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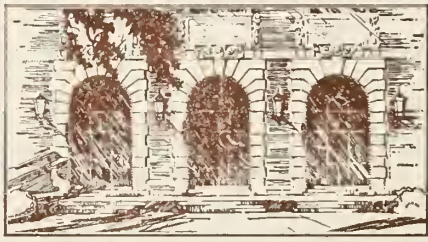
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NINETY - SEVENTH YEAR.

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SAMUEL SQUIRE SPRIGGE, M.A., M.D. CANTAB.,  
*EDITOR.*

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LONDON


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END OF THE FIRST VOLUME FOR 1919.



# The Goulstonian Lectures

ON

## THE SPREAD OF BACTERIAL INFECTION.

*Delivered before the Royal College of Physicians of London*

By W. W. C. TOPLEY, M.A., M.D. CANTAB., F.R.C.P.,  
DIRECTOR OF INSTITUTE OF PATHOLOGY, CHARING CROSS HOSPITAL.

### LECTURE I.

[IN ABRIDGED FORM.]

MR. PRESIDENT, LADIES, AND GENTLEMEN,—It is my first and most pleasant duty to return thanks for the honour of selection as Goulstonian lecturer. It is common with lecturers to claim indulgence, but I fear that in my own case the plea is unusually necessary. If the experimental part of the evidence which I lay before you is incomplete, and in cases fragmentary, I would ask you to remember that the circumstances of the past year have rendered research work of any kind far from easy.

In selecting a subject for such lectures as these one's thoughts naturally turn to those aspects of medical work which have recently impressed themselves most forcibly on the attention. While serving under Colonel Hunter in Serbia during 1915 it was my lot to be witness what was, I suppose, when considered in all its aspects, one of the most terrible epidemics of recent times. Since my return to work at my own hospital the routine examinations in the laboratory, especially in connexion with the military wards, have kept constantly before us the bacteriological aspects of preventive medicine as applied to war conditions. It seemed, therefore, not unnatural to attempt to bring together such data as we possess with regard to the spread, and especially the epidemic spread, of bacterial infection; and to supplement it, if possible, by experimental inquiry in the hope that the result might be of interest to others, and the certainty that the exercise would at least be of benefit to myself.

#### THE WAYS OF APPROACHING THE QUESTION.

The subject under discussion may be approached from at least three sides, the epidemiological, the bacteriological, and the biometrical. The first and third may perhaps be regarded as identical, but the statistics of the epidemiologist, who is concerned mainly with the historical and geographical aspects of his subject, differ so widely from those mathematical methods more recently evolved that biometrics has developed a technique which it seems better to regard as belonging to a separate branch of biological science. While it is with the bacteriological aspect of the question that I am here mainly concerned, yet it is impossible to consider one side of the problem alone without losing all sense of proportion.

#### *The Epidemiological Aspect.*

If we survey the results hitherto obtained in the epidemiological and bacteriological fields we note at once that the two lines of inquiry tend to emphasise two different aspects of the phenomena observed. The epidemiologist puts before us a picture of certain diseases, varying often in their less important details, but showing a remarkable conformity to type when the whole aggregate of manifestations is considered, which arise for some unaccountable reason and attack a larger or smaller portion of the population living at the time. After causing ravages of greater or less extent they seem to disappear again only to reappear after a longer or shorter interval, and again run their course. Moreover, each successive visitation bears a striking resemblance to its predecessor, though the total number of cases, the total mortality in any one centre of population, and the distribution of the epidemic over the inhabited parts of the earth, vary greatly from one outbreak to another.

Thus epidemiology tends to lay stress on the constancy of a disease, as some process which continues through long ages of history, now rising to a climax, now relapsing into insignificance, but remaining a constantly menacing factor among the mass of circumstances that constitute the environment of our species. Thus it is possible to trace some of our epidemic diseases back into the dark ages of medical history,

and though we have only to go back a little way, as regards historical time (to say nothing of time as it is regarded by the biologist or geologist), to find the way confused and the shapes before us vague and doubtful, yet we can trace likenesses that leave us in little doubt that most of the enemies with whom we are now engaged have troubled our fathers before us.

#### *Bacteriological Lines of Inquiry.*

When we turn to the bacteriological aspect of the question we find a very different picture. Workers in this field have been more concerned with the minute investigation of comparatively small samples of cases than with the broad view of an epidemic of disease as a biological process. By these investigations they have been able to identify the causal organism of certain of the more important communicable diseases, and in recent years have brought forward data of the greatest importance for a better understanding of the factors involved in the spread of such infections. The foundations of bacteriology, indeed, rest on Pasteur's observations on the nature and prevention of infections characterised by their ready spread.

Rapid advance in the investigation of epidemic disease along bacteriological lines has, however, been so far prevented by two outstanding difficulties. The very diseases which would afford the most favourable field for study are just those in which the causal organisms are unknown. Scarlet fever, measles, small-pox, and chicken-pox, to mention only a few of the more outstanding examples, still await a satisfactory elucidation from this point of view. We have lost faith in one of our supposed causal organisms during the world-wide influenza epidemic which is still with us, and already there are many claimants to the vacant place, but no one of them has yet established its position.

The other great obstacle we have to face is our inability to convey to laboratory animals diseases as they occur in man. We can produce lesions of a definite and specific nature in the majority of cases, but not the actual disease in all its features, and among the features most frequently lost is that tendency to spread of infection which we should specially desire to study.

In spite of these limitations much has already been accomplished, and though much remains to be done there is little doubt that we are steadily gaining that knowledge which, if properly applied, will enable us to deal effectively with the great problem of infective diseases.

In any attempt to form a bacteriological conception of the processes involved in the epidemic spread of infection the ascertained facts of epidemiology must be kept constantly in mind.

#### THE MAIN PROBLEMS.

We may commence by asking ourselves what are the main problems to be solved and the most striking phenomena to be accounted for, assuming, as we have, I think, the right to do, that the organisms which the best bacteriological opinion regards as having established their causative rôle, do indeed play that part in the diseases in question, and that in other cases we are dealing with an unknown cause of essentially similar nature.

Considering the general picture presented by the historical and geographical data concerning any one of these diseases which have from time to time assumed an epidemic form, the questions that force themselves most prominently before us are probably the following:—

(1) Since the outbreaks are separated from one another by intervals of time, during which there may be a complete absence of the disease in its classical form, it is necessary to explain how and why the specific virus remains dormant for periods often extending over many years.

(2) If we can obtain a reasonably complete answer to this preliminary question, there remains the problem of why it is that the dormant virus periodically awakens to activity and gives rise to those outbreaks of disease which, in their pandemic or epidemic forms, show such strikingly constant characteristics. In seeking an answer to this question it will be necessary to include as facts to be explained those well-known preliminary phenomena which so often precede the appearance of an epidemic.

(3) If it be possible to form some reasonable conception of the causes which originate an epidemic it will still be necessary to show that such causes, operating further, will tend to produce the phenomena which are to be observed in the rise and subsequent subsidence of the wave of disease.



Any tenable theory must thus explain the constant presence of a specific cause of disease through long periods of time, the periodic reappearance of the disease in epidemic form and the characteristic form of each such wave of disease in its rise, crest, and subsidence, leading to another disease-free period.

#### THE HUMAN CARRIER.

The gradual accumulation of evidence pointing to the importance of the human carrier as a factor in the persistence of a bacterial virus during inter-epidemic periods has profoundly altered our conception on these matters. In how far persistence in soil, water, or other inanimate habitats may contribute to the preservation of pathogenic bacterial species, we have no certain knowledge; nor have we in most cases adequate data on the prolonged existence in other animal hosts of bacteria potentially pathogenic for man—a factor which is probably of far greater importance. The fact which has been brought into prominence, and which has been more and more clearly established as a general law, is the continued parasitic existence in man of bacteria known to be capable of causing disease, without the actual production of the disease in question.

The extensive studies which have been carried out in connexion with the carrier problem have yielded data of the greatest value concerning the relative distribution of such parasites at epidemic as contrasted with non-epidemic times, and especially in epidemic as contrasted with non-epidemic areas. The position as it stood in 1912 is admirably summarised in Ledingham and Arkwright's "Carrier Problem in Infectious Diseases." Very thorough investigations have been carried out during the past four years in connexion with those epidemic diseases which have assumed special importance under war conditions, and the results, as set forth in various reports to the Medical Research Committee, to the Local Government Board, and in other papers, afford data of the highest significance.

Without considering in detail the bacteriological evidence in connexion with each of those epidemic diseases in which knowledge of the causative parasite enables us to pursue an inquiry along these lines, we may summarise the relevant facts which have come to light, sometimes in one disease, sometimes in another, but which are being more and more surely established as general principles by the gradual accumulation of evidence.

#### SUMMARY OF PRESENT KNOWLEDGE.

It seems to be a general law that, where a given bacterial infection is associated with the presence of the causative parasite in certain excretions or on certain mucous surfaces, the tendency is for the organism to persist in such situations for a certain short interval, usually a few weeks, and then to disappear. In some cases, however, it persists over much longer periods, sometimes, as in certain typhoid carriers, for 25 years or more. These chronic carriers form a relatively small proportion of the persons infected, and in many cases there is a well-defined association between the carrier-state and some other pathological condition in the host. Thus typhoid carriers are especially common among those persons who are suffering from lesions of the gall-bladder, and hence the condition occurs more frequently in women than in men. Similarly the presence of enlarged and unhealthy tonsils would appear to contribute to the persistent carrying of the *B. diphtheriae*.

In the case of many bacterial parasites there is ample evidence that pathogenic species are distributed fairly widely throughout the general population, and it seems probable that, if any large sample of the community could be minutely investigated, most of those bacteria, which are recognised to be the cause of the epidemic diseases natural to the locality concerned, would be detected in one or more of the individuals examined.

#### Carrier-rates among Contacts and Non-contacts.

If such an inquiry be carried out in an area in which an epidemic is actually occurring it will be found that a proportion of individuals, in apparently perfect health but who have been in more or less intimate contact with cases of the disease in question, are harbouring the specific parasite. Moreover, the percentage of such carriers among healthy contacts will be considerably higher than among the general non-contact population. Thus Graham-Smith, from collected records of 2132 carefully-made observations, gives a figure of

0.18 per cent. as representing the carrier-rate of virulent diphtheria bacilli in normal non-contacts, while the same observer found a carrier-rate of 10.4 per cent. among a sample of normal contacts. Stillman records a carrier-rate of 0.33 per cent. for Type 1 Pneumococci among 297 normal non-contacts, but a rate of 14.9 per cent. among 107 healthy contacts with cases of lobar pneumonia due to infection with a coccus of this type, and a multitude of similar examples could be quoted.

If a comparison be made between healthy contacts, healthy non-contacts resident in an infected area, and healthy non-contacts from an area free from the disease in question, the carrier-rates obtained may be found to form a descending scale. Flack reports a meningococcal carrier-rate of 8.53 per cent. among 1629 healthy contacts, of 5.53 per cent. among 651 healthy non-contacts from epidemic areas, and of 2.18 per cent. among 275 healthy non-contacts from unaffected localities. It is a point of some interest that, during a considerable epidemic, the carrier-rate among healthy non-contacts may equal that among healthy contacts as demonstrated by Glover in the case of the Meningococcus.

If, instead of examining perfectly healthy contacts, we confine ourselves to individuals resident in an epidemic area, and suffering from some mild atypical infection of doubtful nature, which shows no clinical identity with the epidemic disease, we find a sharp rise in the percentage of persons from whom we can isolate the specific organism. Thus we may compare the 70 per cent. carrier-rate for *B. diphtheriae* obtained by Köber when examining 139 contacts suffering from mild sore-throats with the 10.4 per cent. rate quoted above for healthy contacts. Similarly, Billet, Le Bihan, and others, while investigating an outbreak of typhoid fever in an infantry regiment, examined the faeces from 64 atypical febrile cases which could not be diagnosed as typhoid on clinical grounds, and isolated the *B. typhosus* in 13 instances, a carrier-rate of 20.3 per cent., which is vastly greater than that ever found in healthy contacts.

#### Rise and Fall of Carrier Rates in Relation to Epidemics.

In the case of cerebro-spinal fever certain additional facts have been established which are of the greatest significance. It has been shown by many observers that the rise in the meningococcal carrier-rate quite definitely precedes the outbreak of an epidemic. So uniform is this phenomenon that it has been possible to set up a tentative limit of 20 per cent. as a danger-line, and to regard a rise in the carrier-rate beyond this figure as a warning of the imminence of an epidemic. Moreover, it has been established in the case of this disease that a decline in the carrier-rate precedes the decline of the epidemic in some cases, and in others occurs more rapidly; so that it is usual for the percentage of healthy carriers to sink to a relatively low level while cases of the disease are still occurring. (Bruns and Hohn, 1907; Hutchens, 1916; Johnston, 1916; Glover, 1918, &c.) The association of a high carrier-rate with overcrowding has been noted by many observers, and Glover has given a striking demonstration of the way in which the rate may be caused to fall by simply spacing out the beds in a sleeping apartment.

#### The Virus of Scarlet Fever.

If we turn from those diseases, in which knowledge of the causative organism allows the problem to be studied from the bacteriological point of view, to other diseases in which such knowledge is still lacking we find that clinical and epidemiological studies have yielded results pointing in no uncertain way to conclusions similar to those arrived at by research along bacteriological lines.

Thus Butler, in a careful study on "The Intermittent Infectiousness of Scarlet Fever," finds ample clinical and statistical evidence to support the view that persons recovered from scarlet fever may convey the infection to others after intervals of long duration, while those who have never suffered from a typical attack may convey the disease to persons with whom they come in contact. He points out further that a statistical inquiry into the frequency with which sore-throats in other members of a household precede a fully developed attack of scarlet fever in one of them, leaves little doubt that the typical case may be the result of infection from the atypical one.

He concludes that there is little need to assume an extra-corporeal habitat for the virus of this disease, if we exclude



milk, acting as a direct cultural material, and considers that the facts point rather to the continual diffusion among the population of the scarlatinal virus, which from time to time is communicated from person to person in such toxic quantity and degree as to give rise to the typical sporadic or epidemic disease.

#### *Epidemic Diseases of Plants.*

It would be of the greatest interest to look for analogies in the epidemic diseases of plants. The relative simplicity of the conditions would seem to afford hope that the essential processes might be traced more surely than in human and animal pathology, and that we might thus gain further insight into those general principles which must surely underlie the phenomenon of epidemic parasitic disease of all kinds.

Professor Blackman, whose opinion I have asked on this point, and who has most kindly given me the benefit of his special knowledge, has pointed out to me the difficulties that lie in the way of arguing from plant to animal disease, or vice versa. The structure of the plant-bodies does not seem to afford the opportunity for the continued existence of a parasitic flora apart from disease, if we exclude cases of true symbiosis. There are no regions comparable to the respiratory and alimentary tracts, within the body yet outside the tissues, in which such a flora might readily persist. Moreover, the annual death of many of the host species, with the intervention of a relatively long period before the appearance of a new generation, introduces a factor which is altogether absent in the diseases affecting man and animals.

Another factor which makes difficult comparison between plant and animal pathology is the relative complexity of the tissue changes, and especially of the immunity reactions in the latter. The existence of a specific parasite in a plant itself constitutes disease; in man and animals it is only one essential factor.

It seems that we must be content to await further advances in our knowledge of parasitism in general before attempting to co-ordinate the facts throughout the whole field, but it is impossible to doubt that closer co-operation between investigators in all branches of biological science would be of mutual benefit, and would throw light on many of our most difficult problems.

#### THE CONCEPTION REACHED.

If we now glance back and see to what point our inquiry has so far led us, we are left with some such conception as the following:—

The first difficulty with which we were faced in forming any theory of the spread of bacterial infection, which should conform to the known facts of epidemiology, was to find some explanation of the perpetuation of the virus during inter-epidemic periods. The bacteriological data which have been accumulated, especially during the last 20 years, have shown that the causative organisms of specific diseases are to be found in apparently normal persons who give no history of having been in contact with the disease in question, as well as in healthy contacts with actual cases of the disease. Moreover, the organisms in question have been shown, in certain cases, to persist for long periods of time in or upon the tissues of their hosts, and we must always remember that the difficulty of bacteriological technique is likely to lead to a serious under-estimate.

Clinical and epidemiological investigations have yielded confirmatory evidence, and we are thus left with a conception of the virus of a given disease being distributed fairly widely throughout the world as an apparently harmless parasite on the human host, but taking on during epidemic periods a new and sinister rôle, only to relapse again into comparative quiescence as the epidemic subsides.

We have seen that while the organisms we have considered can live as harmless parasites on normal and healthy persons, yet they become much more plentiful when we examine healthy contacts, and more plentiful still if we are dealing with persons in an epidemic area who are suffering from atypical and apparently unimportant illnesses. Thus we find that a clinically typical case of a given disease tends to be surrounded by certain atypical cases, from whom the causative organisms may be recovered by suitable methods, and by a much wider circle of healthy individuals, many of whom are acting as carriers of the parasite in question.

#### LECTURE II.

It is important to keep clearly before us that the facts as to the distribution of the bacterial parasite during the epidemic period may be interpreted in two ways. It is perhaps natural to focus our attention on the case of disease, and regard it as the centre from which spread the atypical cases and the healthy carriers. There is, on the other hand, the alternative hypothesis that the distribution of the parasite is the expression of a biological process which has preceded the outbreak of disease, and that the typical cases are merely the final results of this process. We should not, of course, minimise the importance of case-to-case infection, nor cease to believe that large numbers of contact carriers derive the parasites they harbour from the sick individual.

#### THE EPIDEMIC CURVE.

If we now turn to the consideration of those epidemiological facts which must be regarded as fundamental in any attempt to form a bacteriological, or, as I should prefer to regard it, a biological conception of the processes involved in the rise and fall of a wave of disease, we find certain phenomena which from their very constancy must be regarded as of primary importance as clues to the solution of the problem.

The most striking feature is undoubtedly the symmetry of the epidemic curve. This phenomenon has been emphasised by countless epidemiologists. The problem has been clearly enunciated by Brownlee, who shows that certain deductions may be drawn with regard to the possible factors involved in the rise and decline of the wave.

We must, then, be prepared to show that those causes which bring about the rise of the wave of disease will, by their continued operation, directly or indirectly give rise to a subsequent decline in a way that is compatible with the symmetry actually observed. It seems certain that the processes leading to the fall of the wave must be the essential consequence of those causes which determine its rise. The constancy of the whole process could hardly be otherwise explained.

There are other features characterising considerable epidemics which must be taken into account, and which yield significant clues. Among these we may particularly note the occurrence during the earlier stages of an epidemic of atypical cases of disease and the reappearance, to a less extent, of these atypical cases during the latter part of its decline.

The periodicity of epidemics and the explanation of the long epidemic-free interval in certain cases form another aspect of the problem which will be referred to later.

#### *Origin and Rise of Epidemic Wave.*

Considering, then, the rise and fall of the epidemic wave, it is necessary first to find some explanation of its origin and rise. There are at least three possible explanations—an increase in the power of the parasite to produce disease, a decrease in the resistance of the host, and some alteration in the surrounding circumstances which favours the transference of parasites from case to case without any alteration in the pathogenicity of the one or in the resistance of the other. The third of these hypotheses may, I think, be disregarded. That alterations in environment may be the determining cause in initiating an outbreak of bacterial disease is probable enough; but they will almost certainly act through the variations which they bring about in the other two factors. The whole of bacteriological knowledge is clearly against the occurrence of a considerable epidemic in which the pathogenicity of the parasite and the resistance of the host remain constant.

Again, while we may well believe a lowered resistance of a certain number of the host-species to be an important factor in the initiation of the process, yet we cannot believe that it is the whole story. The widespread ravages of many epidemics would seem altogether to preclude such an explanation. We seem forced therefore to the conclusion that an increase in the pathogenicity of the specific parasite is an essential factor in the rise of epidemics, excluding from this category small sporadic outbreaks which may be due to the introduction of a fully virulent parasite by a healthy carrier or in some other way.

#### *Decline of Epidemic Wave.*

When we consider the decline of the epidemic we are faced with three similar possible factors—an alteration in



the parasite, now in the direction of lessened pathogenicity; in the host-species, in the direction of heightened resistance; or in the environmental conditions, resulting in lessened opportunities for the transference of the parasite. There is, indeed, in the case of any considerable epidemic, a fourth possibility: the elimination of all susceptible individuals by an attack of the disease. This explanation has been unanimously rejected by epidemiologists on various grounds. Brownlee, in the paper referred to above, shows that it is entirely incompatible with the observed symmetry of the epidemic curve, and that a progressive variation in the biological activities of the parasite seems to offer the most satisfactory explanation of the facts observed. But, while there seems little room for doubt that increased pathogenicity of the parasite must play an essential part in the rise of the wave of disease, it is much more difficult to decide on the relative importance of variations in the powers of parasite and host in bringing about its decline.

#### DEFINITION OF TERMS.

It is important at the outset to define our terms. "Resistance" or "immunity" expresses the sum of the defensive powers possessed by the host. When, however, we turn to the parasite, we find several terms used to denote its powers of attack, and the limits of their implications are not always clearly defined.

"Pathogenicity" denotes simply the power of producing disease, without reference to the manner in which it is brought about. It is a property of those organisms which never cause extensive tissue invasion, but which produce their effects by means of powerful exotoxins, just as much as of those organisms which give rise to a generalised infection. In referring to an organism as pathogenic for man we imply that it produces disease under natural conditions; that is, it is naturally infective, though the degree of infectivity need bear no relation to the degree of pathogenicity. When we state that an organism is pathogenic for laboratory animals there is no necessary implication that it can produce disease under natural conditions.

"Virulence" has come to mean the power of a parasite to multiply within the tissues of the host. An organism which is highly pathogenic need not necessarily be virulent. Conversely, it is possible, though rare, for a micro-parasite to be virulent but non-pathogenic. The rat trypanosome seems to afford an example, but there is no strict parallel among bacterial parasites. Virulence is indeed an elusive term. It is actually employed to express the power of bringing about a generalised infection of the host. It pays no heed to any possible variation in the power or rate of multiplication in different tissues, nor to the capacity for bringing about that initial invasion of the tissues on which subsequent events depend. Still less is virulence synonymous with infectivity; and this is a point which seems to be too little regarded in many epidemiological and bacteriological studies.

As commonly employed, the term "infectivity" denotes an attribute not of the parasite but of the diseased person, an attribute, moreover, which depends on the patient's environment quite as much as on himself. The infectivity of the typhoid patient or carrier is in inverse ratio to his personal cleanliness and to the perfection of the sanitary arrangements under which he lives. It is in direct ratio to his opportunities for contaminating food or drink. The malarial patient is infective in the presence of the anopheles mosquito, how infective recent military experience has demonstrated. In a district free from appropriate insect hosts the same patient is no danger to the community.

If we employ the term "infectivity" in speaking of a bacterial parasite, we should mean that, under the conditions existing in nature, it is in a favourable position to obtain transference to a new host, and that it is possessed of those biological attributes which will enable it, when so transferred to give rise to that sequence of events which constitutes an attack of disease.

It is incorrect, therefore, to state that an increase in the virulence of a bacterial parasite will conduce to epidemic spread of the disease to which it gives rise. It will only do so if there is an adequate degree of infectivity. In an epidemic of any disease in which virulence of the parasite is an essential factor we need an increase in both attributes to fulfil the conditions required.

#### SAPROPHYTIC SPREAD OF ORGANISMS.

In attempting to trace those processes which lead to the acquirement by the parasite of the attributes which enable it to give rise to a wave of disease, it is necessary at the start to form some conception of the manner in which it spreads from those relatively scattered centres in which we believe such organisms to exist in inter-epidemic periods.

It is of interest in this connexion to turn again to the case of cerebro-spinal fever. The evidence which has been collected with regard to this disease has already been referred to, but two further facts may be emphasised—the relatively small number of the cases of disease in any epidemic in comparison with the very large number of persons who are carrying the meningococcus, and the frequent absence of any ascertainable connexion between successive cases.

Consideration of all the available evidence has led to a conception of the spread of this disease which has met with very general acceptance, and which is clearly outlined by the authors of the recent report issued by the Medical Research Committee. It is suggested that the real epidemic consists of a widespread dissemination of the Meningococcus, as a saprophyte, in the throats of the population at large. The organism is regarded as being only a potential tissue-parasite, and as having only a low degree of virulence; so that in normal times its spread is associated only with cases of disease among the most susceptible elements of the community, that is, among infants. At times, however, the organism seems to acquire an increased virulence, and its spread is associated with a larger number of cases and with the attack of young adults who are usually immune.

Is it possible that such a saprophytic spread forms the initial stage of epidemics in general? Assuming that it does so, it is necessary to inquire whether there are valid reasons for expecting such a process to culminate in the elaboration of more infective and more virulent varieties of the parasite concerned. Certain recent observations would seem to afford ground for an affirmative answer.

#### RATE OF MULTIPLICATION OF BACTERIA AND VIRULENCE.

The rate of multiplication of bacteria in a fluid culture medium has been investigated by many observers, and more recent observations by Penfold, Ledingham and Penfold, and Chesney have yielded information of a very precise nature on this point. It has been shown that there is a "lag" phase, in which multiplication of the bacteria increases in rapidity, at first slowly and then more quickly, until a uniform rate of maximum or logarithmic growth is attained. After a time the rate of multiplication decreases, eventually giving place to a phase in which the death of organisms exceeds the rate of generation.

The relation of virulence to the phase of growth of the inoculated culture has recently been studied by Wadsworth and Kirkbride in the case of the Pneumococcus. Their results show clearly that an organism which exhibits only a low degree of virulence when injected in the form of a 24-hour culture in liquid medium may be highly virulent after being allowed to grow for 6-8 hours only in the same medium. The authors quote results which they believe to indicate a definite increase in virulence of a strain of pneumococcus by repeated subculture at 8-hour intervals, but a close study of the data given leaves a doubt whether the whole matter is not explained by the coincidence in any culture of the phases of maximum virulence and maximum rate of growth. This one point is, in any case, clearly established, and we may assume that any organism will exhibit its highest virulence under circumstances in which it is multiplying with maximum rapidity, and that a bacterium which under normal conditions is practically non-virulent may in such circumstances show a virulence of quite definite degree.

#### INCREASE IN VIRULENCE BY NATURAL SELECTION.

Now it will be clear that, in the saprophytic spread of a bacterial parasite, the conditions will tend to encourage the transference of those organisms which possess the greatest power of rapid growth, for such organisms will come to form a considerable proportion of the local bacterial flora of the host, and hence will obtain increased opportunities for transference to other individuals of the host species. In this way natural selection will operate in the direction of the dissemination of the variety of the parasite possessing a maximum power of growth under the prevailing conditions.



It would seem probable, then, that a saprophytic spread of a bacterial parasite would lead naturally to the selective propagation of those forms which would be especially likely, when introduced into the tissues, to multiply within them. It is probable that the bacteria living on a mucous surface are continually being carried into the tissues in small numbers, either by the action of phagocytic cells or in some other way. The combination of the power of rapid multiplication on the surface of the mucous membrane, with the ability to multiply in the tissues when access is gained to them, will render successful invasion extremely probable.

If, then, the parasite forsakes its saprophytic rôle and produces a localised infection of the tissues, it may be regarded as a "passage" strain. Should this strain be transferred to another individual, and so on from host to host, the analogy of experimental passage would suggest that an increase in virulence would result. Natural passage, resulting in such heightened virulence, has been frequently suggested as a possible explanation of the evolution of highly pathogenic strains of bacteria during epidemic outbreaks of disease. It is important, however, to realise that the analogy of experimental passage breaks down at a vital point.

When we wish to exalt the virulence of an organism for a given species, we proceed by transference from animal to animal, always introducing the bacteria into the tissues by mechanical means. Thus we proceed by the selection of strains which are better and better adapted for multiplication in the tissues, that is, more and more virulent in the strict sense of the term; but with the ability of the parasite to infect a new host under natural conditions we are not concerned. This attribute is, as we have seen above, of decisive importance for the production of epidemic disease.

#### *Tissue Invasion.*

If we are to accept a series of passages as the natural mode of acquirement of increased virulence, we must believe that the chances of transference, and hence of selective propagation, are increased by tissue invasion. In some cases we find ample reason for believing that such a result will follow. Whenever successful invasion results in the formation of lesions of mucous surfaces the discharges from which naturally pass to the surface of the body and are frequently or continuously emitted into the surrounding medium, it is clear that increased opportunities for passage will occur. In the case of diseases transmitted by biting insects it is still more obvious that successful and generalised invasion of the tissues will be a decisive advantage in gaining transference to a new host. Here, indeed, we are dealing with conditions which approximate closely to those obtaining in experimental passage.

It is in many of those infectious diseases in which we have good grounds for believing that transference from host to host occurs via the naso-pharynx that we are faced with the most obvious difficulty. In some cases there are, indeed, local lesions which will readily explain the infection of a fresh host, but in some others the best clinical observation reports the striking absence of local changes. Thus in the case of influenza there seems no doubt of the frequent absence of naso-pharyngeal catarrh, at least, during the height of an epidemic, while careful inquiry has signally failed to bring to light any relation between such catarrhal changes and cerebro-spinal fever.

Though these are real difficulties, they do not seem to be insuperable. The absence of localised catarrhal changes during the height of an influenzal epidemic is not paralleled in those influenza-like outbreaks which occur during inter-epidemic periods, and which, as epidemiologists have shown, tend to be especially numerous in the period preceding an epidemic wave. It would seem possible that it is during these premonitory outbreaks that the preliminary increase in virulence occurs.

#### RESULTS OF POSTULATED GRADUAL EVOLUTION OF VIRULENCE.

In this way we may perhaps explain the gradual evolution of those virulent and infective organisms which, spreading among a population, cause epidemics of disease. If this explanation be the true one, certain results must follow.

During the preliminary stages the contest between parasite and host will result in minor degrees of tissue invasion, and it is difficult to believe that such a process will not result in

the partial immunisation of the host. Again, since transference from host to host will under natural conditions be entirely promiscuous, it will often occur that a given parasite will be transplanted on a host who is already harbouring the same species, though possibly a race of a different degree of virulence. In such a case the newcomer will succeed or fail in establishing itself according as it is better or worse adapted for life under the conditions locally existing. Since it would appear to be a universal rule that competition is most severe between nearly allied species and between varieties of the same species, it is unlikely that the conditions can be so favourable for the rapid multiplication of the parasite as those existing when transference occurs to a host in whom this species is absent.

Clearly, then, the optimum conditions for successful and continued passage will be the close aggregation of a previously non-infected population, and such movement among them as will result in the entrance to the infected locality of large numbers of non-infected persons from outside areas, and the movement to hitherto unaffected districts of persons harbouring the specific parasite. In other words, unusual density of population and an unusual degree of migration will afford ideal conditions for such a process. That these conditions are those which favour the occurrence of epidemics of disease is universally admitted.

The point, then, which it seems necessary to determine is whether a series of natural passages will indeed lead to the evolution of strains of the parasite especially well-equipped for producing disease on the epidemic scale, and whether there is any reason to believe that continued variation along the same lines will result in such modifications as will render it less likely to infect new hosts.

(To be continued.)

## ON THE PROGNOSIS OF NERVE INJURIES.

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### I. *Introductory.*

In order to estimate the prognosis of nerve injuries from all points of view it is necessary to have had not only a considerable number of cases, but to have had these under observation for several years. Thus it is not possible to estimate this properly from cases under observation only since the beginning of the war; for recovery of function after nerve injuries and after operations for repair is remote from the date of injury or operation. For this two things peculiar to nerve injuries are responsible. The first is the occurrence of nerve degeneration after all but the most trivial injuries and the necessity of nerve regeneration taking place before conductivity is regained. The second is the degeneration in the muscles supplied by the damaged nerve. This takes place with great rapidity, and is such that the muscle cannot become functional again until it has regenerated, and this restoration cannot begin until the nerve has already regained its conductivity.

Thus, in all cases recovery of the muscle after a nerve injury requires much time. No other kind of case is so difficult to keep under observation until the final result is attained. This is more so with cases in military hospitals, as such patients have their homes widely separated. After discharge from the army these cases can be traced, but the great majority are living at a distance and the reports received of their progress are very often prepared by those unaccustomed to report on such cases, and therefore usually unsatisfactory.

### II. *Factors Influencing Recovery.*

More than in other cases nerve injuries are influenced by many factors which have a profound effect on the prognosis, causing at times complete or partial failure, and in other cases delay of the recovery of function. These factors may be classified under the following heads.

#### A. *Factors Occurring at the Time of the Injury.*

1. *Sepsis or asepsis.*—Without doubt one of the causes most unfavourable to nerve regeneration is sepsis in the wound. At one time this was thought a complete bar to recovery, but this is not always the case, as certain cases in which very marked sepsis has been present have given good



recoveries. There appears, however, to be no doubt that it is always an unfavourable factor, and that it is apt to lead to changes in the nerve trunk and its surroundings, resulting in the formation of cicatricial tissue and permanent damage of the nerve trunk. Most of the injuries of the nerves met with during the war have been associated with sepsis and many with large septic lacerated wounds. Even when the wound has been a mere puncture a bit of cloth has often been carried in, causing destructive sepsis. This contrasts with the nerve injuries met with among civilians before the war in which the lesion was, as a rule, caused by a knife or sharp and comparatively clean chisel, or by a hit of glass or the like, making practically incised wounds, which in most cases healed up quickly. Consequently, earlier recovery was usually seen in these cases.

Although sepsis is so unfavourable in prognosis, it does not follow that its absence means an assured recovery of function. Take, for example, cases in which there is no open wound and in which the nerve has been cut by the sharp fragments of a fractured bone, or where the nerve has been ruptured by being subjected to tension. In the large majority of these no spontaneous recovery ever takes place, or at best a very trivial one. Although no sepsis has occurred in these cases other unfavourable factors have caused failure of recovery.

2. *The nature of the damage to the nerve trunk.*—This also has a very important effect on prognosis. The damage may vary between the extremes of slight compression of the nerve trunk caused by a cicatricial band to extensive loss of substance of the nerve trunk. Naturally the former would be regarded more favourably, but between the two extremes are many types of injury varying in prognosis. In general, a compression is regarded as more favourable than a severance. Yet many cases of the latter give results apparently as good as, and in some cases better than, the former, and, generally speaking, the results of the two types are practically the same. Taking the simple fact of the nerve injury, no case of severance should give a better result than one of compression, but many other factors influence simultaneously the result. Should the ends of the severed trunk not lie in close approximation, then the probability of spontaneous reunion is not good. Further, if there is separation to any great extent the gap will not be bridged successfully, and failure of reunion will certainly result.

3. *The surroundings of the damaged nerve trunk.*—The condition of the surroundings is very important. As in shell wounds, much destruction implies cicatrization in the vicinity of the nerve, so that even although the nerve itself had been in a condition for recovery, yet the development of a mass of densely contracted cicatricial tissue makes any recovery impossible. Sometimes it apparently does not require very much contraction to destroy the function of the nerve, the most notable examples being in the case of the ulnar sulcus and in the aqueduct of Fallopius. In both cases complete and permanent loss of the conductivity of the respective nerves is found from comparatively small amounts of cicatricial tissue.

4. *Amount of trauma.*—A clean cut severing a trunk as a rule gives a better prognosis than when the severance is made as part of a lacerated wound, and when the laceration is extreme the unfavourable effect is extreme. The mode of action of trauma is apart altogether from any loss of substance of the nerve trunk, and still is unfavourable even although the nerve is not actually divided. The harmful effect is due to the reaction in the tissues, in the nerve itself, and in its surroundings, of such a nature that there is more apt to be a development of cicatricial tissue and therefore ultimately compression.

5. *The nerves injured and situation of the injury.*—Certain nerves are more difficult to deal with than others, and in injuries of these prognosis is less favourable. For example, injuries of the facial nerve are difficult to repair. In the first place, injury in the aqueduct is practically impossible to deal with because of the surroundings of bone. There is no difficulty in exposing it here, but the results are unfavourable for the reason stated. Also, if injured in its course in the parotid its repair is very unfavourable because of the salivary gland; while beyond the parotid the tenuity of its branches is against the chances of a favourable reunion. In general, up to a certain size the larger the nerve trunk the more likely is a good result either from the point of view of spontaneous reunion or of reunion by operation. In the

former case the ends are not so likely to be separated by an interval so great in proportion to the thickness of the trunk than is the case with nerves of greater tenuity. In the latter case the larger trunks are more easily found and less damage is done to the tissues in the process of finding them.

Then, again, there is the fact that the same nerve will have a better prognosis in certain situations than in others. The best illustration of this is the ulnar nerve, which has its worst prognosis when wounded in its course in the ulnar sulcus unless operative means are adopted to overcome this.

Also, the level at which a nerve is severed has its effects on the result. The most unfavourable event is when the nerves are pulled from the cord, so that the injury is presumably an intrathecal one. The most frequently occurring instance of this is in the brachial plexus, which is sometimes completely torn out by a pull on the abducted arm, the effect being to pull out the nerves from the cord and totally paralyse the arm. The arm then may be amputated at the shoulder, as it would only be a trouble to the patient, and even then sometimes intolerable neuralgia having its origin at the intrathecal lesion continues.

#### B. *Lapse of Time between Injury and Operation.*

1. *The progressive atrophy of muscle.*—Wasting of the muscle supplied by the injured nerve is the most serious effect of a nerve lesion, and affects the prognosis very materially. This wasting commences immediately the nerve loses its conductivity. It is unnecessary to go into the exact changes in the muscle, but their effect is to cause the latter to alter almost immediately in its electrical reactions, and when, after a short time it is exposed, it is paler than normal and wasted. For a very long time certainly it retains its responses to galvanic stimuli, although it goes on wasting until its bulk is very greatly reduced.

It is this effect on the muscles which must be taken into account very carefully in giving a prognosis. In the first place recovery of motion will not occur until the muscle is again largely built up and restored to a condition in which its electrical reactions are normal. In the second place the time required to effect this will not be the same in each case, but will vary very widely according to the extent of wasting which has to be made up before recovery exhibits itself to the extent of voluntary movements being possible. Recovery of faradic irritability in the affected muscles is, as a rule, the immediate precursor of recovery of voluntary contractions in the muscle.

Now it is only by a careful study of many cases over long periods that accurate data could be got to formulate a law as to this recovery. In a general way it is recognised that if operation for the reunion of a severed nerve is long postponed any recovery possible will be much longer delayed than if the operation had not been so delayed. The cause of this, as just stated, lies principally in the state into which the muscles have fallen.

2. *Primary and secondary suture.*—In this connexion the question will arise to what extent primary suture has the advantage over secondary suture. The answer is that, other things being equal, it will secure the recovery of the nerve at the earliest possible time so as to stop the degeneration of the muscle as early as possible, and therefore be most advantageous. But other things are not always equal, for in the nerve sections seen in the war the conditions for primary suture were not favourable as a rule, the wound being usually lacerated and infected. In consequence, even although the nerve has been sutured primarily, the result will probably be failure, secondary suture being required. In any case no longer than four months, everything being favourable for further operation, ought to be allowed to elapse after the primary suture without resorting to secondary operation, unless some definite indication has developed to prove that the nerve is renniting.

Then with regard to the question of when to operate when primary suture has not been done, in order to secure the best result, there may be contingent circumstances influencing the decision, such as an open wound. In that case the wound must first be induced to heal, as the prognosis of an operation in such circumstances would not be good. Should the parts be healed sufficiently long and only the question of time to be considered, then between two and three months after the nerve section appears to give a prognosis of the earliest possible recovery. Under such circumstances the best result is a recovery of voluntary movements in about three or four months from the date of operation.



When further delay has taken place before operation then the waiting time after the operation increases at a greater rate. Thus the examination of a number of cases showed that cases operated upon within three months gave a commencing recovery in three and a half to four months, but if five or six months elapsed before operation then seven or eight months elapsed before any improvement in the muscles occurred. These dates refer entirely to the recovery in the muscles. The date of recovery of sensation is not dependent on these intervals of time.

3. *Operation after long intervals.*—When many months have been allowed to elapse before operation then the date of recovery of the muscles is so remote and so gradual that it is very difficult to say exactly when it has commenced to exhibit itself. These cases often pass out of observation and are seen only after a long time, when it is found that recovery has taken place.



FIG. 1.—Condition in Case 1 before operation and 18 months after division of ulnar nerve above wrist. (Phil. Trans., B, 1897.)

CASE 1.—The patient was a woman aged 29. The ulnar nerve was divided above the wrist 18 months previously. At the operation the nerve was found completely divided and the ends separated. Before the operation the muscles in the hand supplied by the ulnar had lost all their voluntary power; their faradic irritability was lost and their responses to the galvanic current were minimal. The muscles were wasted and the skin glossy; the appearance of the hypothenar eminence is shown in Fig. 1.

The operation was performed in January, 1897, 18 months after the section of the nerve. Sensation in the insensitive area returned in five days, indicating the recovery of the



FIG. 2.—Condition in Case 1 five years after operation. (Chippault's, *Chirurgie Nerveuse*, vol. ii., Paris, 1903.)

conductivity of the nerve, but no appearance of recovery of the muscles was exhibited and the patient passed out of view and the case was published at this stage. She was seen again five years and four months after the operation, and it was found that a perfect recovery of the muscles and of the movements had occurred in the interval. Fig. 2 shows the reproduction of the hypothenar eminence which had taken place. The slight appearance of hyperextension in the little and ring fingers was the consequence of the long-continued ulnar attitude, but did not prevent the normal use of these fingers.

Another case may be quoted in illustration of this matter. It was a case of rupture of the fifth and sixth cervical nerves in the brachial plexus.<sup>1</sup>

CASE 2.—The age of the patient at the operation was 14 years, and the accident occurred at birth. The typical paralysis of this condition was present with atrophy of the affected muscles. At the operation the fifth and sixth trunks were found to have been completely divided and united by a scar. On stimulation only a few of the fibres of the deltoid and biceps contracted without any movement resulting. The cicatrix was excised and the proximal two trunks sutured to the three distal branches—namely, supra-scapular nerve, branch to the posterior and branch to the outer cord of the plexus. At five months no improvement had occurred in the movements, although the electrical reaction seemed improved. About two years after the operation, however, the movements had greatly improved.<sup>2</sup> The forearm could then be flexed voluntarily through a range of 60°, and voluntary abduction of the arm was possible through a range of 45°. While these movements were being made the biceps and deltoid could be felt to contract. Also the atrophy of the biceps and deltoid had greatly disappeared. This was the state of matters on the last occasion on which the patient was seen. He wrote subsequently stating that his arm was "all right now," meaning, probably, that further improvement had taken place. No further occasion to examine him occurred, and it has since not been possible to trace him.

It is thus seen that even after long periods there is a possibility still of obtaining good results. It also seems to be the case that although delay in operating means an increasingly longer period to wait for the recovery, after longer delay before operation, the recovery takes place in a more uniform interval of time. Thus for increasing intervals before operation the waiting time after operation increases up to a point and then ceases to increase with further increase of the interval before operation.

#### C. Factors Occurring at the Operation.

1. *Asepsis or sepsis.*—Asepsis is one of the most important conditions in operations for the repair of damaged nerves. A standard of technique which may give passable results in certain other branches of operative surgery will give poor results in nerve surgery. The importance of this as regards the prognosis is not always kept in view. The special reason for this high standard of aseptic technique is that we are dealing with the regeneration of one of the highest types of tissue cells which, as far as their regenerative capacity is concerned, are inferior to connective-tissue cells. The latter, if present in abnormal quantity, are likely to prevent the development of nerve tissue simply because they regenerate more easily than nerve tissue. The consequence is that compression will ultimately develop from the new-formed connective tissue which is fatal to the functional development of any new nerve fibres which have been formed.

It is not only a question of healing by first intention. Certain wounds may heal by first intention, although a more considerable reaction has occurred in them than in the case of other wounds in which the state of sterility has been more successfully guarded. Thus it is that the surgeon whose technique has nearest approach to perfection will find his results better than where the technique is not quite so good, although in both cases all the wounds may have healed "by first intention." It is not meant by this to maintain that no result is possible should a wound even suppurate, for a good result may take place although sepsis has occurred, but in general the results will be better the less the reaction induced in the wound, and this reaction can be reduced to a minimum by technique.

2. *Amount of trauma caused by operation.*—Very important is the amount of force necessary at the operation before the scar is removed from the nerve and its surroundings so as to leave the nerve free or before the ends of the divided nerve are freed from scar and united by suture. Usually the operation, carried through with the greatest gentleness, will give a quicker result than one where force has been necessary. The rule is always to avoid force or coarseness of manipulation if the object can be attained without. This rule applies to any department of operative surgery, but failure to observe it is particularly destructive of good results in nerve surgery. When the nerve ends are embedded in dense scar it is not always possible to get the nerve trunks clear without considerable force. Also, in the case of

<sup>1</sup> Brit. Med. Jour., 1903, Feb. 7th.  
A 2

<sup>2</sup> Ibid., 1904, Oct. 22nd.



a lesion of the ulnar nerve in the arm when the ends cannot be united, without transferring the nerve out of the sulcus to the front of the epicondyle, then more trauma is inflicted. In such cases the prognosis is not so good as where minimal force and manipulation are used.

3. *Coaptation of the nerve ends.*—Another important point is the possibility of getting the ends to meet. If they do not meet, or only do so with tension on the nerve, then the outlook is not a good one. Sometimes if the ends are separated only by a short interval conductivity is restored, but sometimes it is not. Nevertheless, the failure to get the ends quite to meet is much less serious than infection of the wound would be. When the ends do not meet pulling on the nerve trunk often succeeds in getting them together, but the fibres of the nerve may be ruptured, and in that case will require to regenerate causing a further postponement of the early signs of reunion. Excising a segment of a bone so as to shorten the limb and bring the nerve ends into contact requires so much manipulation that the prognosis is unfavourable.

4. *The nature of the suture.*—The suture used has some importance. When sutures which cause irritation have been used, such a formation of connective tissue may be caused at the seat of suture as to strangle any young nerve fibres and prevent restoration of conductivity. The suture must be carefully chosen in view of its capacity either to be encapsuled by the tissue or to be absorbed and to cause the least irritation in either process. Also those cases will have the best prognosis in which the smallest amount of foreign material has been left at the seat of section either to be encapsuled or absorbed. This applies to Cargile membrane or any dead material employed to wrap round the seat of junction, also to thick sutures or many sutures at one junction, all of which are objectionable.

5. *The surroundings in which the nerve is left.*—Lastly, the prognosis is poor in all cases in which after the operation the sutured or liberated nerve has unavoidably been left in a bed of scar or in a bony canal or furrow. In the former case the scar will contract and prevent the conductivity of the nerve from being restored or destroy it after it has been restored. In the latter case the scar or neuroma which is formed at the damaged segment of the nerve, because of the unyielding boundaries, will prevent conductivity by compression.

#### D. Factors occurring after the Operation.

1. *Contraction of antagonist muscle or group of muscles.*—After a satisfactory operation a case may be spoiled by the want of attention to the antagonist of the paralysed muscle or group of muscles. The paralysed muscles may recover their irritability and yet be incapable of carrying on their function because they are stretched and cannot overcome the contracted muscles. This can be prevented by appropriate fixation or even by appropriate passive movements until recovery of the paralysed muscle.

These contractures appear to be more apt to occur in injuries of certain nerves, but again they are also found in certain cases and not in other cases of injury of the same nerve. The difference appears not always to lie in the amount of attention given to the limb throughout the period of recovery. Thus, although no correcting splint has been applied, excellent recoveries may result. In some cases most favourable results are obtained without the slightest attention to after-treatment.

For example, a case of musculo-spiral paralysis<sup>3</sup> after operation gave a complete recovery, although the patient did not permit any after-treatment whatever. A fracture of the humerus was caused by the patient being run over by a police van from which he had just made his escape by tearing up the floor and dropping on to the street. Two days after operation for nerve suture he left the hospital and for about ten days was practically continuously under the influence of drink. He then called at the infirmary and had the stitches removed from the wound, which had healed perfectly by first intention. No more was heard of him till five months after operation when he called again and showed a perfect result and stated that the recovery had become apparent to him 9½ weeks after the operation. In this case the operation was done as soon as the nerve was in the best condition for operation, so that a minimum time was allowed for the development of contracture.

As a rule, contracture will be more likely to affect the prognosis when recovery is longer delayed, and if it is

allowed to develop to a marked degree it will seriously hinder the recovery. Thus when contracture is well developed it often happens that although there appears to be no recovery of the paralysed group, that group is found on electrical examination to give normal reactions, but the functional recovery has been made impossible by the over-stretching due to the contracture of the antagonist group. This very often is shown in cases of foot-drop, where not only the paralysis of the extensors, but also gravity combine to keep the foot in a position of flexion and thus the formation of contracture of the flexor group is encouraged. Unless care is taken this contracture will prevent a functional recovery of the muscles. The contracture must either be prevented from forming or dealt with should it already have formed.

CASE 3.—Figs. 3 and 4 show a foot in flexion and extension, and in this case there was foot-drop due to an injury of the external popliteal nerve. It was dealt with four months



FIG. 3.

FIG. 4.

Case 3.—Recovery of extensor muscles after injury of external popliteal nerve followed by contraction of gastrocnemius dealt with by section of tendo Achillis.

after injury, at which time the extensor group still showed galvanic reactions but no faradic responses. The patient lived at a distance from the hospital and reported himself after the operation very seldom. It was found in about three months that contracture of the gastrocnemius had occurred. The tendo Achillis was then divided for the temporary relief of the contracture. The patient did not report himself again for two years, when it was found that the extensor group had recovered perfectly, and the tendo Achillis not having reunited the foot was drawn into a position of calcaneus. The tendo Achillis was then repaired. The patient then returned to his work as a miner. It is now 2½ years subsequent to the repair of the tendon, and a slight calcaneus position still remains. Had the patient been more regular in his visits to the hospital the tendo Achillis could have been repaired as soon as the extensor group had recovered, and thus the development of the calcaneus prevented. This method is advisable only when the patient cannot be attended to regularly or induced to wear a correcting apparatus pending the recovery of the muscle.

2. *Cicatricial contraction.*—In certain cases it is learned on questioning the patient that sensation was present after the receipt of the wound, and that the anaesthesia developed subsequently at no great time after the injury. Then, in all probability, the nerve will be found not divided, but compressed in cicatrix. The loss of sensation has been due to cicatricial contraction and comes on gradually. The same is sometimes observed after operation, a very early return of sensation gradually disappearing a little later and no improvement again showing itself. This is to be expected, as already noted, when the nerve at the operation is left in dense surroundings or in pre-existing cicatrix.

3. *Overwork on recovery.*—Muscles which have just recovered their function are incapable of doing much work, any attempt by the patient to make them work will result in fatigue which will hinder further recovery. The paralysis then recurs and remains until the muscle from the enforced rest again becomes functional. This may not mean that the man is overworking his muscles by a return to work. The same thing can occur by any ordinary use of the muscles. It sometimes happens that a man finds the recovering hand strong enough to grasp the handle bar of a cycle and commences to use this means of locomotion. This is frequently followed by a recurrence of the paralysis. It is well to advise patients as to the use of the hand in the early stages

<sup>3</sup> Chipault's *Chirurgie Nerveuse*, ii., 855, Case 33.



of recovery. Active movements should be strictly limited until the muscles are sufficiently strong.

III. Results.

In 1908 I published a series of all the nerves operated on by me to that date. There were 35 in all, but ten were too recent to give final results. Some of the latter were subsequently traced and found to have given satisfactory results. There remains a series of 25 observed for a sufficiently long time, and of which the main details can be seen by reference to the work in which they were published.<sup>4</sup> A certain number of these cases were found at the operation to be cases of complete severance and the remainder to be cases of compression.

For the purpose of classification the results were divided into three categories, namely: Complete Successes, i.e., where sensation and motion were restored so as to give restoration of normal function; Partial Successes, i.e., where the results left something wanting, although the recovery was sufficient to give distinct improvement; and Failures, i.e., where no useful recovery resulted.

Tabular Statement of Results in 25 Fully Observed Cases.

Nerve or nerves affected.	Complete severance.				Compression.				Total.			
	Number.	Complete success.	Partial success.	Failure.	Number.	Complete success.	Partial success.	Failure.	Number.	Complete success.	Partial success.	Failure.
Brachial plexus	1	1	...	...	2	1	1	...	3	2	1	...
Median ...	3	3	...	...	...	...	...	...	3	3	...	...
Ulnar ...	6	4	2	...	1	1	...	...	7	5	2	...
Musculo-spiral	3	2	1	...	3	3	...	...	5	1	...	...
Radial ...	1	1	...	...	...	...	...	...	1	1	...	...
Median and ulnar	1	...	1	...	1	...	1	...	...	2	...	...
Median, ulnar, and musculo-spiral	...	...	...	...	1	...	1	...	1	...	1	...
External popliteal	...	...	...	...	1	1	...	...	1	1	...	...
Facial...	...	...	...	...	1	1	...	...	1	1	...	...
Total results	15	11	4	...	10	7	3	...	25	18	7	...
Percentage ...	...	73.3	26.6	...	...	70	30	...	...	72	28	...

The accompanying table shows these results as regards the nerve or nerves affected, the nature of the lesion, viz., complete division or compression; the whole of the cases considered together and the nature of the results. It is seen that there are no failures, and that the results are not greatly different as between complete division and compression.

EYE-COLOUR AND THE ABNORMAL PALATE IN NEUROSES AND PSYCHOSES.

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THE influence of the individual factor in the development of neuroses and psychoses is of importance in relation to their prevention. The lack of reliable data for a detection or estimation of the factor, which has also social and economic aspects, becomes evident in examining soldiers afflicted by these disorders. The conviction grows that the part played by nature, as distinct from that of nurture, in the development of such disorders cannot yet be described safely as more than a susceptibility (predisposition).

The view, however, that definite indications of nature's influence are demonstrable before disorder reveals it, is held widely. Physical stigmata are pointed out, and the importance of stigmata cannot be overrated if their significance be proved and they provide a means of estimating the degree of susceptibility. But their significance cannot be taken as proved, and no claim has been made for their mensurative use. Yet "instability," "neurotic constitution," and

"degeneration" continue to figure freely in up-to-date textbooks without explanation of their meaning, and stigmata to be described under symptomatology as indicative of these terms. It would appear that the first two of the terms are meant to be synonymous with susceptibility.

On this assumption, advantage was taken of the opportunity afforded by the examination of a long series of discharged soldiers in whom susceptibility to neuroses and psychoses had been demonstrated only by its results, to inquire into accepted and unaccepted stigmata. The accompanying notes on eye-colour and the abnormal palate represent the results of observations forming part of this inquiry.

Eye-colour.

The observations upon eye-colour were made to test a prevailing impression that the sufferers from (war) neuroses and psychoses are mostly dark-eyed, and after these considerations:—

1. Previously to 1914 at least, it was believed that nations varied in susceptibility to neuroses and psychoses. The susceptibility of the British was believed to be low, that of certain continental nations to be high.

2. The dominant eye-colour of these continental nations is dark; that of the British is believed to be light.

3. The impression that dark eye-colour predominates amongst the British (war) sufferers from neuroses and psychoses, coupled with the impressions contained in (1) and (2), suggested that the inquiry might prove interesting and possibly productive.<sup>1</sup>

A preliminary search was made for records of the relative frequency of the different eye-colours amongst our population but not with satisfactory result owing to the variation in standard of colour and in methods of record amongst the observers (Beddoes, Tocher, Ripley). Nevertheless, the inquiry was pursued in hope that reliable figures would be produced by scientific observers in our great armies. The method of observation adopted was founded on that employed by Major C. C. Hurst, F.L.S., in the Burbage inquiry into Mendelian inheritance in man,<sup>2</sup> and based upon the anatomical distribution of the eye pigment.

"In the albedo pigment is absent; in the various shades of blue eyes the pigment cells are confined to the posterior surface of the iris, whereas in grey, brown, and black eyes pigment is found also in the cells of the stroma and in those of the endothelium on the front of the iris."<sup>3</sup>

In effect the method divides eyes into two classes: first, those with pigment in the posterior layer of the iris only; secondly, those with brown pigment *also* in the anterior layer of the iris, in the stroma, or in both. Hurst named the first class *simplex*, the second *duplex*, eyes. *Simplex* eyes are therefore always some shade of pure blue or pure "grey."<sup>4</sup> *Duplex* eyes comprise all other colours—black, brown, hazel, yellow, green, impure grey, and intermediate shades. Neither confusion nor hesitation need occur if the question of colour is steadily excluded from the simple decision whether (brown) pigment is present anteriorly in the iris or not. The method—easily learnt and rapidly carried out by careful inspection laterally in a good light—is facilitated by Hurst's further subdivision of *duplex* eyes into *self*, *ring*, and *spotted*, according to the pattern of distribution of the anteriorly placed pigment.

The observations were made in three series of consecutive cases (Table I.):—

TABLE I.

	Series A.			Series B.			Series C.	Total.
	1st 100	2nd 100	3rd 100	1st 100	2nd 100	3rd 100	100 cases	700 cases
Simplex ...	33	34	27	37	33	31	35	230 ... 32.85%
Duplex ...	67	66	73	63	67	69	65	470 ... 67.15%

Totals } Simplex, Series A, 94, 31.33% ... Series B, 101, 33.66%  
          } Duplex,     ,,   206, 68.67%     ,,   199, 66.34%

<sup>1</sup> An eminent physician assures me that history supports a belief that the blue-eyed races have proved their superiority over the brown-eyed and points to a number of contemporary illustrations of the fact that great leaders are frequently blue-eyed, even among the brown-eyed nations. On the other hand, there is the epigrammatic French view (A de Candolle) "Pigmentation is an index of force."

<sup>2</sup> Eugenics Review, April, 1912.   <sup>3</sup> Gray's Anatomy, 1913, p. 942.

<sup>4</sup> That is to say "grey," in the opinion of some. It is the absence of pigment anteriorly that matters rather than the observer's conceptions of colour.

<sup>4</sup> Chipault's Chirurgie Nerveuse, ii.



In the absence of statistics as to the relative frequency of simplex and duplex eyes in our population, these figures cannot be advanced to do more than support the prevailing impression that the duplex eye is more frequent than the simplex eye amongst our (war) sufferers from neuroses and psychoses.

#### Palate.

The abnormal palate has a strong position in medical opinion as a stigma of "degeneration," which, we are told, is capable of manifesting itself in "nervous instability." Observations on the palate were therefore introduced into the inquiry at the suggestion of a colleague. An attempt was made to follow Peterson's classification of abnormal palates, but this was discarded as too complicated and confusing as soon as an ocular conception of the normal palate had been acquired. The method adopted finally took narrowness as a characteristic and abandoned height, which experience suggested to be more apparent than real, and included the shape of the arch not only as a characteristic, but also as an indication of the intensity of the abnormality, as follows:

1st Norman (N<sup>1</sup>) = wide round arch = normal palate.  
2nd (N<sup>2</sup>) = narrow " " = abnormal (1st degree).  
1st Gothic (G<sup>1</sup>) = " oval " " (2nd " ).  
2nd " (G<sup>2</sup>) = " pointed " " (3rd " ).

This division, like Peterson's, is arbitrary, but has the advantage of simplicity. No data were discovered in medical literature for an anatomical division; the normal width of the palate relatively to the dimensions of the facial skeleton does not appear to have been ascertained. Faute de mieux the classification seemed to serve for as accurate observation as is possible at present to the trained eye.

The palates were observed in two series.

TABLE II.

Series A (as above). 163 cases only.

N <sup>1</sup>	N <sup>2</sup>	G <sup>1</sup>	G <sup>2</sup>
28 ... 17.17%	47 ... 28.84%	69 ... 42.34%	19 ... 11.65%

The striking feature of the result in Table II. is the low returns for the "normal" palate and for the extreme degree of abnormality, and it was thought worth while to ascertain how simplex and duplex eyes were distributed to the varieties of palates in the series. (Table III.)

TABLE III.

Series A (163 cases only).

Eyes.	Palates.				Total (eyes).
	N <sup>1</sup>	N <sup>2</sup>	G <sup>1</sup>	G <sup>2</sup>	
Simplex	9 ... 32.14	16 ... 34.05	18 ... 26.05	4 ... 21.05	47 ... 28.83
Duplex	19 ... 67.86	31 ... 65.95	51 ... 73.95	15 ... 78.95	116 ... 71.17
Series C (100 cases).					
Simplex	10 ... 47.6	15 ... 48.7	9 ... 23.7	1 ... 10.0	35 ... 35.6
Duplex	11 ... 52.4	16 ... 51.3	28 ... 76.3	9 ... 90.0	65 ... 65.0
Above Cases Combined (263 cases).					
Simplex	38.77	39.75	25.23	17.25	31.18
Duplex	61.23	60.25	74.77	82.75	68.82

The leading feature of the result in Series A suggested a further series and Series C was undertaken only to ascertain if that feature was maintained, while the results of the combination of Series A (163 cases) with Series C (100 cases) are also tabulated.

It will be seen that while the percentages of the least abnormal (N<sup>2</sup>) show small variation from those of the normal (N<sup>1</sup>), those of the abnormal classes (N<sup>2</sup>, G<sup>1</sup>, G<sup>2</sup>) show a progressive increase of the percentage of duplex eyes as the degree of abnormality of the palate increases. The difference between the percentages of duplex eyes in N<sup>1</sup> and in G<sup>1</sup> and G<sup>2</sup> is in fact as definite as the difference in palate formation. The similarity of the percentages of N<sup>1</sup> and N<sup>2</sup> may be explained, plausibly at least, by the fact that the departure from the normal in N<sup>2</sup> consisted of narrowness without change in arch formation.

The doubt arises whether there has not been faulty classification—that many of N<sup>2</sup> should have been classed in N<sup>1</sup>. This doubt must beset such classifications until the

width of the palate relatively to the dimensions of the facial skeleton is determined. This consideration, however, does not affect the fact that the figures show a by no means negligible increase of the percentage of duplex eyes in G<sup>1</sup> and in G<sup>2</sup> (the definitely abnormal palates) over the percentage of duplex eyes in N<sup>1</sup> (the normal palates).

#### Conclusions.

Definite conclusions are prevented by the facts already noted, but the following suggestions seem justifiable:—

1. That in individuals who are susceptible to the neuroses and psychoses duplex eyes are more than twice as common as simplex eyes.

2. That in the same class of individuals the narrow and abnormally arched palate (G<sup>1</sup> and G<sup>2</sup>) is present in about 52 per cent. of cases.

3. That in the same class, again, the proportion of duplex eyes to simplex eyes is markedly increased in those cases with narrow and abnormally arched palates (G<sup>1</sup> and G<sup>2</sup>) and the increase tends to intensify along with the intensification of the palatal abnormality.

Even if the proportion of simplex to duplex eyes given does not vary from the general proportion in our population and even if the abnormal palate is indeed a British characteristic, whatever its cause, the interest of the third conclusion remains sufficiently suggestive for further investigation on a larger and more complete scale.

#### Degeneration.

A word must be added on the subject of the abnormal palate as a stigma of "degeneration." Bearing in mind the view explaining the abnormality by the baneful influence of adenoids on intranasal air pressure, their presence was looked for whenever recognised characteristics of their influence (adenoid facies) were detected in Series C.<sup>6</sup> This happened in class G<sup>2</sup> only, but in all ten cases; and adenoids were found, or a history of operation, in six of these. By way of control after each case the next case classed as G<sup>1</sup> was examined for adenoids, but without result.

It would appear that the reply of the "degeneration" theorist to the air pressure theorist has been to sweep in adenoids as a stigma.<sup>7</sup> I do not venture to decide how far my figures may support one side or the other. The publication of these notes, however, is certainly not prompted by a desire to strengthen the position of the abnormal palate in the fabric of "degeneration," or to nail up the duplex eye as a new stigma; or yet to justify the tendency to use "degeneracy" and "neurotic constitution" as synonyms.

Etiologically, "degeneration" signifies downward departure from the qualities of the race—a definition offering too welcome latitude to indolent judgment and inviting us to stigmatise many whose accomplishments prove us wrong. If "degeneration" and "neurotic constitution" are to be retained in medical terminology, then surely clear thinking demands that they should be raised to the level of scientific exactitudes.

I venture to repeat that susceptibility to neuroses and psychoses is the most our present knowledge permits us to premise. So far as the observations, of which those recorded here formed part, have gone, they create a belief that reliable data for the estimation of this susceptibility, if attainable, may be reached more readily through psychopathology than through somatic pathology.

Little that is illuminating on this subject has so far appeared to my knowledge in the flood of medical literature of the war; while Freud, Adler, and Jung similarly fail us, although some of the latter's abstract reasoning in his "Conception of the Unconscious" is suggestive. It is not sufficient to speak of symptoms and pride ourselves we have proved "neurotic tendencies" or "instability" without having any conception of their fundamental cause. The way of enlightenment may perhaps lie through further investigation of the complicated psychic processes of the child, of which, as Jung confesses, our knowledge now is meagre.

<sup>6</sup> Previously to observing Series C I had the advantage of a demonstration by Dr. Harry Campbell of his well-known views on the causation and significance of the abnormal palate. It will be recalled that he is inclined to regard it as a British characteristic, denying its connexion with degeneracy.

<sup>7</sup> Cf. Maurice Craig, op. cit., p. 350: "the naso-pharyngeal passages are filled with adenoids."

<sup>8</sup> Cf. War Neuroses, MacCurdy, 1913, p. 33.

<sup>5</sup> Cf. Psychological Medicine, by Maurice Craig, 1917 edn., pp. 27, 28.



## A CASE OF PITUITARY TUMOUR TREATED BY OPERATION.

By H. LAWSON WHALE, M.D. CANTAB., F.R.C.S. ENG.,  
LARYNGOLOGIST TO THE HAMPSTEAD GENERAL AND TO THE  
LONDON TEMPERANCE HOSPITALS.

THE following case of pituitary tumour is, I think, worthy of record. Sellar decompression and removal of endotheliomatous tissue from the anterior lobe of the gland was followed by great improvement in the pressure symptoms.

### *Condition of Patient.*

Mrs. —, aged 29 years, consulted Dr. C. O. Hawthorne in September, 1917. The chief points in her condition were as follows. Sight failing for six months. Sleepy and easily fatigued. Weight, if anything, gaining. No digestive disturbances. Married for four years. Amenorrhoea for four years. Patient was, for her age, a heavy, lethargic woman. Spoke in a slow monotone and walked slowly. Wassermann negative. On one occasion only was sugar found in the urine. Optic discs white. Vision: R., 6/24; L., 6/60. Visual fields, roughly tested, showed deficiency in temporal halves nearly to fixation point (see chart). The patient was seen by Mr. E. D. D. Davis.

In November, 1917, patient was under observation in Hampstead General Hospital. Vision:—R., 6/18; two letters, 6/12. L., counted fingers at three feet. Temperature never above normal and morning record often 97° F. Blood showed leucopenia (2500 white cells). Occasional vomiting sometimes occurring in the morning before any food had been taken. In December, vision: R., 6/18; L., fingers at two feet. Thought her sight was better than on admission. The patient was seen by Mr. W. G. Howarth. In June, 1918, after having been to Yorkshire, thought this had resulted in a wonderful effect on general health and eyesight. Looked much more alert and had largely lost her

FIG. 2.



The pituitary fossa is enlarged both vertically and in the sagittal plane. The anterior clinoids are deformed and thickened; the posterior clinoids are atrophied, thick and rounded.

when sight (left) began to fail. Lethargy was obvious. Her sugar tolerance had been tested. She took up to 5 oz. in eight hours without any appearing in the urine. Nose and accessory sinuses normal. Skiagram, taken by Mr. H. Wigg, showed a large pituitary fossa (Fig. 2). Her husband was decisive in preferring the risks of an operation to a continuance or aggravation of her condition. A nasal douche, and urotropin 20 gr. t.d.s. were prescribed for four days as a preliminary to operation.

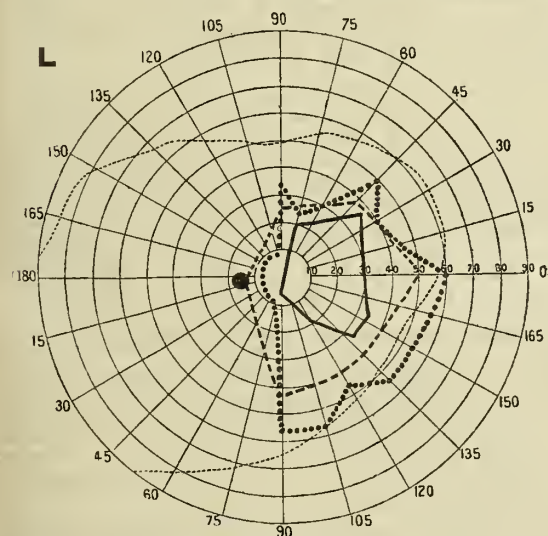
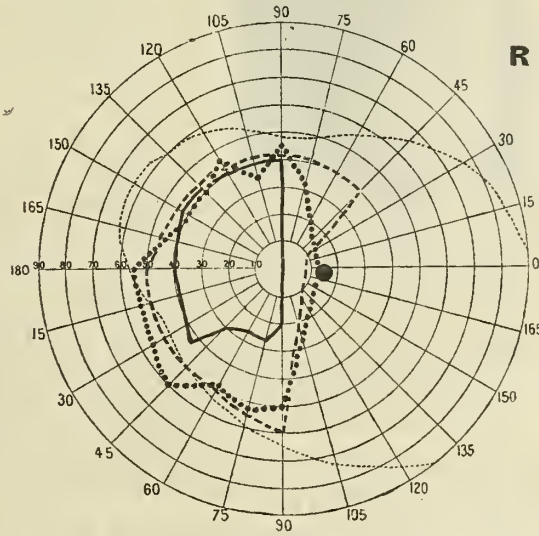


FIG. 1.



*Perimetric charts.*—Neither before nor subsequent to operation was there any record of vision in the temporal fields, excepting from March 22nd to March 29th, between the lines 90 and 45 in the upper part of the right side. But the improvement in the nasal fields is striking. Continuous black line — Sept. 18th, 1917. Interrupted black line - - - March 22nd, 1919. Dotted line ..... March 29th, 1919. Immediately previous to the operation the fields were not charted, because on the left side she had only perception of light.

former lethargic expression. Vision: R., 6/9; L., perception of light only. On Feb. 22nd, 1919, she had been seen as an out-patient on two or three occasions, and lately condition had been less satisfactory. Vision: R., 6/24; L., perception of light only. Headaches began six months ago and were now worse, especially in the mornings.

On March 4th I was asked to see patient. Headache was now acute and nearly constant in the vertex or the occiput. Occasionally there was a moderate degree of proptosis (left), which at other times was absent; divergent squint (left). Questioned as to previous diplopia, patient stated that this had existed two years ago, but only lasted three months,

### *Operation.*

Operation was performed on March 8th, Dr. B. W. Cohen assisting. Preliminary laryngotomy had been intended, but the available tube was unsuitable. As the patient was breathing badly under the anæsthetic an airway had to be provided without loss of time. Rather than delay until a tracheotomy tube could be boiled and inserted the available tube was inserted through the thyro-hyoid membrane; through this tube Dr. D. H. Fraser gave chloroform, the pharynx being shut off by sponges. The tube was withdrawn eight hours later. The left middle turbinate was now removed.

A modified Mouré's incision was made on the left side. The vertical limb of this took the ordinary course down along the junction of nose and cheek. The horizontal limb passed outwards in the skin only as far as just beyond the punctum lacrymale. Thence it was carried through the lower tarsal plate and along the deepest part of the conjunctival fornix for  $\frac{3}{4}$  in. The bone, now removed with saw, chisel, and bone forceps, was bounded as follows: mesially, by the pyriform opening and the inter-nasal suture; above, by a horizontal line cutting off a bare  $\frac{1}{2}$  in. of the nasal process of the frontal bone; laterally and below, by a line from the centre of the infra-orbital margin to the middle of the pyriform opening (this line just spared the infra-orbital vessel and nerve); laterally and above, by a curved line skirting the infra-orbital margin.

The naso-antral party wall was now freely cut away; the nasal duct was not seen or recognised. The ethmoidal gallery was nibbled away and the sphenoidal cell identified. Of this the whole outer wall was cut away. At this stage I had been prepared to sever the bony septum from its attachments above and to dislocate it temporarily to the right for better access to both sphenoidal cells; this manœuvre, however, proved unnecessary. The whole cavity was carefully cleared of minute fragments of bone and mucosa and swabbed, and fresh adrenalin applied for five minutes. The sellar floor was now to a large extent removed piecemeal by the use of one of the curved gouges belonging to a West's intra-nasal dacryocystotomy set. The bone was seemingly very thin. No force at all was required.

What appeared to be a collapsed cyst, which when intact would have been about the size of a small cherry, presented.

FIG. 3.



Photographed on May 5th, two months after the operation, and two weeks after the patient had returned home to the normal performance of all her household duties. The visible scar of the incision, already small, may later be entirely obliterated by excision.

nasal incision, through which a fine tube was inserted into the antrum. A single strip of ribbon gauze was passed up the nose into the pituitary fossa.

*After-treatment.*—Urotropin was continued for a week. The antral tube, changed daily, was discontinued after five days. The nasal wick was continued for ten days. Once daily the cavities were gently irrigated with hydrarg. binod., 1 in 2000; on the ninth day, when it was judged that a protective granulation barrier would have formed, this lotion was preceded by hydrogen peroxide. After two weeks the only local treatment was an alkaline wash twice a day.

*Abstract of Dr. Wyatt Wingrave's report.*—The cells composing the fragments resemble those of the pituitary body individually, but are not grouped like them. The cells seen are grouped irregularly, and so are strongly suggestive of a neoplasm. Only in one place are the cells arranged in typical columns. Seen under 112 oil-immersion lens, certain intracellular copper-coloured granules show that the endothelium of the cell columns is neoplastic. Examples of hetero-mitosis, such as are usually seen in malignant

epithelioma, are extremely scarce; moreover, epithelioma is excluded by the absence of paranuclei. The absence of granulation tissue excludes sphenoidal cell disease. The section resembles the anterior lobe of the pituitary gland, but with an endothelioma.

#### After-history.

The temperature was normal or subnormal, and pulse averaging 80-90 after the twelfth day. The external strabismus persisted. Epiphora was present, but only intermittent and of slight degree; presumably the upper part of the nasal duct is open into the naso-antral cavity. There has been no conjunctival chemosis or infra-orbital oedema. The general condition was brighter, more alert. For five days patient complained of a trickling of fluid (? cerebro-spinal) into her mouth, but it was not possible to obtain any of this for examination. For two days she vomited about once hourly clear greenish fluid; the vomiting continued, with gradually abating frequency, for nearly a week. This duration made it improbable that the anæsthetic was the cause. Possibly the urotropin, which was continued for a week after operation, was responsible; but vomiting was a feature of her condition long before her operation. The gastric irritability prevented her from retaining sugar when given by the mouth to test her sugar tolerance. And even when spontaneous vomiting had ceased she would not retain sugar, even when heavily flavoured. She was allowed out of bed on the eighteenth day.

Headache has been entirely absent since the operation. The only sensation she complained of was hyperæsthesia of the scalp, which disappeared with the removal of the bandage. Patient had anosmia. (N.B.—The right nasal cavities were not touched at operation.)

#### Vision.

Rough tests made during the days following operation showed that with the temporal side of her left retina (nasal side of field) she could see as follows: fingers on the first day; type  $\frac{1}{2}$  in. high at 2½ ft. on the third day; type  $\frac{1}{8}$  in. high at the same distance on the fifth day.

On March 22nd (fourteenth day) Dr. Hawthorne reported as follows:—"Pupil reactions: R., normal; L., sluggish. No change in either disc. No post-operative oedema of discs. Vision: R., 6/12; L., 6/36. Test type read R., J. 1 slowly, J. 2 easily; L., J. 14."

*Visual fields.*—See charts; for convenience of comparison with the former record, the perimetric tracing already given under notes of Sept. 18th, 1917, is reproduced as a black line. The extent of the fields during the period preceding the decompression operation was not charted, because there was on the left no field to chart; at this time the raised intracranial pressure was shown by the headache also. (See Dr. Hawthorne's notes of June, 1918, and Feb. 22nd, 1919, when the vision on the left side is recorded as only perception of light.) The anosmia persisted.

On March 29th (twenty-first day) the sense of smell had been present during the last 48 hours. She was much brighter. No change in optic discs or in divergent squint. There was no return of the diplopia from which she had suffered in 1917, before her sight failed. Vision:—R., 6/9, L., 6/36; one letter 6/24. Type read: R., J. 1 slowly, J. 2 easily; L., J. 10.

*Visual fields.*—See charts on which the earlier tracings have been superimposed.

*Dr. Hawthorne's notes.*—April 2nd.—Blood pressure: systolic, 100 mm.; diastolic, 80 mm. Visual fields not materially affected. Discs as before. Vision: L., 6/24, three letters. Type: R., J. 1; L., J. 10. April 3rd.—Yesterday patient was out on the verandah; to-day she has what she describes as a bilious attack. The inner canthi and the region just below it are oedematous and a little red, for the first time (? dacryocystitis). T., 100·8° F. April 15th.—Pyrexia (April 3rd) subsided next day. Oedema at inner canthus has subsided. Sugar tolerance tested as follows: April 13th, 7 P.M., sugar 3iii. given. Urine tested at 11 P.M., and again at 8 A.M. on April 14th. No glycosuria. April 16th.—Discs, I.S.Q. Vision: R., 6/9; L., 6/18. Type: R., J. 1; L., J. 6. Perimeter (vide charts). To discard eye-shield or dressings. April 21st.—No more photophobia. June 4th.—Her husband writes: "..... her health is excellent. She is a totally different woman, and improves each day."



## Clinical Notes :

### MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

#### THREE UNCOMMON ABDOMINAL CASES ILLUSTRATING SOME PITFALLS.

By NORMAN C. LAKE, M.D., M.S. LOND., F.R.C.S. ENG.,  
MAJOR, R.A.M.C.;

AND

H. K. KEVIN, L.R.C.P. & S. IREL.,  
CAPTAIN, R.A.M.C.

THE following cases occurred within a short period at the Prisoners of War Hospital, Oswestry. They are recorded because of their rarity, and also indicate some pitfalls.

#### *Traumatic Diaphragmatic Hernia.*

CASE 1.—German prisoner of war, aged 20. Wounded Sept. 27th, 1918; admitted to this hospital Oct. 5th, 1918, with gunshot wound of left side of chest. Small entry mark in fourth interspace about 3 inches from mid-line; bullet felt subcutaneously just mesial to inferior angle of scapula. His field-card recorded hæmoptysis for a few days in France. Upon admission the entry wound was a mere scar; no hæmoptysis or pathological sign in the chest. On Dec. 11th he was up and due for discharge, but returned to bed complaining of pain in the left hypochondrium and constipation; he vomited once after food. No pathological lesion detected; general appearance and condition good. The following morning he was rather collapsed; abdomen considerably distended. The pain in the left hypochondrium continued; also tenderness present. Temperature 95.2° F., pulse 120; tongue dry and furred. The left chest was abnormally resonant and the heart dullness obscured. Two enemæ were given without result. Provisional diagnosis was intestinal obstruction, probably due to band in splenic region.

*Operation.*—Anæsthesia was very difficult owing to the rapidly increasing dyspnoea. Abdomen was opened in mid-line as rapidly as possible with a view to relieving this. The distended intestines were allowed to come out of the wound. No relief to respiratory embarrassment. The transverse colon was enormously distended; the obstruction obviously lay somewhere in the region of the splenic flexure which could be felt drawn up under the left dome of the diaphragm. At this point respiration ceased entirely; all the usual means of resuscitation were employed with no response.

*Autopsy.*—An aperture was found in the tendinous portion of the diaphragm on the left side, admitting four fingers; a considerable coil of the splenic flexure of the colon had passed through the opening. Strangulation had occurred at the sharp edge of the aperture. The bowel occupied practically the whole left side of the thorax; lung was compressed to a small mass on inner aspect and heart displaced well to right.

The bullet in its passage had passed tangentially across the dome of the diaphragm. The scar so formed had healed only to yield later when the intra-abdominal pressure was raised by exertion.

#### *Internal Hæmorrhage from Splenic Infarct.*

CASE 2.—German prisoner of war, aged 24. Admitted to this hospital on Sept. 28th, 1918, with diagnosis of nephritis. Upon admission the urine contained a small quantity of albumin, trace of blood, no casts. The heart was enlarged; soft organic systolic bruit at apex. A little œdema was present, distributed generally over the body. He was treated for nephritis; not much improvement. On Dec. 3rd and 4th he complained of pain in the left hypochondrium associated with tenderness. The following day he suddenly became blanched, the pain meanwhile increasing, the pulse very rapid and thin; temperature subnormal. Shifting dullness in the flanks more marked on the left side was noted. A diagnosis of internal hæmorrhage from the spleen was made; cause doubtful. Two or three old and recent pinpoint hæmorrhages in the conjunctivæ were noted; retinæ normal.

*Operation.*—When the patient reached the operating theatre his general condition was so bad that it was decided to transfuse him before operation. Saline infusion was immediately undertaken and a donor found. Rather over a pint of blood was transfused by the citrate method, the biological test being used for incompatibility. The patient improved somewhat, and as it is in our experience better to wait a short time after transfusion before anæsthesia, the operation was delayed. He was, however, obviously still bleeding rapidly and died before operation could be undertaken.

*Autopsy.*—General subcutaneous œdema. The heart was very enlarged; aortic and mitral valves sclerosed and on the surface many old and recent vegetations. Both lungs were œdematous. The peritoneum contained a large quantity of partially coagulated blood. One-third of the spleen had been converted into a large infarct extending back to the vessels in the hilum. Under the capsule, which had ruptured at one spot, was a fairly recent mass of blood clot; hæmorrhage was proceeding directly from aperture in splenic artery. The kidneys were "flea-bitten" and the mucosa of stomach and intestines showed similar points of hæmorrhage.

The case was obviously one of infective endocarditis, with an infected infarct in the spleen which had ulcerated its way through the wall of the splenic artery.

#### *Acute Idiopathic Dilatation of the Stomach.*

CASE 3.—German prisoner of war, aged 25. Admitted to this hospital on Feb. 3rd, 1919, with diagnosis of "acute abdomen." On the previous day after a midday dinner he was seized with a sudden pain in the epigastrium and shortly afterwards vomited. This seemed to give some relief and the case was not thought serious until the following morning, when he began to develop signs of peritonitis. No gastric history. Upon admission the condition was serious. He was continuously vomiting large quantities of slightly blood-stained material containing recognisable undigested food from the previous day. The abdomen was considerably distended, but at the same time quite rigid. There were shifting dullness in the flanks and tympanitic resonance over the front. The case was anomalous, but a diagnosis of peritonitis, probably due to perforation of a pyloric ulcer, was made and operation immediately undertaken.

*Operation.*—Abdomen opened in mid-line. The peritoneal cavity contained a large quantity of blood-stained, thin, purulent fluid. The stomach was enormously distended, occupying the greater portion of the whole abdomen; small intestines collapsed and pushed well down into pelvis. Stomach wall was thin and in places hæmorrhagic; no perforation found. A gastrostomy was performed by the Kader method and several pints of stomach contents were drained off. A large tube was inserted down to the duodenal region and another into the pelvis. The abdomen was sewn up, subcutaneous saline administered, and pituitary extract in 5 m. doses every three hours. The gastrostomy tube drained large quantities of increasingly blood-stained material. Death 17 hours after operation.

*Autopsy.*—The peritoneum contained some blood-stained fluid. The stomach was smaller than at operation, but its walls were so thin in places as to be quite transparent. The mucosa for the most part was deeply hæmorrhagic. The distension involved the first and second portions of duodenum; otherwise intestines were normal. No perforation or stricture; all other organs quite normal macroscopically.

The case fits in with the description of acute idiopathic dilatation of the stomach, usually a post-operative complication. In addition we here have a peritonitis most marked about the stomach. There are two possibilities: 1. That the peritonitis is the primary cause and the dilatation a secondary paralytic one. 2. That the dilatation is primary and the peritonitis due to the migration of organisms through the attenuated stomach wall. The man had been eating salted herrings; large masses of the sharp vertebral spines were found in the cæcum, the spines being so sharp as to perforate the bowel wall on the slightest pressure. The suggestion arises that infection may have been carried through the stomach wall in this manner, but the peritoneum usually deals very effectively with small infections of this nature. The case must, therefore, be left under the heading idiopathic.

We have to thank Lieutenant-Colonel R. Turner, R.A.M.C., for permission to publish these cases.

#### A CASE OF MULTIPLE OSTEOMATA OF THE SKULL BONES.

By C. N. SLANEY, M.R.C.S., L.R.C.P.

THE following case is recorded on account of the comparative rarity of the condition.

#### *Account of Case.*

The patient, aged 40, destitute of relations and having no recollection of his parents, mentally approximates to the cerebration of a child barely a quarter of his own age. To the best of his recollection, in 1888, when about 12, he sustained a blow on the right lower jaw from a cricket-bat; three months later he noticed a swelling (see figures, 1). This gradually increased in size, was painless, and unaccompanied



by any objective symptoms except for a sensation of cramp when he drank anything cold. This tumour was subsequently removed by operation. No evidence of fracture; right ramus of lower jaw was much thickened. In 1890 a similar small tumour (2) appeared over the left superior maxilla, attributed to a blow by a stone. It was followed in 1893 by a painless swelling (3) in the left lower jaw; no trauma. The fourth tumour developed gradually in 1895, a few months after his discharge from hospital; no trauma.



Multiple osteomata of skull bones.

Tumour 5, also in 1895, he attributes to knocking his head against a wall; it became gradually larger in size, but is now stationary. Probably the condition of the right eye is due to a tumour (6) similar to the others; no injury. He does not know when his eye trouble commenced, possibly in 1888; his vision was defective when he attended school that year. The bony outgrowths are in lower jaw bilateral. As a whole they give rise to no harmful pressure symptoms except in reference to the right eyeball.

The patient appears well nourished, is 5 ft. 1 in. in height, and weighs 109 lb. There is complete nasal obstruction, apparently due to a general swelling and turgescence of the nasal mucosa; also slight pharyngitis and hoarseness of voice. He professes to see best with a -12 D. sphere, but he prefers not to use glasses. The right pupil reacts to light and accommodation; left pupil dilated and fixed. With the margins of the orbits appearing normal, there is a small hard, movable tumour to be felt under the right upper eyelid, probably in relation with the lacrimal gland. The tissues of both upper eyelids are abnormally flaccid and overlap the cornea; an appreciable amount of the sclerotic is visible below each cornea, more marked in right eye; lacrymation is continuous. Proptosis of the right eyeball has been present since 1888; vision in both eyes more defective since 1894 and still getting worse. Some increase of tension in right eye; no apparent narrowing of visual fields. Media in both eyes hazy from muscae volitantes; discs and vessels smaller than usual. There are signs of old keratitis; positive Wassermann. His abdomen is protuberant and thorax rickety. There is marked indrawing of the skin with each heart-beat at its apex, apparently situated at left side of xiphisternal notch immediately below sixth costal cartilage. No dullness to right of sternum. His cranial nerves appear healthy except for loss of sense of smell. The angle of the mouth on the left side is drawn up, and he is unable to whistle. The left knee-jerk is absent.

#### Description of Tumours.

On examination of the several tumours the following points are observed:—

1. There is a linear operation scar 9 cm. in length along the lower margin of the mandible on right side from angle of jaw to symphysis; this scar is adherent in places to the underlying bone. The inner aspect of the lower jaw is smooth and regular, and appears normal on both sides; the

lower margin of the right mandible appears roughened, probably as a result of the operation. The alveoli and teeth are normal in position and regular in line; enlarged lymphatic glands in submental and submaxillary regions. The outer aspect of the lower jaw appears normal on the right side from the symphysis to tumour 4. No signs of recurrence. This tumour was stony hard.

2. There is a faint linear vertical operation scar on left side of nose about 1.5 cm. in length; also on the superior maxillary bone at this site a slight prominence, neither painful nor tender, but hard and bony.

3. This tumour extends from 1 cm. from symphysis to within 2 cm. of angle of left jaw. It envelops the lower margin of the mandible and extends upwards to just above a horizontal line level with angle of mouth. It is painless, hard, irregular in outline, circumscribed, and sharply defined; skin not adherent; it moves with the jaw and does not interfere with deglutition; no impediment to free movements of mandible. Observed from inside the mouth there is the appearance of a hard tumour growing from the outer plate of the mandible below the alveolar margin; there is no so-called expansion of the bone, but a tendency to fullness is noted over the upper part of the vertical ramus in the region of the parotid gland, but this fullness is not bony in character. He believes that this tumour is increasing in size.

4. This tumour extends from 4.5 cm. behind the angle of the right jaw to within 6.5 cm. of the symphysis; it does not envelop the lower margin of the bone, but extends up to the zygomatic arch; it is well defined, both anteriorly and posteriorly and at its lower margin, but seems to shelve off into the surrounding tissues at its upper part. It is hard, irregular in outline, and the margin of the lower jaw with its angle can be felt below the tumour, which has the appearance of growing from the outer plate of the bone below the alveolar margin, more or less in an upward and backward direction. The tumour moves with the jaw and the skin is not involved. He believes also that this tumour is increasing in size.

5. The tumour resembles those mentioned, is hard and bony, and painless. It appears as a circumscribed irregular swelling on the left side of the frontal bone 3 cm. above the orbital process; it is conical in shape, with its apex projecting upwards, outwards, and backwards, resembling a horn 3 cm. in diameter and 1.25 cm. in height. This tumour is stationary in growth, he thinks.

Parkhurst, I.W.

### A CASE OF CONGENITAL MULTIPLE SARCOMATOSIS.

By J. A. PERCIVAL PERERA, L.R.C.P., M.R.C.S.,  
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THE following case is of interest, on account both of its rarity and of the wide dissemination of secondary growths.

The patient, a full-term male baby a fortnight old, was admitted into the Sheffield Children's Hospital, under the care of Dr. H. Leader. Multiple rounded and nodulated tumours were scattered throughout the body—e.g., head,



Case of congenital multiple sarcomatosis.

thorax, abdomen, upper and lower extremities. These tumours, present from birth, were of varying sizes, from 1 x 1 x 0.5 cm. to 4 x 5 x 1 cm. There was superficial ulceration in the larger tumours; one or two on cheek and legs had started to fungate. The consistence ranged from jelly-like softness in the more superficial ones to more or less bony hardness in ones attached to the long bones, ribs, and skull.

The child weighed 10 lb. on admission, and was well nourished. He was then suffering from diarrhoea and also



bronchitis. Large masses, presumably enlarged mesenteric glands, were felt plainly in the abdomen. After a fortnight the child died. I did a post mortem on it and made the following report.

*External appearance.*—A well-nourished male baby weighing 9 lb. Numerous rounded tumour-like masses varying in size from  $0.5 \times 1 \times 0.5$  cm. to  $4 \times 5 \times 2$  cm. scattered throughout the body. The tumours seemed to arise from different layers of the body in different places—e.g., some from skin, some from connective tissue, some from muscles and their tendons, and some from periosteum. Many of the tumours, especially the larger ones and those where pressure had been brought to bear by the weight of the body, were ulcerated.

*Internal examination.*—Scalp and skull: Numerous rounded growths,  $2 \times 3 \times 1$  cm., ulcerating through the scalp and attached to the diploë of the skull. Apparently non-capsulated. Brain and meninges: Normal. Thorax: Thymus gland normal. Mediastinal glands matted together, very hard to the touch, and very much enlarged. Pericardium: The parietal layer contains one or two hard rounded nodules,  $2 \times 1 \times 0.5$  mm., not extending to inner wall. Heart: Normal. The ribs and vertebrae were studded with tumour-like growths apparently coming from the periosteum. Abdomen: Liver: Several nodules  $2 \times 3 \times 1.5$  cm. Spleen: Three nodules of various sizes. Right kidney: One nodule at lower pole. Left kidney: Normal. The retroperitoneal and mesenteric glands matted together into groups; very hard and in places as large as billiard balls.

Microscopic examination of sections cut from different organs and done at the Sheffield University, revealed small round-celled sarcoma.

It was quite impossible for me to say where the primary growth started. It is possible it started as a periosteal sarcoma of one of the bones and rapidly spread throughout the body by metastases.

As to family history, father and mother are healthy, this being their first child.

I am indebted to Dr. Leader for permission to publish this case.

#### A CASE OF CIRROID ANEURYSM OF PALM OF HAND.

By J. TODESCO, M.R.C.S., L.R.C.P., D.P.H. ENG.

THE following case appears uncommon, as there was no history of trauma or other cause to explain the condition.

The patient, a woman, aged 58 years, was admitted to the West London Hospital on April 8th, 1919, with the history that she had first noticed a swelling over the palm of her right hand 20 years ago. During that period it had broken down on several occasions, with discharge of pure blood. The bleeding had never been severe, and she had been able to do her house-work. For the last ten weeks a similar swelling had appeared on the palmar aspect of the right hand over the terminal phalanx of the middle finger; this had broken down and become septic. (See figure.)

The patient said that both the swellings over palm of her right hand and over middle finger had been painless, but since the latter had broken down she complained of a dull burning sensation in her hand. She was married, with four children; had had no miscarriages. The Wassermann reaction was negative; no bony changes by X ray; both arms were equal in length.



Cirroid aneurysm of palm of hand.

On examination, there was a rounded tortuous pulsating tumour over centre of the palm of the right hand, with some scarring of the skin near the base of the middle finger. The distal and middle phalanges of this digit were gangrenous. There was also some swelling with "mottling of skin" (which was unbroken) over the two distal phalanges of the right ring finger; and some engorgement of veins of forearm: On compressing the arteries at the wrist the swelling over the palm got smaller, but on releasing pressure it swelled out again. On auscultation a distinct "souffle" was heard over the palm, being conducted both upwards along the proximal phalanges of middle finger and downwards towards wrist.

Owing to spreading sepsis and pain the third finger was amputated on April 24th at the metacarpophalangeal joint.

My thanks are due to Lieutenant-Colonel Donald Armour, R.A.M.C., under whose care the patient had been, for permission to record this case, and to Sister Wilks, in charge of the X ray department, for the photograph.

## Medical Societies.

### ROYAL INSTITUTE OF PUBLIC HEALTH: LONDON CONFERENCE.

COMMENCING on June 25th the Royal Institute of Public Health held at the Guildhall a conference, in which the chief aspects of public health—the work of the new Ministry, the prevention and arrest of venereal disease, housing in relation to national health, maternity and child welfare, and the tuberculosis problem—were separately and fully discussed, the debates culminating in a series of resolutions which focussed the present position in regard to these problems. The inaugural meeting took place at the Mansion House, under the direction of the LORD MAYOR, who was supported by His Majesty King MANUEL, Earl BEAUCHAMP, Viscount KNUTSFORD, Lord WILLOUGHBY DE BROKE, Lord LEVERHULME, and others.

#### *The Lord Mayor's Speech.*

THE LORD MAYOR made a graceful reference to the imminence of peace, and to the generosity of Lord Leverhulme which had resulted in the Institute being well supplied with technical equipment, thus enabling it successfully to carry on during the trying time of the war. The Institute was also to be congratulated on at length seeing established that Ministry of Health which it had continuously advocated since it was first urged at the Dublin Conference in 1892. The fine work done by the Institute in the 30 years of its existence strengthened its case for endowment, especially now that there was a greatly increased activity in all that concerned the nation's health.

#### *The Need for a Permanent Endowment for Research Work.*

LORD LEVERHULME announced a donation of £100 from the King and a generous cheque from the Prince of Wales. Good health, he said, was at the very foundation of a large and profitable output. In order to carry out necessary research work in public health matters it was essential that the Institute should have a permanent endowment, and he earnestly appealed for financial support to that end. One of the objects was to found a national journal of preventive medicine, and for such a good programme as the Institute had set itself he thought there was a good case for a substantial Government grant. He had always been much impressed by the Institute's economy of management and efficiency of service, and he was certain the money received would be wisely expended. £30,000 was the sum asked for, and he proposed a resolution urging the Government to make a grant towards this amount.

H.M. King MANUEL (an honorary Fellow of the Institute), in seconding the resolution, said that everything which could now be done for the improvement of public health would be of the utmost importance. We had recently been living in times when brains, money, and everything we possessed were used for purposes of destruction; let the people now do likewise in the work of reconstruction. The one thing which above everything else won the war was the health of the country. In conclusion, His Majesty trusted that the knowledge gained in dealing with the men disabled in the war would be applied to the case of the civilian population.



Lord BEAUCHAMP, who was President of the Berlin Conference before the war, said we could not expect satisfactorily to deal with the reconstruction of the national life unless the standard of health of the community became higher than in the past; and he hoped the Government would suitably recognise the University work being done by the Institute in preparing students for degrees in public health.

Lord WILLOUGHBY DE BROKE also supported the resolution. He said the need was to bring to maturity as many British boys and girls as possible, and rear them in such surroundings, and with such knowledge of the fundamental laws of health as would enable them to promote national efficiency in the highest degree. In hoping for the Ministry of Health a great and increasing success he pleaded for a universal grasp of the leading facts of science, which was a fundamental necessity to the full power of the race.

Further support came from Sir THOMAS OLIVER and the Director of the Medical Department of the Navy, the DEAN of ST. PAUL'S, and Lord KNUTSFORD. Dr. J. UTTING (Liverpool) objected to the part of the resolution which asked for a Government subsidy, as it would mean, in his opinion, that the Institute would be under the "blighting influence of bureaucratic control."

The resolution was carried.

On the proposition of the BISHOP of HEREFORD, seconded by Dr. MARY SCHARLIEB, the Lord Mayor was cordially thanked for his hospitality.

#### I. THE WORK OF THE MINISTRY OF HEALTH.

Dr. W. R. SMITH (Sheriff of the City) presided at this session. He said it was difficult to exaggerate the far-reaching importance of training men and women to take up public health work. The school medical service originated with the School Board for London, and it was now a great satisfaction to find Sir George Newman, late medical officer to the Board of Education, attached to the new Health Ministry. Many health measures owed their origin to special efforts for local application only, efforts promoted by a Health Committee of some large municipality. This was the case with such measures as the Infectious Diseases Notification Act, that for the notification of tuberculosis, the Notification of Births Acts, while other measures dealt with town planning, a pure milk-supply, milk for mothers unable to suckle their children, &c. He hoped the new Ministry would not put into operation any schemes which would destroy or impair the usefulness of such bodies. He thought adequate support for research should be forthcoming from the Treasury, and those intended for conducting research should receive careful training to that end. They needed to have not only a scientific training, but patience, an analytical mind, and sound judgment. He pointed out that great powers were possible to the new Ministry through the channel of the Orders in Council that the Act provided for, which Orders became operative if no opposition came from either House within 30 days.

Sir H. KINGSLEY WOOD, M.P., spoke at some length on

#### *The Central Organisation of the Health Ministry.*

He hoped that the Consultative Councils would receive the benefit of the long experience of the Institute of Public Health. He thought that in former days and up till very recently the preventive aspect of public health had been almost entirely lost sight of; the problem had never been adequately tackled as a whole, but had rather been approached by jerks, stimulated in many cases by the menace of an epidemic or pestilence. He agreed there had been in this country an utterly inadequate provision for research, a beggarly £60,000 a year being the sum expended on it. A Medical Research Department was one of the equipments of the new Ministry, and this would be under the direction of the Privy Council; nothing short of this was adequate for a matter of such world-wide importance, for its activities would embrace the whole of the British Empire, with branches in every part. One of the most serious indictments against our health conditions had been that we had, to a large extent, taken a parochial instead of a national view of health affairs, and that view had been guided too much by considerations as to rate increases. For that he considered the Government were largely to blame, as they had not given sufficient grants to local authorities to enable them to carry on their work. Until the formation of the Health Ministry, 21 Government departments or sections were dealing with health affairs. There were a large number of

laggard authorities which needed to be stirred up to the adoption of the modern spirit in administrative affairs. He paid a tribute to the memory of Lord Rhondda, who did so much to bring about what all were so pleased to see established. With regard to tuberculosis, the employed class was entitled to such provision as had been made for sanatorium benefit, but a large mass of people had no right and no access to the same treatment. Many thousands of pounds were being spent in connexion with this disease, of which, he thought, about 75 per cent. was thrown away.

Dr. F. E. FREMANTLE (consulting medical officer for Herts) discussed the question of

#### *Local Administration in Health Matters.*

He had drawn much help from experience of military hospitals during the war; in civil work, however, considerable latitude must be allowed. The ultimate centre of the whole activity was the family life. Under the new Ministry health in the factory was left out at present, but he hoped it would soon be included. But little had been done as yet in the matter of national assistance for the poor professional and commercial classes. He urged that there should be one authority, out of which the separate activities should be developed as the need for them arose. He believed in coöperation on central bodies of persons with special knowledge which would be useful to the community. Prevention and cure could not, in practice, be separated, therefore there should be one administrator for both. The essence of public health progress should be a sense of individual responsibility, and measures would be most effective of which the public had become convinced as to their necessity.

Dr. J. MIDDLETON MARTIN spoke of public health administration in Gloucestershire, of which he is county medical officer. He emphasised the serious factors of distance and sparse populations, and therefore the need of improved transport to secure prompt consultations.

Lady BARRETT, M.D., dealt with

#### *The Women's Aspect of the Work of the Ministry of Health.*

The speaker made a strong plea for efficient home administration. The unit of the local area was the home, and the administrator of the home was the woman. Housing schemes might be perfect, but unless the women in those houses had the knowledge and the willingness to use the facilities which had been planned for them, housing schemes would not make any appreciable difference in the health of the country. The same was true of infant welfare schemes; there must be women workers who had access to the homes, otherwise even the women who attended instruction might hear all that was said and yet go home without doing anything. All strong and irresistible habits were learned in infancy, and the necessary health habits could only be inculcated if the women had not only the knowledge but also the goodwill to do it. The people who at the moment had the greatest influence in the home were women of three skilled functions—nurses, midwives, and health visitors. These women, therefore, required careful representation in connexion with the Ministry of Health, because they knew the difficulties met with in the practical application of the various schemes. Men and women were working together for the good of the race; it was not a male race or a female race, but both, and therefore both should be combined for teaching and for administration.

In the further debate a large number took part, and the following resolutions were passed and ordered to be sent to the Ministry of Health:—

(1) That this Conference views with satisfaction the contemplated creation of Advisory Councils in connexion with the work of the Ministry of Health, and urges that the services of those who have had long, wide, and practical experience in administrative and executive public health should be secured upon those councils.

(2) That in view of the large national demands which will be made on the Ministry of Health as an organising and controlling centre it is desirable that it should not be burdened with functions and details which may result in depriving the local authorities of a sense of responsibility and a sense of initiative.

(3) That in the view of this meeting sanitary inspectors, health visitors, and similar classes of public health officials should be adequately trained, and that the present system of examinations should be coordinated so as to secure one qualifying examination for the whole country.

(4) That in view of the invaluable services rendered by women who are serving as elected or co-opted members upon local authorities, or as officials of such authorities, this Conference is of opinion that women should be included in larger numbers on all advisory bodies, and that greater facilities be provided for the training of expert women workers in the homes of the people.



(5) That in the opinion of this Conference all questions comprised within the scope of port and maritime sanitation should receive the earnest attention of the Ministry of Health, and in order to ensure greater co-operation and confidence between British and foreign port authorities, the widening and readjustment of the agreements reached at the International Sanitary Convention are necessary.

(6) That greater use should be made of the services of the British Consuls in foreign ports in obtaining and transmitting information relative to the sanitary condition of the ports.

(7) That it is desirable that smaller authorities should be joined together with the view of securing the whole time services of medical officers of health and other sanitary officials.

## II. THE PREVENTION AND ARREST OF VENEREAL DISEASE.

The chair at this session was occupied by Sir WILLIAM MILLIGAN (Manchester) in the absence of Lord Sydenham. The chairman reminded the audience of the initial step in a national movement against these diseases taken by Sir Malcolm Morris. He impressed upon the meeting the widespread prevalence of syphilis and gonorrhœa and the large number of cases going about to-day in an infective condition. He assumed that none of those present were anxious to see a revival of the "C.D." Acts; the measure had been tried in nearly every country on the globe, and practically every country had given it up or was about to. The subject must be approached from a different angle; the public must be educated and shown the dangers of the disease and the calamities which followed in its wake. The universities devoted too little attention to the teaching of this subject; so widespread a disease should be carefully taught to all medical students. Women must be properly paid for their work, thus removing temptation from the path of the poor self-supporting girl. He hoped to hear opinions as to whether compulsory notification was advisable, now or at any time. If adopted was it likely to act as a preventive measure? A very important question was that of prophylaxis; should it be encouraged by the profession? Further, should inmates of institutions who were suffering from these diseases be retained there until they were cured? The present methods of treating syphilis were complicated, and required considerable technical skill, and he thought the aim of syphilologists should be to secure some method of treatment which was somewhat more simple and easily applicable, so that it could be put into a greater number of hands. It was quite a mistake to regard gonorrhœa in the light-hearted way which many people did, and it would be useful for this gathering to express an opinion on this. He regarded gonorrhœa as almost as destructive as syphilis. The danger in the matter of spread was not the street-walker but the clandestine prostitute, who used this as a means of eking out her underpaid living. He doubted if gonorrhœa, especially among women, was ever cured. He hoped the discussion would be focussed on a resolution.

### *The Woman's Standpoint.*

Dr. MARY SCHARLIEB presented the subject from the woman's standpoint, which was, she said, in the estimation of the public, somewhat of a novelty because women and children had been supposed to know nothing of this evil. Those who did not know of an evil could not protect themselves against it, and it was unwise to keep women in ignorance of the troubles to which they might become victims. It was still more criminal for parents to neglect to teach their children to value and respect their bodies, and how to maintain their bodies in purity, temperance, and chastity. When parents were either unwilling or unable to discharge that sacred duty they should suitably delegate it to others, such as schoolmasters and schoolmistresses. Dr. Scharlieb proceeded to speak of these diseases as they affect pregnant women and children before and after birth. A considerable percentage of the 100,000 deaths of unborn children which occur every year were due to these diseases. In England and Wales something like 800,000 babies were born alive every year, and of them about 100,000 died before the anniversary of their birth was reached, many from syphilis which they derived from their mother before birth. 20,000 die within a week after birth. None of the ordinary causes of infantile mortality—bad air, bad food, bad milk, bad maternal management, whooping-cough, measles, bronchitis—were operative so soon after birth; the majority who died so early did so because they were born in a dying state, a heavy percentage owing this to infection with syphilis. It had been calculated that about 30 per cent. of all the blindness of the country, 30 per cent. of the deafness, 16 per cent. of the insanity, and most of the

feeble-mindedness was due to venereal disease. Gonorrhœa as it affected women was a loathsome ailment and a dangerous disease. Evidence was given before the Royal Commission on Venereal Diseases that one-half of the sterility of the country was due to gonorrhœa, and a distinguished medical witness attributed one-fourth of the serious pelvic conditions which needed a major operation to the same cause. Yet an Irish medical student, when asked how he would treat these diseases, replied, "With contempt." There were now very few large towns which had failed to provide clinics and schemes for treating these diseases, a wonderful progress in less than three years, and the speaker urged the members of this Conference to do their best to get the work enlarged.

### *The Civilian Standpoint.*

Sir MALCOLM MORRIS treated the subject from the civilian standpoint, which, he said, was a more complex one than that of the Army, for in the case of the latter, masses of men were under strict discipline and instruction, while the ordinary population consisted of men and women, young and adult, some of them not of high intelligence, and with but a rudimentary sense of responsibility; hence they did not seek advice until the disease was far advanced, and were apt to withdraw themselves from treatment as soon as the obvious symptoms were suppressed. He referred with satisfaction to the propaganda work which had been carried out by the National Council for Combating Venereal Diseases, particularly during the war, in lecturing to two million men. The most promising form of propaganda was through teachers, for no boy or girl should go out into the world ignorant of sex perils, or of the value of sexual continence. He referred to the poster and other propaganda work, and said that the giving effect to the Report of the Royal Commission by the Local Government Board was one of the brightest incidents in the public health administration of this country. There should be no area without facilities of ready access for the treatment of these diseases. Some thought the demobilised soldier was spreading the disease; others that the soldier was really the victim of the non-prostitute girl and woman who during the war had fallen into a loose mode of life. Relaxations of various kinds at the present time favoured a recrudescence of venereal disease, such as followed previous wars. Prophylaxis he did not regard as a wise, but as a panicky measure, though he preferred not to enter into the ethics of it. By supplying a man with a prophylactic outfit, he was released from the restraint which might otherwise have been operative; certainly it would not diminish a tendency to promiscuity. Dr. Otto May had resigned from the National Council because that body did not countenance prophylaxis in that way, but its policy was still maintained, for otherwise the great moral forces of the nation would be antagonised to the Council. He moved:—

That in the opinion of this Conference it is absolutely essential, alike from the military and civilian standpoints, including also the interests of women and children, that legislation affecting venereal disease should be amended and harmonised, so far as it possibly can be, with legislation affecting other forms of communicable disease, the aim being to ensure continuity of treatment and the prevention of the spread of infection.

Mr. E. B. TURNER seconded the resolution. He said he felt sure there would be set up some form of confidential notification of these diseases, which would ensure that most important desideratum, continuity of treatment, and treatment which was efficient and skilled. This meant the surmounting of very formidable obstacles. Very few doctors, owing to the sacredness of professional confidence, would voluntarily consent to notification, but if it became a statutory compulsory requirement he thought most would soon fall into line without trouble. Legislators must be shown the necessity for some such revision in the law. He concluded by an appeal to do all that was possible to stop the activities of the venereal quack by means of prosecutions.

### *Inadequacy of the Present Measures.*

Dr. J. H. SEQUEIRA, who has charge of the London Hospital Venereal Clinic, said he was convinced more and more that the measures adopted at present in combating these diseases were inadequate and cumbersome, as well as expensive in time and money. He described the course of treatment, and explained the need for early advice, regretfully remarking that 40 per cent. of those who attended the clinic did not complete the treatment, despite the organised



efforts to follow cases up and the emphasis laid upon the taking of the thorough course. From the scientific standpoint these diseases were among the easily preventable, and the natural question was, Why were not prophylactic measures more thoroughly carried out? The reason was a moral, not a scientific one. For a long time he was against prophylaxis in this matter for that reason, but he had had proof of such important results from prophylaxis, which he narrated, that, in view of the great prevalence of the diseases, he had changed his opinion, especially as he failed to differentiate ethically between supplying a man with a prophylactic outfit, and giving him an address to which he could go for so-called "early disinfection" after the risk had been run.

Sir THOMAS BARLOW said that until adequate national provision for treatment had been set up it was undesirable to lay down penal regulations regarding notification. The more treatment centres were set up, and the more a kindly and humane tone pervaded their administration, the more would sufferers avail themselves of these means of cure. He gave the results arrived at by Dr. F. H. Teale in regard to the antiseptic function of soap and water in the case of the gonococcus. Exposed to a 2 per cent. solution of ordinary yellow soap for two minutes, only a trace of growth remained, and when exposed for four minutes it gave no growth at all. Answering Dr. Sequeira, he urged a full consideration of the moral aspect, as sexual promiscuity had been one of the fatal deteriorating influences in civilisation, seen in the decay of the Roman Empire. A loose morality on this question tended to weaken the marriage bond and produce all its dangerous sequelæ. He urged strict cleanliness, especially after risk had been run, but not the supplying of a prophylactic packet.

Mrs. GOTTO said the question was really as to how to make the provisions for treatment available to a mixed general community in a way which would be helpful medically without being harmful socially. Social, medical, and ethical ideals converged into one, for she did not believe a real truth was ever divided.

#### *Methods of Diminishing Venereal Disease.*

Dr. OTTO MAY said that to diminish these diseases two lines of effort could be used—reducing the practice of sexual promiscuity, or making such promiscuity less dangerous. The standard of conduct at the present time was very low. Only 9 out of 100 officers between 19 and 24 years of age did not admit sexual experience with females, a fact which connoted an equally low standard in the other sex. If that was the case after thousands of years of ethical teaching, did it not suggest that there would not be much progress in this matter along that road? With the present delayed age of marriage there was possibility of some damage arising from enforced chastity; alienists knew that much functional nervous disease, even going on to homo-sexual manifestations, ensued on enforced chastity. He did not say this by way of apology or of an incentive to unchastity, but the question had to be faced. As to the dangers arising from promiscuity, physically much was possible in the way of prevention by disinfection; the chief difference of opinion was as to the nature of the disinfection to be employed. But he agreed with Dr. Sequeira in seeing no ethical difference between telling people where to receive absolution from the effects of misconduct and telling them where to get a package which would give them similar absolution. Hospitals could not be induced to remain open day and night in order to be ready to give the "early treatment" at all hours, and every hour of waiting increased the danger to the victim.

In the further full discussion Mrs. PALMER (Southampton) urged the straight view on this national question, putting aside all hypocrisy. Ordinary people had two powerful impulses, those of self-preservation and the exercise of the sexual function, and it was necessary to find out whether our system of society catered for both. Seeing the low standard of morality at present prevailing, we must not allow high ethics to prevent us using every means to stamp out venereal disease. What people seemed afraid of was having against them the organised force of the Church. It was grievous that to hold views favouring prophylaxis meant resignation from the Council for Combating Venereal Disease.

Mr. POWELL pleaded that life for all classes of people must be made fuller and sufficiently interesting; they should not feel that sexual intercourse was their only form of amusement.

The CHAIRMAN, in putting the resolution, said all were agreed as to the need for teaching biology to children, and the proper persons to do it were the father to the son, the mother to the daughter. But if they objected to do it another means must be open. He had written to the headmasters of every public school in England asking whether they gave instruction in sexual hygiene. The reply from almost every headmaster was, that when they found that the boy had not been told anything about it—which was almost universal—the headmaster took him for a walk or had him in his study on the eve of his departure from school and told him what was necessary. That was the next best to parental instruction.

The resolution was carried with two dissentients.

(To be continued.)

## THE MEDICO-LEGAL SOCIETY.

### *Annual Meeting: Election of Officers.*

THE annual general meeting of this society was held on June 24th at 11, Chandos-street, W., Sir W. J. COLLINS being in the chair.

Mr. R. Henslowe Wellington was elected President for the ensuing year; Sir J. Macdonell, Mr. A. H. Trevor, Dr. M. I. Finucane, Dr. W. H. Willcox, and Dr. F. G. Crookshank vice-presidents; Mr. E. Goddard and Dr. B. H. Spilsbury honorary secretaries.

The reports of Mr. WALTER SCHRÖDER, the honorary treasurer, and of the honorary secretaries were adopted.

The CHAIRMAN referred to the work done for the society, since its birth in 1901, by the President-elect (Mr. Henslowe Wellington) and alluded feelingly to the loss sustained during the last 12 months in the deaths of two successive Presidents, Sir Samuel Evans and Dr. F. J. Smith, in their terms of office.

At the conclusion of the business of the annual general meeting an address was given by Dr. LIONEL WEATHERLY, entitled—

### *"A Point of General Importance: The Interpretation of Secs. 47 and 321 (ii.) the Lunacy Act, 1890."*

Dr. Weatherly said that he would divide his address into three parts: (1) a preamble; (2) a story; (3) a moral. By way of preamble he alluded to the necessity for care, on the part of lawyers, in the drafting of Bills, particularly those concerning matters of medical importance; and he insisted on the necessity for the participation of medical interests when such Bills or Acts are in contemplation. His "story," which was narrated impersonally, referred to incidents which are already widely known, and was concerned with the events that followed the request made to a consultant in lunacy, by the relatives of a certified lunatic, to visit that person in a county asylum where he was actually a paying patient. Difficulties in obtaining the consent of the superintendent of the asylum to the proposed visit of the consultant were only overcome by the issue, under pressure, of an order for admission made by a Commissioner in Lunacy; but, although physical admission to the asylum and access to the patient were obtained, the consultant did not in the event secure either personal communication with any medical officer of the asylum or the opportunity of being informed, by a perusal of the records or otherwise, of the patient's case. Legal action was taken, on behalf of the patient's relatives, with a view to the overcoming of what was considered to be the intentional withholding of information necessary if the visit was to be other than a fertility; and it was submitted that, on a certain interpretation of Secs. 47 and 321 (ii.) of the Act of 1890, merely physical admission to the asylum and access to the patient was not a proper compliance with the order of the Board of Control. The action failed; it being held by Mr. Justice Darling that the order had been technically fulfilled, and that there was no power in the Board of Control to order the production of the records to an independent consultant visiting a patient at the request of the relatives.

Dr. Weatherly discussed the extent to which, in his opinion, this ruling was open to dispute, and urged the necessity in the interests of the insane for an alteration in the law, if, indeed, it has been correctly interpreted by Sir Charles Darling. Dr. Weatherly drew attention, moreover, to an early contention of the Board of Control during the progress of the events narrated, that such a proceeding as



the visit of an independent medical man to such a patient in a county asylum is "unprecedented"; and he emphasised the fact that it had been repeatedly stated (and there was nothing to show the contrary) that the action taken by the asylum superintendent, whilst seemingly of an obstructive nature, was in no sense personal and directed against the particular consultant engaged.

An important and interesting debate followed the address, in which Mr. GARDINER, Mr. HARVEY HARTLEY, Mr. GODDARD, Mr. HENSLOWE WELLINGTON, Dr. CROOKSHANK, and others took part.

#### *Summary of the Discussion.*

The CHAIRMAN, in summarising the discussion, said that he, an erstwhile chairman of the L.C.C. and a member of its Asylums Committee, certainly did not regard as "unprecedented" the admission of medical men to see asylum patients, and to inquire into various matters concerning them. But the question was one to be considered impersonally, and in discussing the purely legal aspects of the case he concluded by observing that there appeared to him good grounds for seeking amendment of the statute. In view of the representations made by the Medico-Legal Society in earlier years to successive Lord Chancellors in regard to death certification and coroner's law, he did not think it would be outside their province to make, if so disposed, similar representations in regard to this case also.

Dr. WEATHERLY briefly replied to various questions put to him, and thanked the society for the care and sympathetic interest with which the subject had been discussed.

## Reviews and Notices of Books.

*A Treatise on Orthopaedic Surgery.* By ROYAL WHITMAN, M.D., M.R.C.S. Eng., F.A.C.S., &c. Sixth edition, thoroughly revised. Illustrated with 767 engravings. London: Henry Kimpton. 1919. Pp. 914 + xii. 36s.

IN the preface to the sixth edition of this well-known work Dr. Royal Whitman instances the recent severe epidemic of anterior poliomyelitis in New York and its vicinity and the crippling accidents of war as two factors which have definitely established the place of orthopaedic surgery in the popular mind. But it is, as he says, rather the constant purpose of this specialty to prevent and correct deformity and to preserve and restore function which governs treatment from beginning to end, and is its chief distinction. It is not necessary to dwell upon the merits of this well-known text-book. Suffice it to say that it has kept well up to date. But the final chapter on military orthopaedics, the addition of which distinguishes this edition, calls for some comment. This chapter reminds us that the military authorities of the United States were able to make use of the Allies' experience and that they paid great attention to the examination and preparation of recruits. In this work orthopaedic surgeons took a large share. The primary examination decided whether a recruit should be unconditionally accepted or rejected, or if he should be conditionally accepted as fit for certain duties, but not for all the strains of active service. Under the rules of the selective service governing orthopaedic disabilities these conditional cases and many of the recruits who broke down under training were treated in special training-camps, where they were divided into groups according to the character and degree of their disability and drilled under the supervision of orthopaedic surgeons. Strains of the back and weak and disabled feet were the commonest disabilities.

The regimen in these camps was severe and calculated to discourage all malingering. Dr. Whitman lays great stress on the importance of eversion of the front of the foot as indicative of weakness. The normally low-arched foot is not thus everted and is generally quite fit for the strains put upon it. Weak and flat feet appear to be the bane of the citizens of the United States, and hence far more is heard of these disorders in military orthopaedic work there than in this country. Dr. Whitman makes the interesting statement that although strain or discomfort in the back is noted in about 25 per cent. of the recruits, in most instances it is relieved by the military drill and by the posture enforced by carrying the pack.

The treatment of fractures, of nerve injuries, and the preparation of amputation stumps are adequately dealt with, but call for no remark. They embody the conclusions to which four years of war have led most surgeons. A useful section is that on Attitudes of Election, in which the standard position in which an ankylosed joint is most useful is considered for all the chief articulations. We note that Dr. Whitman favours full extension as the position of election for an ankylosed knee, therein differing from Lieutenant-Colonel Brackett, the Director of Orthopaedic Surgery in the United States Army, who much prefers an angle of 135°. Sir Robert Jones, and many other experienced surgeons, however, agree with Dr. Whitman, whose opinion appears to us to be a sound one.

A short but useful section on Reconstructive Treatment concludes the chapter and the book.

*Nerve Injuries and their Treatment.* By Sir JAMES PURVES STEWART, K.C.M.G., C.B., M.D., F.R.C.P., Senior Physician to the Westminster Hospital, &c.; and ARTHUR EVANS, M.S., M.B., F.R.C.S., Surgeon and Lecturer on Surgery at the Westminster Hospital, &c. Second edition, revised and enlarged. London: Henry Frowde and Hodder and Stoughton. 1919. Pp. 250. 12s. 6d.

WE reviewed this book favourably on its first appearance. In its new edition it is increased in size by some 40 pages and contains considerably more illustrative instances of lesions of the various peripheral and cranial nerves. The authors have seen in all some 520 cases of nerve lesion, and they have marshalled their facts in a logical and readable way. The photographs and diagrams number some 40 more than in the original edition. In its present form the book is sure of appreciation by neurologist and practitioner alike.

*General Medicine: Practical Medicine Series.* Vol. I. Edited by FRANK BILLINGS, M.S., M.D. Chicago: The Year Book Publishers. 1919. Pp. 622. \$2.50.

THIS volume is the first of a series of eight, each on different aspects of medicine, published at intervals throughout the year, and each reviewing 12 months' original work on the subject with which it deals. The first volume on general medicine covers considerable ground, and includes abstracts from papers on such rare diseases as lipodystrophia progressiva. We find no reference here to the work of Dr. Lewis on the effort syndrome. Possibly this is not considered to come within the range of general medicine. The work is classified into various sections. That on tuberculosis may be taken as a fair sample of the quality of the whole volume. It contains no striking papers, but some are worth careful study, especially those on errors in diagnosis (p. 25) and Roentgen ray diagnosis of pulmonary tuberculosis (pp. 27 and 29), and on clinical experience with Koga's cyanocuprol (p. 59). The others deal with a variety of subjects, including nomenclature, system of examination, lung reflexes, artificial pneumothorax treatment, tobacco-smoking, gastro-intestinal disorder, the tuberculous soldier, and prognosis. Writing on the last Dr. Fishberg omits to emphasise the prognostic value of progressive fibrosis, and in the paper on a system of examination no mention is made of the importance of determining the position of the heart and the area of superficial cardiac dullness.

The articles seem to be abstracted almost entirely from British and American journals, from which practitioners without knowledge of foreign tongues can make abstracts for themselves, but it is clear that many will not have time or desire to do so.

*Irish Ethno-Botany and the Evolution of Medicine in Ireland.* By MICHAEL F. MOLONEY, M.B., Ch.B. N.U.I. Dublin: M. H. Gill and Son, Ltd. 1919. Pp. 96. 4s. 6d.

Dr. Moloney tells us in his preface that his book "aims to give in outline the evolution of medicine in Ireland, and to indicate the comprehensive character of Irish ethno-botany." The outline is exceedingly sketchy and we cannot see, so far as this book is concerned, that Irish folk-botany differs much from the folk-botany of England, Scotland, or Wales. Those who are acquainted with the FitzPatrick lectures of the late Dr. Frank Payne or those of Sir Norman Moore will find that very many of the medicinal uses of plants given by Dr. Moloney are also given by the two writers just cited. For instance, Yarrow—i.e., *Achillea Millefolium*—is stated on p. 29 by Dr. Moloney to



have been used as a cure for toothache. The same use of the same drug appears in the Anglo-Saxon translation of the Herbarium of Apuleius, quoted by Dr. Payne in his "English Medicine in the Anglo-Saxon Times." Again, Dr. Moloney gives an old Irish saying about salvia, which he translates as follows: "While the sage is on the mountain no one should die." In the well-known poem of the School of Salerno, *Regimen Sanitatis*, written about 1100 A.D., we find the following: "Cur moriatur homo cui crescit salvia in horto?" though with great good sense the writer gives the answer, "Contra vim mortis non est medicamen in hortis." On p. 44, Dr. Moloney says that saffron is used by the country people to-day "to bring out the rash of measles." This use is not confined to Ireland, for saffron tea is a common English rural remedy for measles even to the present day. Dr. Moloney gives a very full list of plants used in native Irish materia medica, but only in a very few instances does he say for what complaints the various preparations are used. As to Part II. of his book, which is called "History of Medicine in Ireland," it is so slight as to be of little value. The best features of the book are the indices, of which there are three, in Erse, English, and Latin respectively.

*Nerves of the Human Body.* By CHARLES R. WHITTAKER. F.R.C.S. Edin., Senior Demonstrator of Anatomy, Surgeon's Hall, Edinburgh. Second edition, revised and enlarged, with plates. Edinburgh: E. and S. Livingstone. 1919. Pp. 76. 3s. 6d.

Mr. Whittaker's edition of the late Professor A. W. Hughes's "Handbook on the Nerves of the Body" belongs to the *multum in parvo* type of text-book, for it is little more than a catalogue of the peripheral and cranial nerves and sympathetic system. So far as it goes it contains a practical compendium of knowledge bearing on its subject, but the form in which this is couched makes little appeal in these days. The book is intended, we presume, for the student of pure anatomy, yet, even so, we should like him to feel that anatomical knowledge is garnered for the purpose of its subsequent practical application in practice, whereas there is a regrettable want in the book of diagrams covering the points in which anatomy and clinical practice meet. There are no illustrations, for instance, of the segmental areas of the cutaneous nerve-supply.

#### JOURNALS.

*La Clinique Ophtalmologique*, November and December, 1918, and January, 1919.—The original articles in this journal include a description of Smith's intracapsular operation for cataract extraction illustrated by some excellent plates (A. S. and L. D. Green of San Francisco), articles by two of the editors, Jacqs and Darier, on the treatment of detached retina by puncture and subconjunctival injection, an article by Varrey-Westphal describing a new apparatus for the detection of partial colour-blindness, and others, besides the usual reviews of articles from other journals, French, German, Italian, Spanish, American, and a few English.

*Fourth Annual Report of the Ophthalmic Hospitals and on Ophthalmic Progress in Egypt during the Years 1915-1916.* By A. F. MACCALLAN, Director of Ophthalmic Hospitals. 1919. Cairo: Ophthalmological Society of Egypt. Bulletin of 1918.—From these reports we learn that the number of permanent ophthalmic hospitals built in Egypt during the ten years 1907 to 1917 was 13, and that there were in addition four travelling hospitals. The bulk of their work is concerned with trachoma and its sequelæ, the extent of this scourge being indicated by the fact that the proportion of the infected pupils in the primary provincial schools varied from 61 to 100 per cent. On the other hand, the danger of infection has probably been exaggerated, for Lieutenant-Colonel J. W. Barrett stated in the discussion on Dr. MacCallan's report that from February to November, 1915, when he was consulting oculist to the Forces in Egypt, he saw only 17 cases of trachoma amongst all the troops that came under his notice, and most of them were contracted in Australia. The number of operations performed for the relief of trichiasis and entropion in one year was upwards of 26,000. Next to trachoma, the chief cause of ophthalmic disease is the gonococcus, and Dr. MacCallan has for some years been noting the relation between the activity of this organism and the rise of the temperature curve, which appears to precede it at an interval of one or two months. The commonest causes of blindness, apart from conjunctival infection, are cataract and glaucoma, the percentage of blindness due to the latter disease being as high as 13.9. The glaucoma is nearly all of the chronic form and the usual

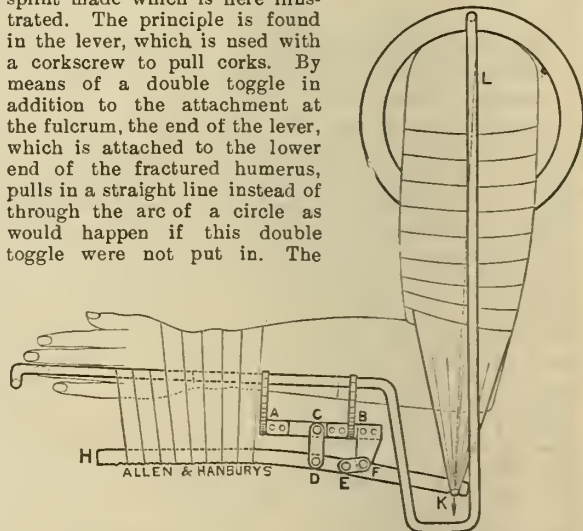
operation for it undertaken is trephining with iridectomy. Of the other papers contained in the Bulletin we may remark that in many of them the English sadly needs revision. There is one coloured plate of a case of coloboma of the choroid.

*The Optician and Scientific Instrument Maker.*—This weekly publication is frankly a trade journal, but contains articles of educative value to the optician dealing with the theory and practice of his calling. It also contains many articles dealing with the methods of sight-testing, and there is much controversial matter in which the claims of the sight-testing optician are championed. Into this controversy we do not propose to enter beyond pointing out that the refraction of children at any rate cannot be reliably estimated without the use of a mydriatic. We therefore regard the directions for correcting astigmatism and other refractive errors in children contained in the number for April 25th as a good deal worse than useless.

## New Inventions.

### A HUMERUS EXTENSION SPLINT.

THE difficulty in obtaining satisfactory extension in fracture of the humerus is well known to those who have had any large number to deal with. If the fracture is without loss of substance and without displacement it is found advisable to apply some form of extension if a perfect result is to be obtained; should there be displacement the need for extension becomes imperative; if there is displacement and loss of substance in addition—as so often happens in gunshot injuries—extension is necessary during the cleaning of the wound, even if foreshortening has to be resorted to later in order to get union. I have had the splint made which is here illustrated. The principle is found in the lever, which is used with a corkscrew to pull corks. By means of a double toggle in addition to the attachment at the fulcrum, the end of the lever, which is attached to the lower end of the fractured humerus, pulls in a straight line instead of through the arc of a circle as would happen if this double toggle were not put in. The



apparatus is attached to a Robert Jones splint. The extension apparatus is indicated by the letters. A B is an aluminium plate fixed to the under portion of the forearm section of the Jones splint, H K represents a lever attached to this plate at the fulcrum C D, the double toggle being shown as B F E. The extension is fixed to the lower part of the arm by glued stockette and the pull takes place from the lower end of it by means of tape attached to the lever at K, the direction of the pull being L K in the exact line of the intact humerus. Extension is obtained by an elastic upward pull at H by means of rubber tubing over a vulcanite pad moulded to the lower end of the forearm or it can be attached to the sides of the Jones splint. In the sketch the extension is shown to extend far up the arm, whereas it is fixed to the lower end of the arm only, and the hand is shown in a position midway between pronation and supination, but in actual practice the hand is put up in full supination; these explanations are necessary as the drawing is done so as to be as clear diagrammatically as possible.

The splint attachment can be obtained from Messrs. Allen and Hanburys, 48, Wigmore-street, London, W.

Whitby.

W. E. F. TINLEY, M.D. Durh.



# THE LANCET.

LONDON: SATURDAY, JULY 5, 1919.

## The Passing of the Local Government Board.

It is with genuine feelings of regret that the older generation of medicine must witness the passing away of the Medical Department of the Local Government Board; for, owing to the fact that the Board ceased to exist on June 30th last, its powers and activities have been transferred to the new Ministry of Health. The annual reports of the medical officers of the Board embody the history of medicine in its practical and scientific aspects as applied to public health and the prevention of disease in England and Wales, and record a progress which is admitted to stand unique among the nations. Progress in public health knowledge has been largely due to the pioneer work of the Medical Department of the Board, and those who can look back on the history of sanitation through any considerable period of years will see those decades distinguished by a gradual increase in sanitary efficiency, originated or promoted by the medical servants of the Board.

Forty-eight years ago, when the Local Government Board was constituted by Act of Parliament, the knowledge of preventive medicine and public health administration was relatively small, and each advance had to be by way of experiment. It was the intention of the first medical officer of the Board, Sir JOHN SIMON, to make the Department a Ministry of Health, but, by an unfortunate decision of the President, measures for the improvement of the public health were made subordinate to the administration of the laws for the relief of the poor. SIMON was further hindered in his efforts by another decision of the President which prevented the medical officer from taking initiative action without having first received the sanction of the lay secretariat, who at that time neither understood nor appreciated the need for sanitary reform. Prior to the constitution of the Local Government Board public health legislation had been scanty and imperfect, and one of the first duties of the Department was, with the advice and assistance of the medical officer and his staff, to draw up a sanitary code for the country. But before this could be done the necessary machinery had to be provided, and for this purpose the Public Health Act of 1872 was passed, which divided the whole of England and Wales into sanitary districts, and made the appointment of medical officers of health and inspectors of nuisances compulsory in every district. This was followed by the Act of 1875, which codified and extended all the previous public health legislation. These two Acts were the foundation of real sanitary progress throughout England and Wales. At the time when the Board was created Great Britain was being ravaged by a

virulent epidemic of small-pox, accompanied by great loss of life. This necessitated reform of the existing arrangements for vaccination, which was accomplished by the passing of a series of Vaccination Acts and by the inauguration of a system of inspection by the Board's medical inspectors with the view of maintaining a high standard of vaccination throughout the country. These measures did much to diminish the prevalence of small-pox, and the subsequent inquiries made by the Medical Department, which led to the removal of small-pox hospitals from London and other populous centres, had great influence in arresting the spread of the disease. We may also refer to the great campaign instituted by Sir JOHN SIMON for the abolition of filth nuisances, which were then of common occurrence, a piece of strenuous work which was instrumental in reducing the incidence and mortality resulting from enteric fever and other intestinal diseases, while it added much to the comfort and decency of life among the working classes. It had been his intention to carry out a complete sanitary survey of the country and to place the results on permanent record, but unfortunately he was only allowed to do this in piecemeal fashion. Nevertheless, the inspections made by the Board's medical inspectors were productive of great improvement in the sanitary circumstances and administration of the districts visited by them. These visits were generally welcomed by the local authorities and their officers, who were anxious to discuss local sanitary problems and obtain the advice and assistance of the Board's expert staff. But, the number of medical inspectors was totally inadequate to carry out the policy for which Sir JOHN SIMON and his successors, notably Sir GEORGE BUCHANAN, Sir RICHARD THORNE, and Sir WILLIAM POWER, were responsible. Despite repeated applications for increase of staff, this inadequacy was allowed to continue and may be said to have never been removed. In view of these various circumstances it is the more remarkable that the sanitary progress of England should have been so rapid, but towards the close of the last century the Medical Department of the Board made one of its greatest moves forward. The first essential of a scheme for the administrative control of infectious diseases is that accurate information respecting the number and nature of such cases should be supplied to the medical officer of health of the district. This involved a system of notification with all the trespass upon privacy involved therein. To meet the strong prejudices in certain quarters the Notification Act of 1889 was made adoptive, and ten years later, when the value of notification had been universally acknowledged, the measure was made compulsory throughout England and Wales by the passing of the Infectious Diseases (Notification) Extension Act, 1899. It became one of the chief duties of the Board's medical inspectors to make inquiry into the circumstances associated with outbreaks of infectious diseases, and the long series of reports on the subject forms the basis of much of our modern knowledge of the epidemiology of the indigenous infectious diseases. The Medical Department of the Board was also largely responsible for the reform in connexion with port sanitary administration which led to the abolition of the obsolete quarantine regulations and their replacement by a system of medical inspection of shipping. This system has proved an efficient safeguard against



the introduction of diseases from abroad, and has been of great value to the maritime trade of the country. To Sir RICHARD THORNE belongs the credit of having demonstrated to the representatives of other nations at various international sanitary conferences the beneficial results of this system, and the present international sanitary agreements are largely based upon the English model. To Sir ARTHUR NEWSHOLME the country largely owes its increased sense of responsibility for its childhood, while under his dispensation the prevention of tuberculosis received special attention.

It is only by the recollection of these different landmarks, and by comparison of present conditions with those existing at various points in our sanitary history, that the nature, quality, and extent of the work of the Medical Department of the Local Government Board can be adequately appreciated. It has been carried out, often in circumstances of great difficulty, and its full measure of success is even now scarcely recognised by the public. But it has proved of incalculable value to the country.

### Peace and Famine.

POST-WAR conditions are in some cases even more terrible than those of war itself. Thus Lord CURZON—and General SMUTS adds: "We witness the collapse of the whole political and economic fabric of Central and Eastern Europe. Unemployment, starvation, anarchy, war, disease, and despair stalk through the land." While our public men have waited until the signature of the Peace Treaty to make these terrible facts generally known, they have long been realised by the initiated. The danger of epidemic disease has been so real to the inhabitants of the smaller European States that certain of them, though still in a state of war, sent representatives to arrange common measures of hygienic defence at a meeting held under the presidency of Dr. FERRIERE in Vienna. A sample or two of the findings of this International Red Cross Commission will suffice. In the Budapest Maternity Hospital, where 16,000 confinements take place annually, there were no sheets,<sup>1</sup> while the mattresses on which patients lay were filthy for the lack of means either to wash or to disinfect them. Dr. F. BLANCHOD, engaged in fighting typhus in Eastern Europe,<sup>2</sup> wrote of the entire absence of soap, linen, and medicaments, the resistance of the whole population being at the same time dangerously lowered as a result of famine and fatigue. Mr. R. KATZ, of Prague, who has recently been travelling with the Hoover Food Mission, recounts a terrible story of famine in the Erzgebirge<sup>3</sup>—the mountainous district between Saxony and Czecho-Slovakia. He computes that in these rural communities 90 per cent. of the children are rachitic, while hunger-œdema is so common as to be the rule.

If further proof were necessary of the physical effects of starvation on the population of Central Europe a summary is now available of RUMPEL's address on the effect of the war on nutrition, delivered at the Hamburg Medical Society at the beginning of April. Loss of weight to the extent of 20 or more per cent. he regarded as normal. Although certain cases of gout and fatty heart might have gained some advantage, yet in many

otherwise healthy people a symptom-complex developed, shown subjectively by palpitation and precordial pain increasing to attacks of pseudo-angina, objectively by diminution of the cardiac dullness, mobility of the heart on change of position, reduction of blood pressure, enteroptosis, wandering kidneys, dropping of the stomach, tendency to hernia with incarceration. Among the children, in whom during the first war-year little harm was noticeable, general weakness was now the rule, and a limitation of the stature proper to their age. To the famine known as "hunger-œdema," first described in 1917 by himself and later by VON JAKSCH, 22,000 cases had fallen victim in German Bohemia alone, with a mortality of 4 per cent. In Vienna a condition resembling osteomalacia had arisen. Tuberculosis had increased both in severity and in contagiousness. As regards illnesses in general, the length of convalescence was increased, hypersensitiveness towards remedies frequently showed itself, the blood changes included an increase in lymphocytes, with many cases of severe pernicious anæmia. Common also were gastric ulcer, the gastro-cardiac symptom-complex of ROEMHELD, polyuria, enuresis, and rapid surrender to fatigue. Apart from the terrible mass of suffering involved, these observations are of great intrinsic interest.

For the relief of this general distress our Treasury has agreed to add an equal amount to funds raised by voluntary organisations. To assist them in spending wisely the important Memorandum which we print on p. 28 has been drawn up by the Committee on Accessory Food Factors appointed jointly by the Medical Research Committee and the Lister Institute. The notes have been compiled with special reference to the famine districts of Eastern Europe, and the advice set forth is based upon the present state of our knowledge of the distribution of accessory food factors in natural foodstuffs and of the rôle played by them in preventing disease and in promoting health and growth. The antineuritic or antiberi-beri factor (water-soluble B), the fat-soluble A or antirachitic factor, and the antiscorbutic factor are described, and the foodstuffs in which respectively they do or do not occur are given in a table, which provides a convenient form for reference. This table is more comprehensive than any yet published, and indicates some interesting dietetic differentiations. Over 60 foodstuffs are thus catalogued. Chemists have not been able to throw much light on the composition and character of these accessory factors, which have, so far, not been isolated in their pristine state, and up to the time of the issue of this report their presence could only be determined by experiments with animals. So far as is known, the accessory food factors cannot be produced by the animal organism, and all animals are dependent for their supply directly or indirectly upon the plant kingdom. On the plant, therefore, rests the responsibility of averting the deficiency diseases. In time of peace the variety of food consumed by European nations protects them from risk of any shortage in these essential substances. Under present conditions, however, in addition to a general shortage of food, there is also a great restriction in variety. For the sake of the populations of Central and Eastern Europe there is abundant reason for spreading quickly a knowledge of the principles set forth in this report to guide the new spirit of generosity and humanity, born in the hearts of the peoples in this great hour of common suffering and sorrow.

<sup>1</sup> Journal de Genève, March 22nd.

<sup>2</sup> Gazette de Lausanne, April 25th.

<sup>3</sup> Vossische Zeitung, June 5th.



## Seventy Years Young.

It is only 15 years ago that Sir WILLIAM OSLER was appointed Regius Professor of Medicine at Oxford. If his friends on both sides of the Atlantic—and no man has more, or more attached friends, most of whom feel that he is their own private crony—had not united at this moment to give him certain anniversary volumes as an expression of their affection, and by so doing revealed his birthday, no one would have credited him with three score years and ten. True he has long been before the medical public and is steeped in the wisdom of the ages; more than 20 years ago a distinguished foreigner, meeting a Johns Hopkins physician, inquired, "And how is your Osler? He must be centuries old." But he is always sympathetically of the same age as the person with whom he is talking; indeed, he often remarks when anyone's age is discussed, "Oh, he is our age." Many a true word is spoken in jest, and as a practical joker of no mean ability the Regius Professor is well able to hold his own with even the youngest of us—but that is another story.

If it is a great power, and our American and Canadian cousins certainly possess it, to get at once on good terms with strangers, it is surely a much finer talent to keep up these friendships in the way that the list of contributors to his anniversary volumes proves Sir WILLIAM OSLER can do. It is a long generation since Sir WILLIAM OSLER left Canada for the United States, but he is always acclaimed as the greatest Canadian physician. It was said on his departure from Johns Hopkins that his American colleagues deplored the loss of the man even more than that of the physician, and that this was a true saying is shown in this country by the way he has brought men together in London and Oxford, which has now become the Mecca of the United States and Canada, both socially and medically. He was obviously the proper chairman, not only for the newly instituted Fellowship of Medicine, which will welcome to London and this country generally visitors from the Dominions, America, and our Allies, but also for an efficient post-graduate scheme in London which is to cater for their professional needs. The Association of Physicians of Great Britain and Ireland was due to his inspiration, and the *Quarterly Journal of Medicine* has been brought out under his guidance since its birth in 1907. As President of the classical Association he has, like his brother Regius professor at the University of Cambridge, maintained the proper conception of the scholar-physician, equally versed in the experiences of the past, the potentialities of advancing research, and the practical steps of progress. For Sir WILLIAM OSLER has just been appointed a member of the Standing Committee to inquire into the financial needs of his University, and to advise the Government as to the application of any grants that may be made by Parliament towards meeting them. University education in the United Kingdom will thus have the advantage of his conciliatory common sense.

But in spite of all these multifarious activities no one can think of the man without recalling his love for books and their authors. As President of the Bibliographical Society, as an active curator of Bodley's library, and as a judicious collector of incunabula and other considered treasures, he has enough work to fill up the spare time of most young men. Of his favourite authors, Sir THOMAS

BROWNE, MONTAIGNE, OLIVER WENDELL HOLMES, and the EGERTON YORRICK DAVISES, father, son, and grandson (a family whom it is hardly an exaggeration to say he has rescued from oblivion) he probably most closely resembles the Knight of Norwich. There are few if any medical men who can give such charming addresses, full of kindly advice and graceful humour. To read his "Æquanimity" is a never failing remedy for bad temper. Of his infinite variety there is much more to say, but this we hope to be here to do on the 100th birthday which is his by hereditary right; and in the meanwhile we may recall OLIVER WENDELL HOLMES'S prophetic dictum: "To be seventy years young is sometimes far more cheerful and hopeful than to be forty years old."

## Annotations.

"Ne quid nims."

### DISABLEMENT AND ITS RELIEF.

THE evidence of Sir L. Worthington Evans, Minister of Pensions, given before the Select Committee of the House of Commons dealing with the administration of sailors' and soldiers' pensions, foreshadows timely changes in the method of dealing with disabled men. The number of pensionable men is now 720,000, nearly half of whom, it is estimated, require industrial training; only 11,000 of these men are yet undergoing training, while another 37,000 are desirous of training. The Minister referred to the transfer of the work of training disabled men to the Ministry of Labour, and indicated that the part of the work retained by the Ministry of Pensions is the training and treatment of the men so long as it is necessary for them to remain under medical care. Not only the men now being discharged from hospital will be admitted to the six or eight new residential convalescent centres soon to be established, but also the men discharged during the war who have been able to follow some employment (mostly unskilled) but still require medical treatment to make them efficient citizens. The Minister thought that these centres might usefully provide for the tuberculous "of the non-infectious type" and the relatively small number of men with extreme facial disfigurement for whom surgery could do nothing. The most economical unit for administrative purposes in the official view is 500. The first centre to be set going will be the converted filling factory at Hayes (Middlesex), where there are a number of isolated buildings convertible into dwellings and workshops served by a main building suitable for administrative purposes. As the grounds are nearly 200 acres in extent a course of agricultural training will be available. Men passed on to the industrial classes of the Ministry of Labour who break down during training will be returned to the convalescent centre. Such a centre might eventually be used as a permanent village centre occupied by the men and their families, especially tuberculous men. One cause of delay in pensions work—excessive centralisation—is to be dealt with, as already announced, by a welcome process of devolution, resulting in the establishment of 13 regions—two in Ireland, one in Scotland, one in Wales, and nine in England—each of which will be in the charge of a director who will have full powers in administrative matters. The anomalous and difficult position of the



medical referee is to be remedied by instituting Regional Appeal Boards staffed by consultants properly selected. In future the neurasthenic man, for example, will be actually seen by neurological experts, and no awards will be altered on inexpert hearsay evidence. The man dissatisfied with his award will still be able to go to his Local War Pensions Committee, who will be entitled to have the case reviewed by the Regional Appeal Board; their decision must, from the nature of the facts, obviously be final for a period. If the man's condition becomes altered he can go to the local medical referee, who will have the findings of the Regional Appeal Board before him and will be able to certify to what extent the man's present condition differs from the condition found by the board; the Local War Pensions Committee will be able to finance the man to the extent of this difference.

#### MONOPHAGISM, PELLAGRA, AND SCURVY.

THE theory which connects the ætiology of pellagra with maize, originated by Lombroso, has for the last ten years become the subject of renewed discussion. While on the one hand the geographical distribution of this disease is in close relationship with maize cultivation, laboratory experiments on the other hand have furnished no positive results in establishing this association. Professor G. Volpino,<sup>1</sup> of Bergamo, has recently investigated the subject from the point of view of anaphylaxis in pellagrous patients inoculated with extract of maize, and has shown that the injection of 1 to 2 c.cm. of watery extract of spoilt maize produces in them a distinct reaction affecting the nervous system, the skin, and intestinal functions. Sound maize had not the same effect. These phenomena, clearly anaphylactic, are caused by a super-saturation of the organism of pellagrous patients already rich in maidic substances, by a new maidic substance introduced experimentally. Other experiments in guinea-pigs confirmed this. These animals, after an exclusive diet of maize for 20 to 30 days, were inoculated with 0.5-1 c.cm. of the serum of pellagrous patients and died within 1-3 days, while control animals inoculated with serum from healthy individuals survived, as was the case also with other guinea-pigs fed on ordinary diet even if inoculated with double quantities of pellagrous serum. An exclusive diet (monophagism) is not of itself invariably harmful, especially when it forms the traditional food of the species; sometimes, however, it is not tolerated and causes pathological phenomena, as in beri-beri (Professor Volpino adds) and gout. The reasons why guinea-pigs fed exclusively on maize die are complex; the want of autineuritic and antiscorbutic vitamins is probably less important than the deficiency of grass, which is the traditional food of the species. As a result of this, the fact comes into play that the molecular grouping of the proteins of cereals are not analogous to those of herbaceous proteins, and the amino-acid content also is different. Moreover, it is probable that every kind of unsuitable diet, if persisted in, favours the entry into the circulation of a definite quantity of protein not completely split up into amino-acids, which causes, on the one hand, alimentary anaphylaxis, and on the other, the appearance in the blood of

ferments destroying the proteins themselves. In monophagism, therefore, there has to be taken into consideration not only the absence of certain groups, but also the presence in excess of other groups which are toxo-sensitising. Pellagra cannot be caused by deficiency of proteins in a diet of maize, for the amount of these is enough to satisfy the requirements of human food. It is always a disease of poverty, but the specific feature is to be found in the toxic or toxo-sensitising action of its over-abundant constituents. In the same way Professor Volpino considers that in scurvy there is a process of sensitising of the organism by a diet which is too exclusive, being deficient in certain constituents and disproportionately excessive in others. The same is true also of sprue and beri-beri. Professor Volpino, in view of the toxo-sensitising factor in pellagra, is led to consider the possibility of artificially increasing the resistance of animals to an exclusive diet. His researches have shown how this can be done within certain limits and the possibility of the extension of the method to human beings. Dr. Volpino's views, which are of a highly speculative nature, will find a suitable test in their application to the prophylaxis of relapses in pellagra.

#### HEALTH WORK FOR THE WHITLEY COUNCILS.

ABOUT a year ago the Whitley Councils of the Potteries and Printers set up a joint health committee which sanctioned an experimental scheme for regular medical observation and research in industry. The experiment, described by Mr. E. Halford Ross in a lecture delivered on Tuesday last before the Industrial Reconstruction Council, was made in two large printing works, where the employees were informed by both their employer and the secretary of the trade-unions that a doctor would attend periodically to advise the workers on health matters. As a result many came forward and asked advice. Observations were made while work was in progress and much was done to show employees how they might work under better conditions. In addition, numerous cases of disability were discovered and remedied and the experiment was considered to have been most successful. Certain researches were done concerning fatigue, hours of work, the provision of seats, and the advantages of welfare work generally. It was discovered that the health committee of each industry is the best means of carrying out this work. Each industry differs; each has its own requirements. It is, therefore, much better for each industry to undertake its own welfare matters than to leave it entirely to any Government department. This experiment suggests that further valuable research in industrial medicine might be carried out on a larger scale under similar conditions. Sufficient work has already been done in London during the last two and a half years to indicate some of the lines along which research should be pursued. Catarrh, bronchitis, and chronic cough are the most common obvious ailments which affect the workers, and it is very rare to find a large office without somebody in it suffering from a "cold." It is quite certain that a considerable sum of money is lost in London every week owing to the reduction of output caused by these complaints, in addition to the wages paid during sickness. It might quite possibly be demonstrable by experiment that economy would

<sup>1</sup> *Annali d'Igiene*, May-September, 1918. Rome, Via Palermo, 58.



be effected if workers suffering in the early stages of catarrh were persuaded to stay at home until they recovered. Anæmia is also of frequent occurrence among the young women and girl workers, and handicaps their work greatly. Out of several hundred employees examined in three large clothing factories 63 per cent. of the girls were found suffering from anæmia. This common disease can be easily prevented if taken at once when it appears. If left until well advanced each case may require months of treatment. Its prevention is a matter of education, and a little medical advice to parents in childhood will stop much of this disabling affection. Here is a matter which an industrial medical service could take up at once, and in which, working in conjunction with the School Medical Service, it would achieve wonders in a very short space of time. Anæmia has a most distracting effect on work, and may last for years, producing far-reaching results in motherhood. Again, from work that has been carried out in connexion with munition works during the war it appears probable that improper feeding has been a considerable factor in the production of fatigue, and that the short, hurried, and scrambled mid-day meal, accompanied by the discomfort of waiting in queues and the curtailment of rest, has resulted in a diminution of output. These questions are for scientific study rather than for political speculation, and under the ægis of the Whitley Councils medical men might well find an opportunity for impartial observation in a sympathetic environment.

#### MENINGITIS IN ANTHRAX.

At a meeting of the Société Médicale des Hôpitaux de Paris MM. Delater and Calmels reported a case of a rare complication of anthrax, namely meningitis. The patient, an American soldier, on June 14th noticed a pimple on the left cheek, which was slightly swollen. On the following day he was sent to hospital because he was feverish. On the way he vomited three times and momentarily lost consciousness. When admitted he was seriously ill. He was pale, covered with perspiration, and stuporous. The rectal temperature was 101.8° F. and the pulse 90. In the left parotid region was a "button" about 1 cm. in diameter, flat, greyish-white in the centre, surrounded by a rosy zone. The whole parotid region was œdematous, and the condition extended to the neck. There were no enlarged glands. When put to bed he at once assumed a curled-up attitude. Kernig's sign was positive and the neck was a little stiff. There were conjugate deviation of the head and eyes to the right, lateral nystagmus, and fibrillary contractions of the eyelids and lips. There was no meningeal streak. For two hours the patient remained in this state. Then general convulsions suddenly appeared and recurred every five minutes. In the intervals the patient was excited, turned in the bed, and tried to raise himself. The attacks of convulsions merged into one another, and death took place four hours after admission, just as lumbar puncture was about to be performed. It was performed immediately after death. The liquid, removed by aspiration, was rosy and turbid. To avoid error puncture was performed in several places, always with the same result. This rapid succession of meningeal phenomena during the time that the patient was in hospital rendered exact diagnosis very difficult. There was evidently a very acute infection or

intoxication, and without doubt a close relation between the meningeal condition and the parotid lesion. The necropsy showed soft œdema of the parotid and cervical region extending beneath the sterno-cleido-mastoid muscle. The internal jugular vein was thrombosed. The parotid gland was slightly congested. The meninges and cerebral convolutions were covered by a network of dilated veins filled with very black blood. There were no meningeal adhesions. All the thoracic and abdominal organs were normal. The hypothesis of anthrax had not been definitely entertained because the pustule had not had time to develop. Those who saw the patient thought of a boil complicated by jugular phlebitis, with œdema of the neighbouring parts, but after the bacteriological examination they recognised that the soft and extensive œdema was best explained by the diagnosis of anthrax. This was made certain by microscopic examination of the cerebro-spinal fluid, which showed numerous, much-altered polynuclears and many Gram-positive filaments, containing spores, and free spores. The bacteria had the squat appearance with square ends characteristic of anthrax. Cultures were typical, and a guinea-pig inoculated therewith died in 40 hours with the usual symptoms and lesions.

#### STATE-APPLIED PHYSIOLOGY.

Mr. G. H. Roberts, the Food Controller, recently told the executive officers of food control committees that the total cost of controlling the food supply of the country worked out at about 10d. a year per head of the population. The Consumers' Council has since decided that this tenpenny rate is well spent, and has formally recommended the continuance of a Ministry of Food. At the Carlisle Coöperative Congress last month two resolutions were carried, the combined effect of which would be the continuance of many, if not all, of the measures taken during the war for regulating the distribution of food. A member of this congress declared that food control began two years too late and is ceasing two years too soon, and this was evidently a view which commended itself to the majority of his hearers. However insistently a large number of persons have demanded the removal of food control at the earliest possible moment, its abolition is being regarded by at least as many with apprehension. Their fears may be exaggerated, the iniquities of the food profiteer may not be as black as they have been painted. But the question does arise whether the law of supply and demand can be trusted to bring down prices rapidly and to obtain a just division of available supplies, or whether the limited amount of food likely to be put on the market in the near future will enable unscrupulous speculators to obtain monopolies which more abundant supplies would render difficult or impossible. The average citizen who dislikes the food profiteer cordially at the same time has a suspicion that the law of supply and demand must ultimately prevail against him. Nevertheless, he is anxious lest meanwhile the desire of him who has the longest purse to live luxuriously will operate to the disadvantage of those whose means are more limited.

The stringent application of the coupon system, when our supplies and our prospects of future supplies were at their worst, admittedly effected a necessary economy. It promoted and maintained a contented feeling among the population in general. Both good things. But it did more than this. It



enabled the whole nutritive problem of the country to be studied as never before by the best scientific brains, and this surely is the most cogent argument of all for the existence and maintenance of food control. It will enable the nation to retain the services of their scientific food advisers. How necessary this is the latest report of the Food (War) Committee of the Royal Society, to which we have already alluded, is sufficient evidence. This concludes with the pregnant words: "The above report shows how very inadequate is our present knowledge of the science of nutrition, and demonstrates the necessity of renewed investigations on almost every point discussed in it." Sir Auckland Geddes recently remarked that the universities, through the professors of the various faculties, had contributed more fully to victory than any other organised section of the community, and he begged men of science in future not to remain dumb at critical periods, but to come forward to help the country. It would be hard to devise a more efficient medium for the vocal help sought than such a Royal Society's committee. Professor E. H. Starling's recent Oliver Sharpey Lectures on the Feeding of Nations: a Study in Applied Physiology, were a luminous exposition of the results which may be thus obtained. Even the most cursory study of these lectures should convince our legislators that the scientific method will and must pay. Let them only compare the debit and credit sides of the food balance-sheet. The continuation in being of an expert advisory committee at the Food Ministry will serve to build up a body of sound data from which the needs of the community may be accurately computed. Nor is this the only department outside the Ministry of Health that needs such expert advice. The fixing of a minimum wage is ardently desired. On what basis should this be founded, the cost of living, the æsthetic conditions of labour, the amenities of life, or the actual energy expended? Here is another problem which applied physiology should help to solve.

#### DEPOPULATION.

AN aspect of the reconstruction problem which is gravely exercising statesmen is that of the maintenance of a sufficient population to carry out any projects of reform which may be deemed necessary. Perhaps, in course of time, the National Birth-rate Commission may have some helpful recommendations to offer, and meanwhile those who wish to learn how the matter presents itself to a Frenchman may care to read a work entitled "La Natalité," written by Professor Gaston Rageot,<sup>1</sup> in which he discusses the economic and psychologic laws which have determined modern views as to the place of the child in the social scheme. It is his desire, he says, "to dissipate some of the illusions which envelope the problem of natality," the principal being the belief that it is a simple one which may be solved by particular measures such as the award of premiums or the grant of allowances. His statement of the position is philosophical, and he displays none of the special weakness to which debaters of this subject are prone—an inability to realise that the demolition of an opponent's argument by means of a triumphant *reductio ad absurdum* does not, of itself, show that one's own case is any better. A low birth-rate is, he finds, associated historically with extremes of civilisation which are themselves incompatible with the existence of the family. It is natural, he

says, for human parents not to concern themselves about their children. "Ce n'est pas la nature qui protège l'enfant, mais la société." And society is for each of us only an abstraction which becomes concrete and living when it stands for "la patrie en danger." To the French mode of devolution of property, which has been held to discourage the production of large families, he attaches little importance, if only for the reason that in England freedom of testamentary capacity has not prevented a fall in the birth-rate; its effects, too, have varied—it stimulated natality under the Revolution and depresses it to-day. Summing up the various factors which he has dealt with at length he concludes that "la fausse démocratie produit le dépeuplement," but he is not without hope of better things.

#### TRAUMATIC ADDISON'S DISEASE.

THE subject of traumatic Addison's disease is discussed by Dürck,<sup>1</sup> who reports the following case. A hitherto healthy man, aged 48, was caught between a railway carriage and a revolving platform and had four ribs fractured. Apparent recovery took place, and he was able to resume his work in about six weeks, but a week later he had to give up owing to weakness in the arms and legs and palpitation. Bronzing of the skin of the face and hands gradually set in and the muscular weakness increased. Treatment consisted in the administration of suprarenal preparations, and death did not take place until about eight years after the accident. The autopsy showed considerable bronzing of the skin of the face, hands, forearms, and external genitals, and apparently complete absence of both suprarenals with a healed fracture of the sixth to the ninth ribs on the right side. On microscopical examination some necrotic fragments representing the remains of the medulla of the left suprarenal were found, while on the right side there was hardly any trace of the suprarenal, but remains of blood pigment indicated that a hæmorrhage had formerly taken place in this situation a long time previously. Tuberculosis could be excluded, and there was no evidence of syphilis.

#### A CHILD-BEARING STRIKE.

THE insertion at the front of the most recent number of the *Munich Medical Journal*, which has reached us, of a polemic against a threatened child-bearing strike in Bavaria is something of a portent. The author, Fritz Burgdörfer, a doctor of public economy holding office in Munich, begins by calling attention to the active propaganda at present being carried on in that city, directed towards a prevention of conception and an encouragement of intentional abortion, leading up to a demand for what amounts to a strike of child-bearers. This "communistic" programme, Dr. Burgdörfer tells us, assumes that the population of Germany is at present too large by 30 millions, and that since under present conditions the usual outlets in the form of exported goods or emigration are impracticable, the cry should be "No more children!" since even a wise peasant does not breed more cattle than he can feed. Largely attended public gatherings in Munich have, we learn, been instructed in the systematic use of conception-preventing apparatus, the instruments themselves being shown and their application described. Dr. Burgdörfer's reply to all this is

<sup>1</sup> Paris; Ernest Flammarion.

<sup>1</sup> Aertzl. Sachverständ.-Ztg., 1919, xxv., 73-81.



to quote at length Parts 1 and 2 of the 1919 Blue-book of the Bavarian Statistical Office giving the official figures for the changes in the population during the period of the war, which is over. The result is, he truly says, extremely sad. In place of the usual abundant excess of births over deaths the effect of the last five years upon the Bavarian population has been as if:

(1) One year and eight months long no marriages had taken place.

(2) Two years long no children had been conceived.

(3) Three years long double the usual number of human beings (excluding children under 5 years) had died.

The married couples in the country had not only substantially diminished in number but their average age had increased and their procreative ability was less. All in all, at the end of 1918 the baby budget showed a deficit of roughly 400,000. Applied to the pre-war German Empire as a whole, of which the Bavarian population formed one-tenth part, the profit and loss account might be so stated: 800,000 marriages not made, 4 million children unborn, 1.6 million military persons died, 700,000 civil persons died in consequence of the hunger blockade—as compared with normal times. These massive figures, Dr. Burgdörfer thinks, speak of a situation so serious that the communistic propaganda must be controverted at all costs. At the moment there are not too many children but too many adult men in Germany. A child-bearing strike would come too late and produce its maleficent results two decades hence, when they would be an anachronism. Any nation that practises a one-child system is going to its destruction. His motto is "Work, Peace, and Order," in the belief that "The greatest riches of any people consist in the people itself."

#### METROPOLITAN WATER-SUPPLY RESEARCHES.

THE thirteenth annual report on the results of the chemical and bacteriological examination of the London waters for the 12 months ended March 31st, 1919, was issued last week and presents some novel features, inasmuch as, arising out of the events of the war, certain important changes have been introduced in waterworks procedure. We gather from the observations of the Director of Water Examination to the Metropolitan Water Board, Sir Alexander Houston, that the new methods of water purification adopted will form the future policy of the Board. It is clear from the report that during the period of the war, and excepting temporary periods of unusual stress, the average quality of London's water-supply has been wonderfully well maintained, especially in view of the extraordinary difficulties, often of a cumulative sort, which the engineering department has had to face. Sir Alexander Houston admits, however, that it is disappointing to have to point out that for the current year the New River, East London (Lee), and Chelsea bacteriological results are the worst since the work was started under his control. The floods were responsible in the first two cases, and as regards Chelsea, the works "were asked to do too much in relation to the filtration area." The chlorination of the river waters has been continued, and this process, it is reported, succeeds considerably better than storage on the average, and is practically three times superior in its winter effects, when both the river water and the storage water give the least satis-

factory results. These statements are based on the results of bacteriological examination (the *B. coli* test). The saving of coal by the adoption of the chlorination method as compared with the storage method is a very remarkable factor in the case. Chlorination further has an important deterrent effect on the development of algæ or other vegetal growths, often a source of great inconvenience and trouble to water engineers. The Staines reservoirs were affected with these growths, which showed prominently in the photographs taken of the suspended matter, but they rapidly disappeared when chlorinated river water was once more used for supply purposes. Again and again these reservoirs were, during flood-time, heavily "seeded" with growths, yet when the floods subsided and chlorinated river water was again the source of supply the growths vanished relatively quickly. It would thus seem to be the case that when chlorinated river water is stored for only a short time there is no serious risk of growths, even if from time to time a reservoir water is used which contains growths in great abundance. These water researches have obviously involved much well-directed study and the progress reported is admirable.

#### THE DEATH OF LORD RAYLEIGH.

THE death is announced of Lord Rayleigh, in his 78th year. Thus has passed away one who, from the boyish days of his senior-wranglership, had devoted his life, with fruitful results, to the solution of problems of fundamental importance in physical science. Director of the Cavendish Laboratory at Cambridge, where he occupied the chair of experimental physics, he was led to study the physical properties of nitrogen from various sources, with the result that he found the nitrogen of the air slightly heavier than pure nitrogen obtained by chemical means. Could such a discovery be made more fitly than in the Cavendish Laboratory? The residue which the great Cavendish obtained in 1785 after oxidising the nitrogen of the air by "sparking" proved ultimately to be the factor which caused nitrogen in Rayleigh's experiment to be heavier. It was a heavier gas mixed with the nitrogen and subsequently was isolated in a pure state and called by Ramsay, from its inertness, argon. This led to the discovery of other gases in the atmosphere, and the methods employed brought helium to light. In many other directions Lord Rayleigh carried out investigations of both scientific and practical importance. His memoirs on sound, electricity, and optics formed a series of scientific contributions much valued by the Royal Society, of which he was President in 1905. He brought about, also, valuable reforms in the teaching of science and in educational methods generally. Physical science has lost one of its most distinguished exponents by the death of Lord Rayleigh; he is succeeded in his peerage by his son, Mr. R. J. Strutt, F.R.S., who is also a leading physicist.

#### INDEX TO "THE LANCET," VOL. I., 1919.

THE Index and Title-page to Vol. I., 1919, which was completed with the issue of June 28th, is published in this number of THE LANCET. We are glad to be able to restore this pre-war custom, now that it is justified by a more liberal supply of paper.



## ACCESSORY FACTORS IN FOOD.

THE Memorandum which follows has been drawn up by the Committee on Accessory Food Factors, appointed jointly by the Medical Research Committee and the Lister Institute, for the guidance of those engaged in administration of food relief to famine-stricken districts. It is signed by the chairman of the committee, Dr. F. Gowland Hopkins, F.R.S., and the secretary, Miss Harriette Chick, D.Sc.

*Introduction.*

Recent research has shown that the requirements of the human organism as regards diet cannot be met entirely by an adequate supply of protein, fat, carbohydrate, inorganic salts, and water. It has therefore modified the common belief of ten or more years ago, when the attention of physiologists was focussed upon the calorie or energy value of the diet. It is now established that, in addition to these necessary constituents, certain unidentified principles, known as accessory food factors or "vitamines," must also be present in order to maintain health and prevent the occurrence of "deficiency diseases." These substances have not so far been isolated, little is known of their chemical or physical properties, and at the present time their presence can only be detected by experiments with animals.

These accessory factors or vitamins are widely distributed among naturally occurring foodstuffs, and in time of peace, under normal conditions of food supply, the variety of food consumed by European nations protects them from risk of any deficiency in these essential substances. Under the conditions arising from the war a different state of things exists; in addition to a general shortage of food there is also a great restriction in the variety available, and danger from "deficiency diseases" is to be feared.

Of these diseases scurvy is the best known, and the belief that it is caused by some deficiency in the diet has long been strongly held. Recent research has added to the deficiency diseases beri-beri, rickets, and other less well-marked disorders of growth and departures from health.

The following notes have been compiled by the Committee on Accessory Food Factors in the hope that they may afford practical help to those occupied in the administration of food relief to the famine districts of Eastern Europe. The advice given is based upon the present state of our knowledge of the distribution of accessory food factors (vitamines) in natural foodstuffs and of the rôle played by them in preventing disease and in promoting health and growth.

*Accessory Food Factors.*

The accessory food factors at present recognised are three in number:—

(1) Antineuritic or antiberi-beri factor, identified with the "water-soluble B" growth factor of the American investigators.

(2) Fat-soluble A growth factor or antirachitic factor.

(3) Antiscorbutic factor.

As far as is known the accessory food factors cannot be produced by the animal organism, and all animals are dependent for their supply directly or indirectly upon the plant kingdom.

*Distribution and Properties of the Accessory Factors.*

1. *Antineuritic or antiberi-beri factor* ("water-soluble B" growth factor of the Americans).—This vitamine prevents the occurrence of beri-beri in man and analogous diseases in animals. It is also necessary to promote satisfactory growth in young animals. It is widespread, and is found to some extent in almost all natural foodstuffs. Its principal sources are the seeds of plants and the eggs of animals, where it is deposited, apparently, as a reserve for the nutrition of the young offspring. Highly cellular organs, such as the liver and the brain, contain considerable amounts of this vitamine; flesh contains comparatively little. Yeast cells are a rich source; so also are yeast extracts—e.g., "marmite." In the case of peas, beans, and other pulses, this vitamine is distributed throughout the seed, but with cereals it is concentrated in the germ (embryo) and in the peripheral layer of the seed which in milling is peeled off with the pericarp and forms the bran.

Beri-beri is occasioned by a diet composed too exclusively of cereals from which germ and bran have been removed by milling, as in the case of polished rice or white wheat flour. The disease is common where polished rice is the staple

article of diet to an almost entire exclusion of other food-stuffs. It is rare, though not unknown, where white wheat bread is eaten, because the consumption of this type of cereal food is usually accompanied by a sufficiency of other food-stuffs containing the essential principle. It is unknown where rye bread is the staple food, because in the milling of rye there is no separation of the germ.

2. *The fat-soluble A growth factor or antirachitic factor* necessary to promote growth and prevent rickets in young animals.—This vitamine appears to be necessary also to maintain health in adults, and it has been suggested that war oedema may be due to a lack of this factor in the diet. The main sources of this factor are two in number: (1) Certain fats of animal origin; (2) green leaves. The most notable deposits of this factor are in cream, butter, beef fat, fish oils (for example, cod-liver oil, whale oil), egg yolk. It is present in very small or negligible amount in lard (pig fat) and in vegetable oils, as, for example, linseed oil, olive oil, cotton-seed oil, coconut oil, palm oil; pea-nut or arachnis oil is reported to contain it in larger amount. It will be noticed that this factor is found chiefly in the more expensive fats.

While green-leaf vegetables contain the fat-soluble factor, root vegetables are deficient in it; war oedema has been frequently reported under circumstances in which root vegetables have formed a large proportion of the diet.

3. *Antiscorbutic factor*.—This vitamine is necessary in a diet for the prevention of scurvy, and is found in fresh vegetable tissues and (to a much less extent) in fresh animal tissues. Its richest sources are such vegetables as cabbages, swedes, turnips, lettuces, watercress, and such fruits as lemons, oranges, raspberries, tomatoes. Inferior in value are potatoes, carrots, French beans, scarlet runners, beetroots, mangolds, and also (contrary to popular belief) lime juice. Potatoes, although classed among the less valuable vegetables as regards antiscorbutic value, are probably responsible for the prevention of scurvy in northern countries during the winter owing to the large quantities which are regularly consumed.

Milk and meat possess a definite but low antiscorbutic value.

This vitamine suffers destruction when the fresh food-stuffs containing it are subjected to heat, drying, or other methods of preservation.

All dry foodstuffs are deficient in antiscorbutic properties; such are cereals, pulses, dried vegetables, and dried milk.

Tinned vegetables and tinned meat are also deficient in antiscorbutic principle. In case of tinned fruits the acidity of the fruit increases the stability of the vitamine, and prevents to some extent the destruction which would otherwise occur during the sterilisation by heat and the subsequent storage.

An appended table gives a summary of our knowledge as to the distribution of these three accessory factors among the commoner foodstuffs.

*Practical Application of the Foregoing Facts to the Prevention of Disease.*

1. *Prevention of beri-beri*.—It is unlikely that any danger of beri-beri will arise among the famine threatened districts of Eastern Europe as long as wholemeal flour from rye, wheat, barley, maize, or peas, beans, and lentils are provided. Mere shortage of food does not cause beri-beri, and poverty ensures that the whole grain is consumed for purposes of economy.

2. *Prevention and cure of rickets or growth failure in children or war oedema in adults*.—Evidence is accumulating that rickets is caused by a shortage not of fat as such, but of the "fat-soluble growth factor" which is contained in certain fats. Xerophthalmia, a severe disease of the external eye, leading, if untreated, to blindness, has also been attributed to lack of this factor. Infants and young children must therefore be supplied with the *right kind of fat*. To prevent rickets (1) full cream milk should be secured for artificially fed infants when possible; failing that, (2) full cream dried milk or (3) full cream unsweetened condensed milk. (2) is preferred to (3), and, in case of ignorant or careless mothers, even to (1), in order to prevent spread of infection and intestinal disorders. In all cases where (2) or (3) are used an extra antiscorbutic should be given (see below).

Sweetened condensed milk is undesirable for the reason that the degree of dilution required by the high sugar content renders the food, as prepared, deficient in the fat-soluble (antirachitic) factor as well as in fat and protein.

Milk and butter are the best sources of the antirachitic (or fat-soluble) factor for young and growing children;



Table showing the Distribution of the Three Accessory Factors in the Commoner Foodstuffs.

Classes of foodstuff.	Fat-soluble A or anti-rachitic factor.	Water-soluble B or anti-neuritic (anti-beriberi) factor.	Antiscorbutic factor.
<i>Fats and Oils.</i>			
Butter ... ..	+++	0	...
Cream ... ..	++	0	...
Cod-liver oil ... ..	+++	0	...
Beef fat or suet ... ..	+++	...	...
Pea-nut or arachis oil ... ..	+	...	...
Lard ... ..	+	...	...
Olive oil ... ..	0	...	...
Cotton-seed oil ... ..	0	...	...
Coco-nut oil ... ..	0	...	...
Coco butter ... ..	0	...	...
Linseed oil ... ..	0	...	...
Fish oil, whale oil, herring oil, &c.	++	...	...
Hardened fats, animal or vegetable origin ... ..	0	...	...
Margarine prepared from animal fat ... ..	(See below*)	...	...
Margarine from vegetable fats or lard ... ..	0	...	...
Nut butters ... ..	+	...	...
<i>Meat, fish, &amp;c.</i>			
Lean meat (beef, mutton, &c.)	+	+	+
Liver ... ..	++	++	+
Kidneys ... ..	++	++	+
Heart ... ..	++	++	...
Brain ... ..	+	++	...
Sweetbreads ... ..	+	++	...
Fish, white ... ..	0	Very slight, if any.	...
.. fat (salmon, herring, &c.)	++	+	...
.. roe ... ..	+	++	...
Tinned meals ... ..	?	Very slight.	0
<i>Milk, cheese, &amp;c.</i>			
Milk, cow's whole, raw ... ..	++	+	+
.. skim ... ..	0	+	+
.. dried whole ... ..	less than +	+	less than +
.. boiled " ... ..	Undetermined.	+	..
.. condensed, sweetened ...	+	+	..
Cheese, whole milk ... ..	+	...	...
.. skim ... ..	0	...	...
<i>Eggs.</i>			
Fresh ... ..	++	+++	±0
Dried ... ..	++	+++	±0
<i>Cereals, pulses, &amp;c.</i>			
Wheat, maize, rice, whole grain	+	+	0
.. germ ... ..	+	++	0
.. bran ... ..	0	++	0
White wheaten flour, pure	...	...	...
cornflour, polished rice, &c. ...	0	0	0
Custard powder, egg substitutes, prepared from cereal products	0	0	0
Linseed, millet ... ..	++	++	0
Dried peas, lentils, &c. ... ..	...	++	0
Peaflour (kilned) ... ..	...	0	0
Soy beans, haricot beans ...	+	++	0
Germinated pulses or cereals ...	+	++	++
<i>Vegetables and fruits.</i>			
Cabbage, fresh ... ..	++	+	+++
.. cooked ... ..	+	+	+
.. dried ... ..	+	+	V. slight.
.. canned ... ..	...	...	...
Swede, raw expressed juice ...	...	...	+++
Lettuce ... ..	++	+	++
Spinach (dried) ... ..	++	+	+
Carrots, fresh raw ... ..	+	+	+
.. dried ... ..	Very slight	...	...
Beetroot, raw, expressed juice	...	...	less than +
Potatoes, raw ... ..	+	+	...
.. cooked ... ..	...	...	+
Beans, fresh, scarlet runners, raw ... ..	...	...	+
Lemon juice, fresh ... ..	...	...	+++
.. preserved ... ..	...	...	++
Lime juice, fresh ... ..	...	...	+
.. preserved ... ..	...	...	V. slight.
Orange juice, fresh ... ..	...	...	+++
Raspberries ... ..	...	...	++
Apples ... ..	...	...	+
Bananas ... ..	+	...	V. slight.
Tomatoes (canned) ... ..	+	+	++
Nuts ... ..	+	++	...
<i>Miscellaneous.</i>			
Yeast, dried ... ..	...	+++	...
.. extract and autolysed ...	?	+++	0
Meat extract ... ..	0	0	0
Malt extract ... ..	...	+ in some specimens.	0
Beer ... ..	...	...	0

\* Value in proportion to amount of animal fat contained.  
V. slight = Very slight.

margarines made from animal fats are also valuable; those made from vegetable oils are to be condemned. If there is a shortage of butter it should be reserved for children, but if totally lacking the deficiency can be replaced by cod-liver oil and other fish oils or by eggs. If all animal fats are unavailable pea-nut oil should be selected in preference to other vegetable oils for preparation of margarines, &c., and some effort should be made to utilise the fat-soluble vitamins contained in green leaves.

Green leaves are a cheap and readily available source of the fat-soluble vitamins, and adults can probably maintain good health when animal fats are substituted by vegetable fats if green-leaf vegetables are consumed in fair quantity. In case of this vitamin the loss involved in ordinary cooking is not serious. Unfortunately infants or very young children cannot take green vegetables in the ordinary way, but the juices expressed from cabbages and other green-leaf vegetables, raw or even after steaming (not immersing in boiling water) for a few minutes, might be given even to infants if all other sources of this most necessary vitamin have failed.

Purées, carefully prepared from cooked spinach or lettuce, can be tolerated in small quantities (one teaspoonful daily) by many young infants, and the amount taken can be increased regularly with age.

In cases where rickets or growth failure or xerophthalmia are already well established a daily dose of cod-liver oil is essential in addition to all other procedure.

Pregnant and nursing mothers should have as liberal a supply of the fat-soluble factor as is possible. Rickets is not confined to artificially-fed children. Breast-fed children depend for an adequate supply of fat-soluble vitamins on the milk, which in turn depends upon the diet of the mother.

3. *Prevention of scurvy: use of germinated seeds.*—If fresh vegetables or fruits are scarce or absent an antiscorbutic food can be prepared by moistening any available seeds (wheat, barley, rye, peas, beans, lentils) and allowing them to germinate. It is necessary, of course, that these should be in the natural whole condition, not milled or split. The seeds should be soaked in water for 24 hours, and kept moist with access of air for 1-3 days, by which time they will have sprouted. This sprouted material possesses an antiscorbutic value equal to that of many fresh vegetables, and should be cooked in the ordinary way for as short a time as possible.

In case of shortage it should be remembered that salads are of more value than cooked vegetables. The extent to which the antiscorbutic factor is destroyed during cooking depends chiefly upon the time employed. When supplies are limited vegetables should be cooked separately and for as short a time as possible; they should not be cooked for long periods with meat in soups or stews.

Preserved foods, with a few exceptions, may be regarded as devoid of the antiscorbutic principle. Lemon juice retains some value in this respect; canned tomatoes (and presumably other tinned acid fruits) have also antiscorbutic value. *Canned vegetables are useless for prevention of scurvy, as also are dried vegetables.*

Infantile scurvy must be considered separately, as many of the above foodstuffs are unsuited to infants or young children. To avert danger all artificially nourished infants should receive an extra antiscorbutic. Cow's milk, even when raw, is not rich in the antiscorbutic vitamin; when heated, dried, or preserved, the amount contained is still further reduced. The most suitable antiscorbutic material to use is fresh orange juice, 1-3 or 4 teaspoonfuls (5-15 c.cm.) daily, according to age. Raw swede (or, if unavailable, turnip) juice is a potent antiscorbutic, and an excellent substitute for orange juice; to obtain the juice the clean-cut surface is grated on an ordinary kitchen grater and the pulp obtained is squeezed in muslin. Tomato juice, even from canned tomatoes, and grape juice can also be used; the latter is, however, less potent than orange juice, and a larger dose should be given.

Pregnant and nursing mothers.—If babies are breast-fed it is important that the pregnant and nursing mother should receive an adequate supply of antiscorbutic food in her diet. The popular belief that green vegetables are harmful in such cases is often without foundation. Infantile scurvy is not unknown in breast-fed children.

It is evident that many of the above deficiency diseases are rife among the populations of Central and Eastern Europe. It is essential, therefore, that the principles set forth in the preceding paragraphs should be fully understood by all persons engaged in administering relief to these districts.



## AN INDUSTRIAL MEDICAL SERVICE.

### II.—HOW TO START AN INDUSTRIAL MEDICAL SERVICE.

SOCIAL organisation has always followed the lines of evolution, wherein the cell came first, then a group of cells, then a nervous system; similarly, in the social world first came the family, then the tribe, then the governed nation: New services should be allowed to evolve, and not be forced into existence on plans drawn up in some official headquarters.

The need for an industrial medical service has been dealt with in a previous article; the present intention is to show how it can be started. Its subsequent evolution may thereafter be safely left to the future. The first point to have in mind is that a medical service to be effective should acquire the momentum of popular interest, which can only be obtained through direct touch with the personality of those it serves. This is fundamental, and its absence in the past from public health medicine is some explanation of why the average citizen has taken so little interest in the health of the community of which he is a part, although he is only too ready to discuss personal medical topics. The next point is consideration of the duties to be undertaken. These concern industrial birth, life, and death. Industrial birth is the engagement of workers; and here medical services are of great value. A medical officer acquainted with industrial processes may reject a heart case, a myope, or an incipient hernia for some processes, but safely accept them for others; as he gains more experience he will choose persons for special work according to their capacity as measured by alertness, physique, acuity of hearing or of vision; in short, he will adjust round pegs into round holes, and so do much to avoid the great economic waste of labour turnover, the result of the present method of trial and error which leaves the worker to try place after place until a congenial one is found; by thus examining each newcomer personal contact is established which should never be lost. Industrial life is the period of employment; and here skilled medical services are of even more value; to determine the existence of fatigue, the optimum hours of labour, the presence of faulty ventilation or bad lighting; to supervise the hygiene of workplaces; to arrange for dental supervision; to deal with outbreaks of epidemic disease; to advise on the provision of a canteen and its food-supply, of cloakrooms, of washing facilities, and of suitable overall clothing; to watch lost time and sickness records; to supervise closely the health of those employed on dangerous processes; to organise first-aid treatment and establish contact with outside medical treatment; to advise on compensation cases. Here personal contact should be maintained and strengthened, and the medical officer become the friend and adviser of all. Industrial death is the cessation of employment; and here the medical officer should inquire closely into the causation of dismissal or leaving so that he may ascertain where his practice is at fault; such inquiry should be for him what a post-mortem is to the physician and surgeon.

Every industry will have its own special problems; but the above short summary of the work to be done suggests where it must start—viz., in industry by the retention of whole- or part-time medical services by employers of labour. The employer will gain in the quality and quantity of output far more than the salary he pays; the worker will benefit by improved health, happiness, and earning capacity. A few employers have already taken this step; and probably more would follow if they could obtain medical men adequately trained, but there are not many who on perusing the above rough list of duties would consider themselves trained to undertake them. Two things are now needed, an increased supply of trained men and an increased demand for their services. The increased supply could rapidly be met by post-graduate courses held at medical schools in industrial areas; Birmingham, Bristol, Cardiff, Glasgow, Manchester, and Sheffield suggest themselves. Practitioners in industrial areas all suffer from lack of knowledge of how their patients earn their livelihood, and would willingly attend such courses. One group of the profession should in this matter take the initiative, both in pressing the schools to start courses and in attending the courses; we refer to the certifying factory surgeons. They already possess a recognised association and

are in touch with the factories and workshops; but the duties entrusted to them, as they are aware, are wholly inadequate to the needs of industry.

The increased demand would follow almost automatically from the existence of the supply for each trained practitioner in his daily work would influence the men and their unions on the one side, and the employers and their councils on the other. Both sides would soon appreciate the value of a medical attendant with an intelligent understanding of industrial problems and ready to use his knowledge to their advantage.

Our appeal, then, is to the great provincial medical schools to start post-graduate courses in industrial medicine directed to meet the needs of the district, and so be of direct and immediate benefit to the industries among whom they exist, in the sure and certain hope that the industries in their turn will react and give greater financial support to the schools. The schools need financial support, and it is more likely to be forthcoming if the schools pay attention to the particular needs of industry and establish clearly the value industry will get in return.

## MEDICINE AND THE LAW.

### *Treatment by Correspondence.*

AN inquest was recently conducted at Kensington, by Mr. A. D. Cowburn, on the body of a woman, aged 46, who died from tuberculosis and heart disease in the absence of treatment by any qualified medical man. According to the report of the proceedings in the *Times* for June 6th, it appears that until April last she had been treated by a throat specialist in Brazil, where she was then resident, and had, on coming to England, applied, through her husband, to the Alabone Institute in Highbury Quadrant, filling up a "form," and being supplied with an apparatus for spraying the throat, and with medicine. On May 31st the husband, finding that her condition was becoming very grave, wrote to the institute demanding the personal services of "the doctor who had the case in hand." On the following day it became necessary to call in a local medical man, who pronounced death imminent, as indeed it proved to be. Evidence as to the pathological conditions found post mortem was given by Dr. B. H. Spilsbury, who is reported to have said that, had proper treatment been given, life would have been prolonged. The husband of the dead woman having declared that he was under the impression that the "doctor at the institute was a qualified man," the coroner stated that he intended to call the attention of the proper authorities to the matter. It appears certain that in this case the inadequacy, at least, of "treatment by correspondence" for one in so grave a state of health, was not appreciated by those on whom the responsibility for her welfare devolved; but the husband evidently believed that the treatment he procured his wife was legitimate, and conducted by a qualified medical man in a proper manner, though in absentia. Any action that may be taken by the authorities will probably be conditioned by the strength of the evidence available that the husband had grounds extended to him for this belief: but it may be that, even if such evidence be not forthcoming, there is yet sufficient basis for action by the Society of Apothecaries, which society, it will be remembered, has the right to sue for penalties against persons practising as apothecaries without its licence. The practice of an apothecary consists, it is usually held, in attending and advising persons requiring medical treatment, and in prescribing, compounding, and supplying medicine for their cure and relief. Bone-setters and others of that ilk do not therefore expose themselves to the liability of such action. But it is clear that, in the interests of others who may be misled from one reason or another, the activities of the Alabone Institute call for close attention.

### *The Dispensing of Prescriptions at Night.*

At a recent inquest at Deptford it was proved that an insured person who had received a prescription at eight in the evening could not obtain the medicine till the following day because the druggists available would not dispense after that hour. In the view of the medical man who gave the prescription, the life of the patient, who died, might have been saved if he could have obtained the prescription at once. He stated that similar cases were happening every



day. The coroner expressed the opinion that in urgent cases druggists should be compelled to dispense at any hour of the day and night, and that the matter should be brought to the attention of the Insurance Committee. This, he was informed, had already been done without result. It would certainly appear to be useless for medical practitioners to be compelled, by public opinion if not by law, to attend patients at all hours—often for illness which is not serious or urgent—when in cases of genuine urgency the effort of the medical man is frustrated by the closing of the druggist's shop. It is for the public to bring about the remedy in their own interests.

#### *The Proof of Paternity.*

In a recent trial before Mr. Justice Darling a man indicted under the Punishment of Incest Act, 1908, raised the defence that the girl with whom, according to the evidence, he had had sexual intercourse, was not in fact his daughter. She had been born two months after the prisoner married her mother, but he denied that he had had, or could have had, access to the mother at the time when the child must have been begotten. The law presumes a child born in wedlock to be the legitimate offspring of the marriage, and when the Punishment of Incest Act was framed, in order to prevent intercourse between persons closely related in blood, the position of those connected only by a legal presumption was possibly forgotten in the drafting. Mr. Justice Darling, while referring to authorities of great weight against the course which he took, relied upon the Poulett peerage case as enabling the presumption of legitimacy to be rebutted. He therefore left it to the jury to say whether the girl was the daughter of the prisoner by blood or not, and told them that it was their duty to acquit him if they were satisfied that she was not his daughter in the sense indicated. The prisoner was found not guilty and discharged. Defences of this kind will probably be heard of again at similar trials, and it is to be hoped that they may not lead to undeserved acquittals.

#### *Professional Secrecy in the Eye of the Law.*

An interesting statement was made by the presiding judge during the hearing at the last Worcester Assizes of a case of concealment of birth. One of the witnesses, a medical man, was called in when the girl was prostrate, and after she had placed the body of the baby under the mattress. He said he had to perform an operation to save her life. The judge said he saw that the doctor in his depositions had stated that though he knew the child had been born, he did not think it his duty to inform the police, as it would have been a gross breach of professional confidence. The judge said there was no professional confidence in criminal cases, and it was the doctor's duty to inform the police. He did not blame the doctor for his view, but he thought it should be known that his view was wrong, as was that of the Association which advised him. The judge added that if a patient cut another person's throat it would be the doctor's duty to inform the police. There was no difference between these cases. In the result the girl was found not guilty. The question thus raised is, of course, not new and its solution is not easy. It has been frequently discussed, and an able exposition of the whole subject was given by the late Dr. A. G. Bateman, the Secretary of the Medical Defence Union, in a paper which, with a report of an interesting debate, is to be found in the Transactions of the Medico-Legal Society for 1904-05. It would appear that the dictum of the learned judge presiding at the recent Worcester Assizes is in absolute accord with the strict letter of the law. It is equally clear that the judge did not consider that, in this case, there had been any but a technical breach committed by the doctor. His actions were fully in accord with the paramount professional opinion which finds it repugnant to assume the office of informer, when knowledge of the indictable offence is obtained in the exercise of professional capacity. This opinion is clearly set out in our columns this week by Sir John Tweedy, President of the Medical Defence Union. Nevertheless, it is well that the letter of the law should be known, and that the responsibility for non-compliance, under certain circumstances, should be realised. A medical man in the exercise of his professional vocation has special opportunities for becoming aware of the commission of offences against the law, and special confidence is reposed in him. The law, however, while casting upon him no special duty, does not extend to him the special privilege

that it does to lawyers, who are exempted from disclosure of "professional secrets," even when these relate to the commission of criminal offences.

#### *An Action for Negligence.*

Two consolidated actions of medical interest were recently heard before the Lord Chief Justice and a special jury. Mr. W. A. Bowring sued Mr. M. L. Cook to recover the professional charges for performing an operation on Mrs. Cook. Mr. and Mrs. Cook sued Mr. Bowring for damages for negligence in the operation and in the medical treatment of Mrs. Cook. Mr. Bowring's counsel, after referring to his client's qualifications, gave a brief review of the case. The plaintiff, he said, was consulted by Mr. Cook in January, 1917, about his wife's condition, and made an examination as a result of which he diagnosed the case as one of fibroid tumour incarcerated in the pelvis and advised an operation for the removal of the tumour. For the defence it was alleged that the plaintiff had advised that Mrs. Cook was not pregnant, when, in fact, she was, and that he had not completed the operation which he had advised. To these allegations the plaintiff replied that he had stated that it was doubtful whether Mrs. Cook was pregnant, and that the question of pregnancy did not affect the decision to operate. In desisting from operating he had acted in accordance with the condition of Mrs. Cook as revealed by the abdominal section. Afterwards, and as a result of his treatment, the fibroid growth in the uterus subsided, and Mrs. Cook regained her health. The jury, after two minutes' deliberation, found for the plaintiff, and judgment was entered accordingly, both on the claim and counterclaim. It seems clear that Mr. Bowring, the plaintiff in this case, acted throughout in a proper manner, and in accord with the justifiable opinions formed by him at different stages during the progress of the case. It would be intolerable for a surgeon who, during an operation, finds evidence that satisfies him that a contemplated procedure should not be carried out, nevertheless, under penalty of being cast in damages, to be forced to complete the operation "contracted for" (if the phrase be permissible) or to forego his proper fees. Mr. Bowring is to be congratulated on the swift decision of the jury in establishing an important principle.

## AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

#### *The Second Wave of Influenza.*

SINCE the first weeks of April the presence of a second wave of influenza has been manifest in Victoria. The hospital accommodation has again been severely taxed, and the disease has been more widespread in the community than before. The increase has been very marked as a result of the Easter vacation, with its overcrowding in trains and public amusements. The restrictions in force during the last epidemic were not reimposed by the Government. The Minister of Health (Mr. Bowser) was last week announced to be suffering from overstrain, and the Hon. Mr. McWhae has been appointed acting Minister. It had been generally felt that a stronger policy was required at the Health Department, and there had been some slight friction with the Medical Advisory Committee on account of certain suggestions being shelved. It is understood that the new policy will include a special medical officer, with full discretion to manage the hospital equipment and general direction of the handling of a special organisation, apart from the routine of the Board of Health. As is not unusual, the emergency hospital accommodation has proved unsatisfactory and inadequate, but the chief difficulty is stated to be the shortage of nurses. Up to the end of April there had been about 1500 deaths from influenza in Victoria. In Sydney the disease became markedly epidemic early in April. Restrictions were at once imposed, including the prohibition of all public gatherings and the compulsory wearing of masks. The course and severity of the outbreak appear to have been much the same as in Victoria. About 700 deaths have so far occurred in New South Wales.

It is impossible to say what effect the restrictions have had. Probably they have in some degree mitigated the extent of the outbreak, but at the same time there have been other evils apparent as the result of these regulations which



may have outweighed their possible good effects. Commerce has been dislocated, and much hardship has resulted from loss of employment. The coal trade has been paralysed by conflicting quarantine authorities, and the occasion has been seized upon by the seamen to demand extra wages and insurance against influenza. No definite conclusion has been reached as to the value of inoculation or masks, but the most pregnant comment on these precautions is that the public has ceased to ask for them. The Federal Director-General of Quarantine, Dr. Campston, has published an analysis of some 2000 cases in the quarantine hospitals. In the meantime the Federal department continues to issue the vaccine.

During the past week the disease has appeared in epidemic form in Queensland and South Australia, but so far not severely.

#### *The Legality of Mask-wearing.*

During the period of compulsory mask-wearing in Sydney in January, Dr. Fox, a city practitioner, refused to adopt a mask on the score that it was unhealthy. Dr. Fox was arrested and appeared before a magistrate, by whom he was committed for trial before a higher court. The State Attorney-General has decided not to prosecute, but Dr. Fox is not satisfied with this attitude, and intends to proceed against the authorities for damages.

#### *Curious Case of Snake-bite.*

A remarkable happening is reported from the Riverina. A resident of a riverside town caught a large specimen of a Murray cod, and on opening the fish discovered a live snake, by which he was bitten in the attempt to withdraw it. He was treated by a companion with a first-aid outfit and subsequently by a medical man, and suffered no further ill-result.

#### *Lodge Dispute in Victoria.*

The dispute between the Friendly Societies and the Victoria branch of the British Medical Association which has been running on since last year is still unsettled. About half of the societies have agreed to accept the Association's model agreement, but some of the others decline to come in. Meanwhile the former lodge doctors appear quite satisfied with the position, which is that they are paid by the lodge for each visit. It is said that this results in far less work than formerly, and that the remuneration is better. The Orders which stand out are hoping that, the war being over, there will be a supply of men willing to take institute places in spite of the Association's refusal to recognise institutes.

May 6th.

## NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

#### *Calcutta University Medical Schools.*

THE Senate of the Calcutta University has approved of the affiliation of the Carmichael Medical College, Belgechia, to the final M.B. standard. This is the second medical college in Calcutta to affiliate.

#### *Plague, Cholera, Small-pox, Hookworm.*

The last weekly report issued shows the mortality from plague in India as 2417 deaths against 3047 seizures. In the Bombay Presidency there were 178 deaths; in Madras, 7; in Bengal, 23; in Bihar and Orissa, 320; in the United Provinces, 706; in the Punjab, 1029; in Burma, 63; in the Central Provinces, 32; and in Mysore, 21.

By last mail a serious outbreak of cholera among the employees of the Calcutta Telegraph Office is reported. About 115 telegraphists, clerks, and messengers, including 82 Europeans and Anglo-Indians and 30 Indians, have been attacked.

There has been a considerable increase of small-pox on the Kolar goldfield during the past month, as compared with any previous month since the present outbreak. There were 100 attacks and 30 deaths, bringing the total to 275 attacks and 88 deaths since July 1st, 1918. There was a recrudescence of plague during April, after a month of immunity, and cholera has also reappeared.

Dr. J. Borland McVail, Deputy Sanitary Commissioner, has opened a laboratory at one of the Bengal mills for the investigation and treatment of ankylostomiasis among jute

mill employees. So far as has been shown to date, in spite of the excellent sanitary arrangements provided in the mills, more than 50 per cent. of the coolies are infected with hookworm disease. The treatment is being carried out by the medical staff of the mills with the advice and help of Dr. McVail and his staff.

#### *Town Planning at Lucknow.*

The Lucknow Municipal Board has resolved to guarantee the payment of the charges of a town-planning expert to enable the Lucknow Improvement Committee to secure this gentleman's return to India and his advice on the details of the various improvement schemes during next cold weather.

#### *Trooping during the Hot Weather: Educational Distractions.*

An official communiqué published in India states that some 20,000 British troops of the post-war Army are now being prepared in England for service in India. It is expected that their despatch will commence in June. It has long been recognised that during the Indian summer boredom has much to do in producing a mental and physical condition which tends to the development of disease, and steps are being taken during this hot weather to prevent the ennui and lack of interest which has been so often the curse of the soldiers' life. It has been arranged that soldiers shall be afforded interesting and congenial occupation in their leisure hours. The Commander-in-Chief is anxious that soldiers should be given opportunities for improving their general education and knowledge and, where facilities can be provided, for learning or practising a trade. The aid of local educational authorities has been freely drawn on and instruction in a large number of subjects has been arranged. The War Office, at the instance of the Government of India, has made a grant of £10,000 in aid of this educational scheme. The Government of India have also arranged to provide free passages for soldiers to and from any place in India at which they wish to spend their furlough. Last year the Government spent half a lakh on making the various homes established more comfortable for the men, and gave another half lakh to the Y.M.C.A. for a similar purpose.

#### *Red Cross Supplies for the Afghan Campaign.*

The Joint War Committee has made very complete arrangements in connexion with Red Cross supplies on the North-West Frontier for the Afghan campaign. Main depôts have been established at Peshawar, Rawalpindi, Kohat, Bannee, and Quetta, with Red Cross commissioners in charge of each.

#### *New Nursing Home.*

The Bengal branch of the Lady Minto Indian Nursing Association opened a nursing home at Salt Hill, Darjeeling, on May 1st. The home is chiefly for maternity cases, but other suitable non-infectious cases will be admitted.

June 4th.

## URBAN VITAL STATISTICS.

(Week ended June 28th, 1919.)

*English and Welsh Towns.*—In the 96 English and Welsh towns with an aggregate civil population estimated at 16,500,000 persons the annual rate of mortality, which had been 10.6, 9.9, and 10.0 per 1000 in the three preceding weeks, declined to 9.6 per 1000. In London, with a population slightly exceeding 4,000,000 persons the annual rate was 9.0, or 0.9 per 1000 below that recorded in the previous week, while among the remaining towns the rates ranged from 3.4 in West Hartlepool, 3.5 in Eastbourne, and 4.3 in Wallasey, to 15.7 in Wigan, 17.2 in Hastings, and 20.1 in Stockton-on-Tees. The principal epidemic diseases caused 133 deaths, which corresponded to an annual rate of 0.4 per 1000, and included 44 from diphtheria, 33 from measles, 31 from infantile diarrhoea, 17 from whooping-cough, and 8 from scarlet fever. Measles caused a death-rate of 1.6 in Newcastle-on-Tyne and 2.7 in Stockton-on-Tees. There were 2 cases of small-pox, 1143 of scarlet fever, and 1030 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 3, 1115, and 1085 respectively at the end of the previous week. The causes of 32 deaths in the 96 towns were uncertified, and included 3 each in Birmingham, Leicester, and Liverpool.

*Scotch Towns.*—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had been 12.3, 12.4, and 11.0 in the three preceding weeks, rose to 11.5 per 1000. The 249 deaths in Glasgow corresponded to an annual rate of 11.6 per 1000, and included 12 from measles, 11 from whooping-cough, and 1 each from scarlet fever, infantile diarrhoea, and typhus. The 83 deaths in Edinburgh were equal to a rate of 12.9 per 1000, and included a fatal case of diphtheria.

*Irish Towns.*—The 107 deaths in Dublin corresponded to an annual rate of 13.8, or 1.5 per 1000 below that recorded in the previous week, and included 3 from measles and 1 each from scarlet fever and whooping-cough. The 98 deaths in Belfast were equal to a rate of 12.7 per 1000, and included 3 from scarlet fever and 1 each from diphtheria and infantile diarrhoea.



## A MONTHLY RECORD OF ATMOSPHERIC POLLUTION.

METEOROLOGICAL OFFICE: ADVISORY COMMITTEE ON ATMOSPHERIC POLLUTION: SUMMARY OF REPORTS FOR THE MONTHS

ENDING

April 30th, 1918.

May 31st, 1918.

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre.										Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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		Tar.	Carbonaceous other than tar	Ash.	Loss on ignition.	Ash.		Subphate as (SO <sub>3</sub> ).	Chlorine (Cl).		Ammonia (NH <sub>3</sub> ).				Tar.	Carbonaceous other than tar	Ash.	Loss on ignition.	Ash.	Subphate as (SO <sub>3</sub> ).	Chlorine (Cl).	Ammonia (NH <sub>3</sub> ).																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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Leicester ... ..	61	0.18	3.33	6.10	3.62	6.62	19.85	1.83	0.62	0.22	London—																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											</

Tr. = trace.

\* Observations suspended owing to war conditions.

"Tar" includes all matter insoluble in water but soluble in CS<sub>2</sub>. "Carbonaceous" includes all combustible matter insoluble in water and in CS<sub>2</sub>. "Insoluble ash" includes all earthy matter, fuel, ash, &c. One metric ton per sq. kilometre is equivalent to: (a) Approx. 91b. per acre; (b) 2.56 English tons per sq. mile; (c) 1 g. per sq. metre; (d) 1/1000 mm. of rainfall.

The personnel of public health authorities concerned in the supervision of these examinations and of the analytical work involved remains the same as published in previous tables. The analyses of the rain and deposit caught in the gauge at the Meteorological Office are made in THE LANCET Laboratory.

## The Services.

## ROYAL NAVAL MEDICAL SERVICE.

Temp. Surg.-Lieut. W. P. Starforth, who has been invalided on account of ill-health contracted in the Service, to retain his rank.

## ARMY MEDICAL SERVICE.

Col. Sir W. H. Horrocks, K.C.M.G., C.B. (retired pay), to be temporary Director of Hygiene at the War Office, and to be temporary Brigadier-General whilst so employed.

Col. J. Fallon retires on retired pay.

Major and Lt. Lieut.-Col. C. W. Holden, D.S.O., relinquishes the acting rank of Colonel on re-posting.

Major and Lt. Lieut.-Col. W. C. Smales, D.S.O., R.A.M.C., from Deputy Assistant Director-General, to be Assistant Director of Hygiene at the War Office.

Major-Gen. Sir W. B. Leishman, K.C.M.G., C.B., F.R.S., K.H.P., to be Director of Pathology at the War Office.

Lieut.-Col. D. Harvey, C.M.G., C.B.E., R.A.M.C., to be Deputy Director of Pathology at the War Office, and to be temporary Colonel whilst so employed.

Major A. C. H. Gray, O.B.E., R.A.M.C., to be Assistant Director of Pathology at the War Office, and to be temporary Lieutenant-Colonel whilst so employed.

Temp. Col. T. P. Legg, C.M.G., relinquishes his commission and retains the rank of Colonel.

The undermentioned Temporary Colonels relinquish their temporary commissions on re-posting: H. G. Barling, C.B. (Lieut.-Col., R.A.M.C., T.F.), J. Swain, C.B. (Major, R.A.M.C., T.F.).

## ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonels relinquishing the temporary rank of Colonel on re-posting: F. J. Brakenridge, J. S. Gallie, G. J. Houghton, H. E. M. Douglas, W. Bennett.

The undermentioned relinquish the acting rank of Colonel on re-posting: Capt. and Bt. Major W. G. Wright; Lieut.-Cols. F. McLennan, H. C. R. Hime.

The undermentioned relinquish the acting rank of Lieutenant-Colonel on re-posting: Maj. and Bt. Lieut.-Col. J. G. Bell; Majors D. P. Watson, T. H. Scott, E. C. Phelan, W. Egan, D. L. Harding, W. C. Nimmo, C. Bramhall, T. S. Blackwell, B. Johnson, G. F.

Rudkin, J. J. O'Keefe; Capt. C. M. Drew, J. W. C. Stubbs, R. B. Price, J. H. Fletcher, C. Helm, F. Worthington, E. Phillips, R. Hemphill, W. J. Dunn, R. R. Thompson, L. F. K. Way, E. W. Vaughan, H. C. D. Rankin; Temp. Capt. W. E. Hallinan.

To be acting Lieutenant-Colonels whilst commanding Medical Units: Majors R. N. Hunt, J. A. W. Webster, N. E. Dunkerton, Capt. (acting Major) W. W. MacNaught.

Lieut.-Col. G. A. T. Bray, D.S.O., is placed on retired pay.

Major W. W. Boyce, D.S.O., relinquishes the acting rank of Lieutenant-Colonel on re-posting.

To be acting Majors: Capt. and Bt. Major A. Shepherd, S. W. Kyle; Capt. T. J. L. Thompson; Temp. Capt. A. T. W. Forrester, R. H. Stevens, L. T. Giles, E. J. Pehill, J. R. Griffith, H. Findlay, R. S. Woods, J. M. Morris (whilst specially employed); Temp. Lieut. J. E. G. Calverley.

The undermentioned relinquish the acting rank of Major: Capt. and Bt. Major W. L. Webster; Capt. R. C. Aitchison, G. P. Kidd, W. J. Knight, T. J. L. Thompson, F. R. S. Shaw, D. H. C. McArthur, A. L. Stevenson, R. H. Williams, J. H. Baird, R. W. Vint, T. D. Inch, J. A. Renshaw, F. C. Chandler; Temp. Capt. J. R. M. Whigham, T. Ferguson, W. F. Morgan, R. J. B. Madden, G. B. McTearish, A. R. Esler, E. F. C. Dowling, H. J. Pickering, F. J. O. King, A. J. Dunlop, G. C. Linder, C. L. Chalk, R. B. Blair, H. B. Shepherd, F. H. Moxon, G. S. Brown, J. Rodger, E. G. Dingley, T. H. Oliver, J. W. Littlejohn, R. C. Cooke, J. L. Jackson, G. S. Murray, W. C. Horton, G. B. Elliott, W. H. Peacock, H. G. Frean, A. V. Craig, E. F. G. Ward, F. W. Jamond, C. Burnham, P. J. Chissell, J. S. Hall, T. Sturdy, H. E. Gamlen, F. H. Young, G. H. Culverwell, W. K. McIntyre, J. L. A. Groat; Lieut. (temp. Capt.) G. E. Spicer.

Late temporary Captains to be Captain: E. E. Frazer, F. Wheeler.

The undermentioned Captains resign their commissions: J. A. Andrews, J. A. W. Ebdon.

Temporary Lieutenants to be temporary Captains: L. W. Oliver, T. C. A. Sweetman.

Officers relinquishing their commissions: Temporary Lieutenant-Colonels, and retaining the rank of Lieutenant-Colonel: G. N. Stephen, G. A. Bannatyne. Temporary Major: A. F. Hurst (granted the rank of Lieutenant-Colonel). Temporary Majors retaining the rank of Major: J. G. Fitzgerald, H. S. Brander, E. F. Ackery, G. S. Samuelson, A. Robertson, C. Christy. Temporary Captains granted the rank of Major: J. B. Lowe, L. H. C. Birkbeck, J. V. Holmes, W. Haward, E. G. D. Pineo, (Acting Major) G. S. Mill, W. E. Hallinan. Temporary Captains retaining the rank of Captain: H. B. Pare, W. A.



Paterson, W. A. Rees, R. W. L. Wallace, P. O. W. Browne, W. B. Primrose, A. M. Hewat, C. G. G. Winter, A. R. F. Douglas, R. C. B. Briscoe, D. B. Leitch, W. M. McFarlane, J. Rigby, P. C. Bushnell, H. R. Wright, A. Mudie, T. G. Fetherstonhaugh, A. Farquhar, R. de V. King, A. E. Francis, E. Gardner, J. A. Loughbridge, G. S. Murray, A. A. Lees, A. M. Bayne, F. M. Auld, A. P. Ford, D. Gray, W. W. Turner, H. E. Collier, E. R. Lyth, A. H. M. Saward, L. G. Leonard, S. A. Tucker, D. W. Tacey, H. H. P. Morton, G. P. Taylor, I. M. Frazer, G. A. Ticehurst, H. S. McSorley, C. S. Stollerfoth, G. Scullard, G. B. Messenger, G. B. Crawford, W. M. Johnston, C. W. Ewing, H. Findlay, J. S. Dickson, C. O. Donovan, M. C. R. Grahame, A. T. I. Macdonald, G. R. Potter, W. Henderson, T. N. Darling, W. E. Cooper, C. C. G. Gibson, N. P. Pritchard, A. Campbell, L. Gibbons, A. W. Cochran, G. Hamilton, E. V. Hunter, H. R. W. Husbands, A. C. Giles, L. L. Hadley, C. C. B. Gilmour, D. Hardie, C. A. Joll, A. G. K. Ledger, A. J. Andrew, J. S. Taylor, D. A. Donald, J. W. Lindsay, J. O. Thomas, H. Rogers-Tillstone, J. A. Renshaw, R. Kenefick, H. V. Taylor, F. C. Trappell, K. H. Bennett, W. A. Murphy, A. E. Hallinan, B. D. Crichton, J. L. H. Paterson, V. D. O. Logan, T. Kirkwood, E. A. Donaldson-Sim, W. J. G. Johnson, H. A. Cutler, E. H. Jones, R. Calleya, W. H. Gowans, H. E. Clutterbuck, I. Feldman, W. H. Brown, W. J. G. Henderson, J. C. Bramwell, R. B. Heygate, D. S. Harvey, D. Johnston, L. W. Oliver, A. Walker, G. B. Mason, J. B. Cook, H. L. Crouk, C. Clyne, H. R. Tighe, S. G. Harrison, S. A. Day, R. M. Moore, E. P. Dark, H. C. Harrison. Temporary Lieutenants retaining the rank of Lieutenant: W. Hickey, W. F. Waugh, B. W. Lacey, R. C. Redman, H. L. Parker. Temp. Hon. Lieut. F. A. Georger retains the rank of Honorary Lieutenant.

## GENERAL RESERVE OF OFFICERS.

Major A. F. Heaton relinquishes the acting rank of Lieutenant-Colonel on ceasing to command a Convalescent Depot.

## SPECIAL RESERVE OF OFFICERS.

Captains relinquishing the acting rank of Lieutenant-Colonel on resting: W. M. Dickson, E. T. Burke.

Captains relinquishing the acting rank of Major: J. G. Ronaldson, A. F. L. Shields, W. Barclay, R. Taylor, A. R. Hill, C. R. McIntosh, P. Thornton, J. Le M. Kneebone, J. B. Cavenagh, G. G. Alderson, W. M. Blien, A. Winfield, J. B. Scott.

Captains to be acting Majors: H. Rollinson, T. Hampson.

Captains relinquishing their commissions and retaining the rank of Captain: I. D. Suttie, J. M. Courtney, R. R. Scott.

## TERRITORIAL FORCE.

Officers relinquishing their acting rank on ceasing to be specially employed: Capts. (acting Lieut.-Cols.) H. G. G. Mackenzie, J. W. Craven, W. Simpson; Capts. (acting Majors) G. P. D. Hawker, H. A. Playfair-Robertson, R. W. Swayne, R. C. S. Smith, H. B. Sproat, H. M. Fort, G. Young, J. C. Marklove, A. M. Mackay, W. L. Cockcroft, G. E. Nash, T. Graham, N. H. H. Haskins, J. C. Denver.

Capt. N. C. Rutherford relinquishes his commission.

Capt. D. W. C. Jones is restored to the establishment on ceasing to hold a temporary commission in the Army Medical Service.

Capt. C. C. Fitzgerald is restored to the establishment.

Captains to be acting Majors whilst specially employed: T. S. Worboys, N. J. Wigram, T. W. S. Paterson.

1st Eastern General Hospital: Capt. J. F. Gaskell is restored to the establishment.

1st Southern General Hospital: Capt. F. D. Marsh is restored to the establishment.

3rd Southern General Hospital: Major E. C. M. Foster is restored to the establishment.

5th Southern General Hospital: Major W. P. Purvis is restored to the establishment. Capt. (acting Major) G. H. Cowen relinquishes his acting rank on ceasing to be specially employed, and is restored to the establishment.

5th London General Hospital: Capt. (acting Major) E. M. Corner relinquishes his acting rank on ceasing to be specially employed.

3rd Western General Hospital: Major (acting Lieut.-Col.) W. M. Stevens relinquishes his acting rank on ceasing to be specially employed.

2nd Northern General Hospital: Major (acting Lieut.-Col.) W. Thompson relinquishes his acting rank on ceasing to be specially employed.

## ROYAL AIR FORCE.

Medical Branch.—Lieut. G. A. S. Madgwick is transferred to Unemployed List.

Dental Branch.—Lieut. H. H. Chapman is transferred to Unemployed List.

## AGE OF RETIREMENT IN THE I.M.S.

In accordance with a recent Royal Warrant the ages at which officers of the Indian Medical Service holding administrative appointments shall be placed on the Retired List are now as follows: Director-General 60, instead of 62; Colonels, Brevet Colonels, and general officers 57, instead of 60. The age at which Lieutenant-Colonels and Majors shall be placed on the Retired List will remain unaltered at 55.

## DEATHS IN THE SERVICES.

The late Surgeon-Commander Frederick Fedarb, R.N., who died at Southsea on May 25th last at the age of 52, was the only surviving son of the late Fleet-Engineer William Fedarb, R.N. He obtained his degree of M.B., C.M., at Glasgow University in July, 1887, and joined the Royal Navy as surgeon in 1890. He did service at home and abroad and was fleet surgeon of H.M.S. *Breadnought* during her first commission. At the outbreak of war he was principal medical officer of the Boys' Training Ship *Impregnable* at Devonport, but early in 1916 he was appointed to H.M.S. *Revenge* and served in her at the battle of Jutland. Dr. A. I. Esslemont, of Birmingham, who was with him in *Revenge* writes: "No one could have wished for a better 'chief' or more devoted friend. Dr. Fedarb was a capable administrator, well versed in all the service routine and with a sound, up-to-date knowledge of his profession. He was loved by all his shipmates, because of his quiet, inobtrusive, kind, and generous disposition, and it was a great shock to hear of his untimely death."

Colonel Sir Robert Armstrong-Jones has been appointed a Deputy Lieutenant of the county of Carnarvon.

## Correspondence.

"Audi alteram partem."

## PROFESSIONAL SECRECY IN THE EYE OF THE LAW.

To the Editor of THE LANCET.

SIR,—The attention of the council of the Medical Defence Union has been drawn to certain remarks (reported in *Berrow's Worcester Journal* of June 7th) made by Mr. Justice Bray in a case tried before him at the Worcester Assizes at the beginning of this month. The case in question was the prosecution of an unmarried woman for alleged concealment of birth. The medical man, who was called in six hours after the birth, was unable to find the body of the child, and after considering the matter decided that his duty to the patient precluded him from making any communication to the police. The police, however, upon the matter being subsequently notified to them, took a different view and adversely commented upon the doctor's conduct. He accordingly consulted the Medical Defence Union, who upheld his action in not reporting the matter to the police on the ground that had he done so he would have been guilty of a breach of professional confidence.

At the Assizes the woman was found "Not guilty." At the conclusion of the case the judge called the doctor in question into the box and addressed him, according to the report from which we quote, to the following effect:—

"..... the judge said that he saw that in the depositions the doctor had stated that, knowing that a child had been born in the room, probably recently, he did not think it was his duty to inform the police; in fact, it would have been a gross breach of professional confidence if he had informed the police, and he protested most strongly against the police reporting the matter. The judge added that in his opinion the doctor was quite wrong. There was no professional confidence in criminal cases of this kind, and it was his (the doctor's) duty to inform the police at once in a case like this. The doctor could understand the importance of it because it was possible that the child might have been still alive, and in that case it was the duty of the police to make inquiries. There was no professional confidence to prevent him giving information to the police. 'I want you to please remember that,' added the judge 'I am not blaming you for taking that view, but I think it is important that it should be known that the view you took was wrong.'"

Dr. Standing: "The Medical Defence Union instructed me that I was absolutely correct."

The Judge: "The Medical Defence Union is wrong. If you had your attention called to a patient committing the offence of cutting another man's throat, it would be your duty to go and inform the police. There is no difference between a small and a big offence."

Apart from the fact that in the case which had been tried a verdict of "Not guilty" had been returned, the council of the Medical Defence Union is unable to accept the analogy attributed to the learned judge as a fair one, or to allow that the cases are in any way comparable. The standpoint taken up by the medical profession on this subject has more than once been challenged by the legal profession. The council nevertheless maintains that the duty a medical man owes to his patient is paramount. Assured as it is on this important question the council feels it incumbent upon it to continue to advise any member seeking the guidance of the Medical Defence Union that any communications made to him by a patient and any information acquired by reason of his attendance upon such patient are confidential, and that without the authority of the patient a medical man is precluded by the accepted canons of his profession from disclosing such information to anyone. In adopting this attitude the council feels it will have the support of all those members of the profession who desire to maintain inviolate the trust and confidence which is reposed in them by their patients.

I am, Sir, yours faithfully,

JOHN TWEEDY,

President, Medical Defence Union.

4, Trafalgar-square, W.C.2, June 30th, 1919.

## HOMICIDAL INSANITY.

To the Editor of THE LANCET.

SIR,—In the interesting leading article in your issue of Saturday, June 28th, on the law and psychology of these terrible cases one point seems to me to have been overlooked. I can hardly discuss it without reference to the case recently before the courts, because certain evidence in that case has to



be cited, but I am very unwilling to enter into any controversy, still more to weight the evidence, for or against a criminal of whose case I know no more than any other reader of the newspapers.

The point I would touch upon, as far as possible in the abstract, is this: All alienists will agree that the commission of such a crime in an epileptic state is quite in accordance with experience. Many of us have seen crimes far more elaborate and systematically carried through in such states of automatism, but with this very important difference. I understand from your columns that in the case before us the criminal confessed the whole story to the constable who took him into custody. Now, in my experience of such automatic actions, criminal or indifferent, this has never been the case. In the large majority of instances in my experience the perpetrator has had no recollection whatever of the act or series of acts imputed to him; in a few he has had a vague recollection as of a dream, but would have been quite unable to tell the story plainly as a chain of facts in which he was concerned. Moreover, these few have regarded the events as hardly connected with themselves, and even then as an unfortunate accident which had befallen them by no will of their own.

I am, Sir, yours faithfully,

Cambridge, July 1st, 1919.

CLIFFORD ALLBUTT.

## EPIDEMIC PERINEPHRIC SUPPURATION.

To the Editor of THE LANCET.

SIR,—Most medical officers would, I think, agree with the remarks made by Dr. W. Pasteur in his letter on the above subject in your columns of June 21st. Perinephric abscesses containing *Staphylococcus aureus* were common in France, as they had been in civil experience before the war, and in the same way they were usually related to a small boil or other known focus of staphylococcal infection elsewhere, a focus that might have become quiescent many weeks before the development of the perinephric inflammation. In these cases, however, it does not follow that the "perinephric tissue is the site of election," as suggested by Dr. Pasteur. Perhaps the abscess has its origin more commonly in a small infective embolus within the kidney, from which pus burrows its way outwards, passing through the capsule of the kidney, and so developing into a large extra-renal collection. When abscesses arising within the kidney take such an outward course they do not spread laterally between the capsule and the kidney itself. A specimen in the Museum of University College Hospital illustrates this process, with a tiny track of yellow doubly refractive fat in the kidney, and a considerable collection of pus external to the capsule at the upper pole. Conversely the embolic abscess may rupture into the pelvis of the kidney, and be drained away so that a perinephric abscess does not develop.

More evidence from post-mortem observations is needed to determine the local origin of these perinephric staphylococcal abscesses, and to give the answers to two questions that arise in connexion with Mr. Joseph Cuning's letter—namely: (1) whether the perinephric abscess comes by outward spread of infection from an embolus within the kidney itself, or from some other focus? (2) whether the original source of the perinephric suppuration is the staphylococcal infection of subcutaneous boils, or the secondary staphylococcal infection of the respiratory tract that has occasionally been seen as a complication of influenza, and might lead to an epidemic of such abscesses at a time when complicated influenza is rife?

It is certain that the ordinary or sporadic perinephric abscess in France was the sequel of boils, just as pyæmic abscesses in other tissues (for example, in the myocardium causing suppurative pericarditis) or virulent staphylococcal septicæmias have occasionally been seen with such a history, when there was no possibility of their having been caused by a staphylococcal infection of the lungs coincidentally with an attack of influenza. Among these there is one group of cases of very considerable interest, where the staphylococcal infection from boils enters the lungs directly and produces a picture somewhat like that of an original influenza. Such cases were not, to my knowledge, frequent in civil experience, but several pathologists saw them at autopsy during the war in France. A description of these cases was written in 1916 by Captain

H. W. Kaye, R.A.M.C., but its publication was forbidden at the time by the military censorship. They presented the signs of acute pulmonary disease with profound toxæmia, and were clinically diagnosed at first as "pneumonia." Post-mortem examination discovered innumerable small acute abscesses in the lungs, these being related to the lung-vessels and not to the bronchi. An actively inflamed boil was generally found close to some tributary of the superior vena cava, with pus tracks radiating into the tissues, and staphylococci had been present in the blood during life. Curiously, no embolic abscesses were observed outside the area of the lungs. Death usually results in these acute pulmonary cases, where the resistance to staphylococcal infection must be very low; but I have seen an example of double staphylococcal empyema, that may have belonged to this group, and in which recovery followed upon drainage of the pleural cavities. It is an extraordinary fact that in the special skin hospitals at the base, where acute and chronic boils were very numerous, deeper complicating abscesses were practically never seen. The proportion of cases with boils, in which such abscesses occur, must therefore be very small. Nolf, Bossaert, and Colard, however (*Archives Médicales Belges*, Janvier, 1918), have insisted that a passing infection of the blood and of the urine by staphylococci is more frequently present than has been generally recognised.

Staphylococcal blood infection as a complication of true influenza was described by Patrick and Garrod in THE LANCET of Jan. 25th, 1919. It is quite probable that a "boil" in the lung as a complication of influenza may lead to all the various staphylococcal abscesses at a distance that are known to follow a subcutaneous boil, and that there may in reality be such an epidemic as has been suggested by Mr. Cuning.

I am, Sir, yours faithfully,

T. R. ELLIOTT,

Late Colonel, A.M.S.; Consulting Physician, B.E.F.

University College Hospital, July 1st, 1919.

To the Editor of THE LANCET.

SIR,—I shall be very glad if you can spare me a little space for a few words further on this subject. Neither Sir Thomas Horder nor Dr. Pasteur see any reason to suppose that the condition of perinephric suppuration has any causative relation to influenza, but consider it to be a staphylococcal pyæmia. It may smack of the distinction without a difference type of argument if I desire to state that I feel it wrong to have expressed my opinion that "the recent epidemic of influenza was the primary disease in these cases of perinephric suppuration," and that I ought to have said as my actual opinion "associated with a primary influenzal infection." But this substitution affords me the opportunity to meet Dr. Pasteur's weighty objection that cases occurred in his experience long before the influenza epidemic manifested itself. It is, of course, admissible that during an epidemic any sort of otherwise unexplained pyrexia is conveniently included, and my assumption that two of my cases of perinephric suppuration occurred in patients who had suffered from definite attacks of influenza is justly criticised. But even at the risk of being wearisome I would like to reiterate my opinion that in these cases influenza exerted a determining influence.

It will be recalled that the secondary complications (the dreaded "influenzal pneumonia" and influenzal septicæmia) would appear to be due to organisms whose activity is exalted or altered by a primary invasion by *B. influenza*. It will be remembered, also, that the condition of "purulent bronchitis," originally regarded as a sort of pathological entity, was shown subsequently to be primarily an influenzal infection, and these cases occurred fully two years before the actual epidemic of influenza.

In accepting, then, the authoritative pronouncements of Sir Thomas Horder and Dr. Pasteur, I venture to claim some justification for my support of Mr. Cuning that the condition of perinephric suppuration was associated with influenza, although I see that I was in error in using the term "epidemic" in this connexion.

I am, Sir, yours faithfully,

ADOLPHE ABRAHAMS.

Connaught Hospital, Aldershot, June 28th, 1919.



## INDUSTRIAL MEDICAL SERVICE.

To the Editor of THE LANCET.

SIR,—The leading article in THE LANCET of June 21st and the special article in to-day's issue are most timely and apt. Unfortunately, during the war, under the plea of economy, the Government abolished the statutory inquiry by the certifying factory surgeon into the cause and prevention of certain accidents by machinery. These investigations gave the certifying surgeon a very real and intimate knowledge of the working conditions and danger-points in all the factories within his district. This experience familiarised him with the temperature, moisture, dustiness, weight-lifting, periods of rest and activity, and the strains and stresses peculiar to each particular process, also the mental and bodily exertion demanded of the workers. Such knowledge is essential to a medical man who has to estimate and certify that young boys and girls are suitable or fit to be employed in a particular occupation. The certifying surgeon of some years' standing still retains in his memory the danger-spots and unwholesome parts in mill and workshop. It is surely highly important that this close practical intimacy should be restored or other equally real routine of duty inside the factory should be given to newly appointed certifying surgeons to enable them to judge wisely the suitability of our youth to bear the hazards of fatigue, and so minimise the ever-present risk of accident and ill-health.

Unfortunately, this branch of the factory department has been hampered and its value to the community made less efficient for many reasons. A recently appointed officer has often an insufficient acquaintance with the principles and details of industrial hygiene. A course of instruction in this subject is most desirable of those selected for these posts. He should have more executive authority in enforcing his recommendations and provisional certificates. More supervision and standardisation of his duties are required. The public must be better educated into the necessity and utility of this and allied services so that the risk of clashing is avoided between parental gain, individual liberty, and the welfare of the rising generation. Lastly, the sixpenny fee should be abolished. To expect that a satisfactory examination can be made and a certificate given for such a sum is the abnegation of common sense and experience. Reforms on the lines above indicated and further regulations which your articles and modern opinion demand are, I believe, appreciated by the heads of the Factory Department. If carried out they would rapidly build up a competent industrial medical service throughout the country. I am, Sir, yours faithfully,

Wigan, June 28th, 1919.

R. PROSSER WHITE.

## DETOXICATED VACCINES.

To the Editor of THE LANCET.

SIR,—I was very much interested in the excellent paper by Dr. David Thomson on detoxicated vaccines in THE LANCET of June 28th. As I have been working on very similar lines for over a year I should like to raise a few points and offer a few suggestions upon the subject.

1. *As to the nature of the toxin removed.*—Dr. Thomson states that this is the endotoxin, though the impressions gained at the present stage of my investigations do not suggest this. I have no evidence that it is comparable to the exotoxin of *B. diphtheriae*, *B. tetani*, &c., but I have considerable evidence that it is situated outside the organism and it can be removed without causing autolysis of the organisms. From the rough chemical investigations made it appeared to be a nitrogen-containing fat or lipid, and at present I picture it as an external toxin.

2. *As to the nature of the precipitate.*—In addition to the stroma of the organisms the precipitate contains another substance, which, I believe, is of considerable importance in the production of antibacterial substances.

3. Dr. Thomson does not offer an explanation of the rapid production of immunity following administration of detoxicated vaccine. It is difficult to understand how the body can be stimulated to produce antibodies in less than 24 hours, and yet in acute pneumococcal infections a corresponding sensitised vaccine will give definite evidence of immunity production in from six to eight hours, and I have recently modified my method of making detoxicated vaccines which apparently give similar results.

4. I agree with the editorial comment that more evidence must be produced before the complement-deviation reaction

can be taken as an indication of the resulting immunity titre. I should regard these reactions as evidence of bacterial substances in the blood stream, but not necessarily immune bodies.

5. *Suggestions as to dosage and possible dangers.*—About a year ago I was preparing detoxicated vaccines which I think would be identical with those described by Dr. Thomson, though the technique used was different, and I investigated the vaccine so produced from the following standpoints: (a) To determine whether it was non-toxic and harmless to normal individuals and animals; (b) to determine the effects when given during, or at varying intervals before, infection with the corresponding organism; (c) to determine whether it was superior to an ordinary vaccine in producing immunity.

Without going into details, the conclusions arrived at were that for many organisms, such as streptococci, pneumococci, &c., the detoxicated vaccine was for practical purposes harmless and non-toxic, except in cases of severe general infection, as, for example, streptococcal septicaemia. There are also organisms which may produce a severe toxic effect, and *B. dysenteriae shiga* is an example. Rabbits appear to tolerate, without showing any signs of discomfort, enormous doses of a detoxicated virulent strain of pneumococcus, while they are susceptible to comparatively small doses of Shiga prepared by the same method. The signs and post-mortem findings do not constitute the entire group of typical Shiga infection, but the animal nevertheless rapidly dies.

Dr. Thomson has presumably worked out the results principally with the gonococcus, and in infections with this organism evidences of general toxæmia are usually slight. Until the nature of the immune bodies produced by this form of vaccine has been determined—and I think they will be found to be of a variety not usually produced—I should like to put forward the following suggestions as to the use of this form of vaccine in general infections. I have had no experience with it in gonococcal infection, but have used it a good deal in other infections and carried out a number of animal experiments.

(a) *As to dosage.*—I should suggest its use more on the usual lines of administering sensitised vaccines, and the method I employed was to give 500, 1000, and 1500 million on three consecutive days, followed by a dose of 1500 million every fourth or fifth day. Also, until we know more about the exact results, I should regard 2000 million as a maximum dose, at any rate in severe infections. This suggestion is based upon conclusions that because a given dose is harmless in a normal individual or in one suffering from a chronic infection, it does not necessarily hold that the same applies to a patient suffering from a severe acute infection. I think it possible by the rapid production of antibacterial substances to produce a condition analogous to "sterile death" in these cases. Under these circumstances the disease might be cured, but the patient would not survive. Also surplus vaccine given to a patient in extremis might unnecessarily add to the existing severe toxæmia.

(b) *When using a previously untried organism.*—I should suggest commencing with relatively small doses. I have inoculated myself with several thousand million detoxicated pneumococci without any local or general ill-effects; but I should not like to have to try a similar initial dose of *B. dysenteriae shiga*.

If used, while bearing in mind the above two factors, I am sure that vaccines prepared as described so ably and fully by Dr. Thomson will be found to be very much more effective than ordinary vaccines. I think, however, that the detoxication process is not quite complete, and I have recently evolved a modification which promises to be a more complete imitation of sensitisation. These findings I hope to publish shortly when completed.

I am, Sir, yours faithfully,

S. G. BILLINGTON, M.B. Lond.,

Stoke-on-Trent, June 30th, 1919. Late Temporary Captain, R.A.M.C.

**THE GILCHRIST SCHOLARSHIP FOR WOMEN WAR WORKERS.**—The Gilchrist trustees offer through the council of the London (Royal Free Hospital) School of Medicine for Women a special scholarship tenable at the Medical School by a woman who has served under an organisation directly connected with the war during not less than three years since August, 1914. The scholarship is of the value of £50 per annum for five years. Applications should reach the warden and secretary of the Medical School, 8, Hunter-street, Brunswick-square, W.C.1, not later than July 12th, from whom the necessary form of application and all particulars may be obtained.



## Obituary.

R.T. HON. SIR JOHN MCCALL, M.D., HON. LL.D., GLASG.

Sir John McCall, who died of pneumonia on June 28th, was better known as a statesman than as a doctor. He was, however, a graduate of medicine in the University of Glasgow, taking his M.B. degree there in 1881 when only 21 years of age, and it was not until 1888 that he entered the political world as a Member of the Tasmanian House of Assembly. He carried his medical experience and qualifications with him in his political career, and in 1903, when he became Chief Secretary, he was responsible for an entire reorganisation of the Tasmanian Department of Health. In 1904 he became M.D., and five years later he was appointed Agent-General for Tasmania in London, an appointment which he held with conspicuous distinction until the time of his death. He was created a Knight Bachelor in 1911 and received the K.C.M.G. in the last Birthday Honours, no doubt as a recognition of the great services he rendered in promoting the welfare of Australian troops in hospital or billeted in this country. He allowed himself practically no recreations, his whole time being placed at the disposal of his fellow Australians in need of sympathy or advice. His career as a medical statesman is finding a worthy reproduction in that of his son, who is now district medical officer and medical officer of health in Leonora, West Australia.

EDWIN GREAVES FEARNSIDES, M.D., B.C. CAMB.,  
B.Sc. LOND., F.R.C.P. LOND., M.R.C.S. ENG.,

MEDICAL REGISTRAR TO THE LONDON HOSPITAL; AND ASSISTANT  
PHYSICIAN TO THE HOSPITAL FOR EPILEPSY AND PARALYSIS,  
MAIDA VALE.

A BRILLIANT medical career has been cut short by the death of Dr. Edwin G. Fearnside, which took place on June 26th as the result of a boating accident. Dr. Fearnside, who was born in 1883 at Horbury, Yorks, was the son of the late Joshua Fearnside, and was a successful student at Cambridge, the London Hospital, and at Berlin. In 1902 he was senior scholar at Trinity Hall, Cambridge, and graduated in 1906 with a first-class in the natural science tripos. In the same year he won the Anatomy and Physiology prize at the London Hospital, having in the previous year graduated B.Sc. Lond., taking first-class honours. In 1908 he proceeded to the M.B. and B.C. degrees, and also obtained the Conjoint Diploma of the London Royal Colleges while holding the appointments of clinical assistant to out-patients and house physician to the London Hospital. In the following year he became receiving-room officer, resident anaesthetist, and clinical assistant to the ophthalmic department and at the Hospital for Sick Children, Great Ormond-street, clinical assistant. He proceeded to the M.R.C.P., and after holding the position of house surgeon to the London Hospital in 1910, he became medical registrar a year later. In 1915 he was deservedly elected, on a very short probation, a Fellow of the Royal College of Physicians of London. He was a Beit Memorial Research Fellow and had been assistant examiner in medicine for the University of London. Late Major in the Royal Air Force, he was neurologist to the Hospital for Officers of the Royal Flying Corps, and resident medical superintendent of the Home of Recovery, Highfield. He had recently become a valued editorial writer in our columns.

As assistant physician to the Hospital for Epilepsy and Paralysis, Maida Vale, Dr. Fearnside found an opportunity of perfecting his knowledge of neurology, a subject with which he was specially interested in addition to general medicine, and he contributed much to the literature of both subjects. He was the author of the articles "Eosinophilia" in Allbutt's System of Medicine, "Parasyphilis of the Nervous System" (with Drs. Head, Fildes, and MacIntosh) in *Brain*, 1913, and (with Dr. Head) of "Clinical Aspects of Syphilis of the Nervous System in the Light of Wassermann Reaction and Treatment with Neosalvarsan," 1914, as well as of "Intracranial Aneurisms" and "Innervation of the Bladder" in subsequent years. In 1914 he read a paper before the Electro-therapeutical Section of the Royal Society of Medicine on Diseases of the Pituitary Gland and their Effect on the Shape of the Sella Turcica, which was published in THE LANCET of July 4th, 1914, and upon which valuable

contribution to an important study we commented editorially in the same issue. To the Section of Neurology of the Royal Society of Medicine, among other valuable papers, he contributed one on the Essentials of Treatment of Functional Nervous Diseases in Soldiers, which was reported in our issue of March 23rd, 1918, and which well illustrates his way of approaching a difficult practical subject.

We have said enough to show that by the untimely death of Edwin Fearnside the science and practice of medicine, as well as the institutions with which he was associated, suffer a heavy loss, but above all things Dr. Fearnside was a fine type of the institutional officer. "He was," says the secretary of one of his hospitals, "a great and tireless worker, and he allowed nothing to stand in the way of his hospital work. He was devoted to his patients, and particularly can this be said of him during the war, when the functional side of nervous disease became an urgent matter. During his tenure of office as an assistant medical officer at Springfield War Hospital, and whilst medical superintendent of 'Highfield,' Golders Green, he worked tirelessly first for serving soldiers at Springfield, then for pensioned soldiers, and afterwards for officers of the Royal Air Force at 'Highfield.' As a colleague he was always prepared to place his



EDWIN GREAVES FEARNSIDES, M.D.

services at the disposal of others, and his generous nature made him a host of friends amongst his patients and colleagues, all of whom will mourn his death. When he relinquished his commission as a major in the Royal Air Force Medical Service on the 31st May and left London for a holiday he was a tired-out man for the moment, but no one can doubt that he had a great future before him."

A. S. MacN., an intimate friend, in an eloquent tribute to Fearnside's memory, dwells also in particular upon the value of his work at the Home of Recovery. "At Golders Green," he writes, "Fearnside was most successful. Many an ex-soldier and ex-airman who was brought back to health and mental sanity through Fearnside's instrumentality will feel personal regret for the loss of the doctor who first took the trouble to understand them. Fearnside was an able thinker. With his chief and friend, Dr. Head, he was a pioneer in the interpretation of the 'new neurology.' He was never tired of teaching that in medicine the individual was to be considered and not the disease. His high intellectual gifts were recognised by the College of Physicians in his election to the F.R.C.P. at an unusually early age. Though young in years, already he had achieved much. Had life been spared to him he would have ranked as one of our foremost thinkers and physicians. In conversation he often sketched out proposals for treatises the skeleton-plans of which were marked by originality of thought, and which were



new and stimulating in suggestion. One, I remember, was to give us an entirely new conception of 'pain.' These, alas, will now never be written. *Dis aliter visum!* Fate snatched him from us at the zenith of human happiness, when his life seemed rich with the promise of all that was good."

GEORGE WILKS, M.C., M.B. CANTAB., M.R.C.S., L.S.A.,

LATE MASTER OF THE SOCIETY OF APOTHECARIES AND PHYSICIAN-  
IN-ORDINARY TO THE LATE DUKE OF EDINBURGH.

Dr. George Wilks, who died on June 11th at his residence, Ashford, Kent, aged 79, was a native of the town in which he lived, and the elder son of George Frederick Wilks, of the near-by village of Charing, where his father and other members of the family were medical men before him. He was educated privately until the age of 13, when he went to King's College, London. He afterwards studied in Dresden. Returning to England, he entered Trinity College, Cambridge, where he graduated B.A. in the Classical Tripos in 1863. For two years he was a pupil of Sir George Murray Humphry at Addenbrooke's Hospital, and afterwards a pupil of Sir James Paget at St. Bartholomew's Hospital. In 1867 he proceeded to the M.C. degree, taking also the M.R.C.S. Eng. and the L.S.A. He then started practice with his father at Ashford, and carried it on alone from the time that his father died till 1886, when he was joined in partnership by Mr. E. G. Colville. From 1907 to 1908 he was Master of the Society of Apothecaries of London, and his appointment as physician-in-ordinary to the late Duke of Edinburgh led to his attendance on the Duchess at the birth of the present Queen of Roumania and the Princess Beatrice of Orleans.

Dr. Wilks took an active interest in municipal and social matters, was a prominent Freemason, and a Vice-President of the League of Mercy. As an active supporter of the Ashford Cottage Hospital he helped to free that institution from debt, and in 1906 was presented with a handsome silver tray and a cheque for £150 in recognition of his services to the institution as medical adviser, honorary treasurer, and secretary. With his customary generosity he handed the cheque to the hospital for the formation of an emergency fund.

MICHAEL JOSEPH MCCARTAN, L.R.C.P. & S. IREL., J.P.

THE death took place on June 27th at his residence at Rostrevor, co. Down, of Mr. Michael McCartan. Born in 1857, he was the youngest and only surviving son of the late Mr. Thomas McCartan, J.P., of Baymount, Rostrevor. In 1883 he became a Licentiate of the Royal Irish Colleges, and began practice in Newry, where he also was a member of the Town Commissioners; and in 1899, when that body was changed into the Newry urban council, he was elected chairman, a position he held until his retirement in 1901, when, owing to the state of his wife's health, he was obliged to go to reside in Jersey. From 1897 to 1901 he represented the Newry town board on the Carlingford Lough Commissioners, and he was an original member of the Newry Port and Harbour Trust. In 1893 he was made a justice of the peace for county Down. In 1901, in recognition of his valuable services to Newry, he was the recipient of a public presentation, which took the form of an address and an oil portrait, a replica being placed in the council chamber of the Town Hall. In 1909 he went to reside in Rostrevor, and was in that year appointed dispensary officer of the Rostrevor district, as well as medical officer of health; he was also consulting medical officer of health of the Kilkeel rural district council, and attendant on the Royal Irish Constabulary in Rostrevor, and certifying factory surgeon. All these positions he held at the time of his death. He was buried on June 29th at the old family burying-ground, Kilbroney, Rostrevor. Mr. McCartan was a skilful doctor, a shrewd man of affairs, and greatly respected by his medical brethren and his patients.

DISPENSARY DOCTORS' SALARIES IN IRELAND.—After an acrimonious discussion the Ballymena board of guardians, on June 28th, rescinded all previous resolutions on the subject, and fixed the scale of salaries for medical officers of the union at a minimum of £120 per annum, rising by annual increments of £20 to £200, except in the case of the Ballymena dispensary district where the maximum was fixed at £220.

## Medical News.

UNIVERSITY OF OXFORD.—At examinations held recently the following candidates were successful:—

SECOND EXAMINATION FOR DEGREE OF BACHELOR OF MEDICINE.

*Materia Medica and Pharmacology*.—W. H. Butcher, St. John's; T. Y. Cathrall, Trinity; J. T. S. Hoey, Jesus; J. G. Johnstone, St. John's; H. A. Osborn, New; D. B. Pauw, Trinity; H. L. Rayner, Balliol; M. E. Shaw, New; W. F. Skaffe, Trinity; and N. F. Smith, Balliol.

*Pathology*.—T. A. Brown, Exeter; C. K. J. Hamilton, Lincoln; J. T. S. Hoey, Jesus; H. A. Osborn, New; and H. L. Rayner and N. F. Smith, Balliol.

*Forensic Medicine and Public Health*.—L. G. Brown, Balliol; W. H. Butcher, St. John's; F. B. Chavasse and W. T. Collier, Balliol; F. G. Hobson, New; B. G. von B. Mellé, Brasenose; O. B. Pratt, Christ Church; N. F. Smith, Balliol; and C. P. Symonds, New.

*Medicine, Surgery, and Midwifery*.—L. G. Brown and F. B. Chavasse, Balliol; J. C. Dixey, Brasenose; F. G. Hobson, Queen's; O. B. Pratt, Christ Church; N. F. Smith, Balliol; and C. P. Symonds, New.

MASTER OF SURGERY.

R. O. Ward, Queen's.

UNIVERSITY OF DURHAM; FACULTY OF MEDICINE.—At examinations held recently the following candidates were successful:—

THIRD EXAMINATION FOR DEGREE OF BACHELOR OF MEDICINE.

*Materia Medica, Pharmacology, and Pharmacy; Public Health; Medical Jurisprudence, Pathology, and Elementary Bacteriology*.—

Samuel Eric Hill Anderson, John Stratton Brogdon, James Struthers Clark, Edward Thomas Colville, Oliver Colville (second-class honours), Robert Collinson Davison, Dorothy Amatt Dixon (second-class honours), Thomas William King Dunscombe, Eskander Girgis, Barbara May Gringing, Donald Falconer Hocken, William Ewan Douglas Hodgson, Harold Holtby, Henry Norman Clarence Jaffé, George McCoill, Robert Turnbull Easton Naismith, Carl Damien Newman, Thomas Swinhoe Severs, Louis William Studdy, William Arthur Tweddle, William Christopher Wardle, and Edith Short Williamson.

THIRD EXAMINATION FOR LICENCE IN DENTAL SURGERY (L.D.S.).

*Anatomy, Physiology, and Histology; Dental Anatomy, Dental Histology, and Dental Materia Medica*.—Montague Olswang and Gainsford Reed.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—The following candidates have passed the Final Dental Examination and have been granted the diploma L.D.S. R.C.S. Edin.:—

Euphemia Ross Hadley, Thomas Stewart Tait, Andrew Finlay Readdie, and Edward Louis Adendorff.

ROYAL SOCIETY OF ARTS.—The council of the Royal Society of Arts have awarded the society's silver medal for the following papers read before the society during the past session:—

Edward C. de Sgundo, A.M.Inst.C.E., "The Removal of the Residual Fibres from Cotton Seed and their Value for Non-textile Purposes."

Sir Frank Heath, K.C.B., secretary, Department of Scientific and Industrial Research, "The Government and the Organisation of Scientific Research."

Walter Leonard Lorkin, A.M.I.E.E., "Electric Welding and its Applications."

W. Norman Boase, C.B.E., "Flax—Cultivation, Preparation, Spinning, and Weaving."

Brigadier-General Lord Montagu of Beaulieu, C.S.I., "Aviation as Affecting India."

Professor John Cunningham McLennan, O.B.E. Ph.D., F.R.S., "Science and Industry in Canada."

ST. THOMAS'S HOSPITAL ANNUAL DINNER.—The dinner of past and present students of St. Thomas's Hospital will take place on Wednesday, Oct. 1st, at the Connaught Rooms, Great Queen-street, W.C., Sir George Makers, G.C.M.G., in the chair.

CENTRAL MIDWIVES BOARD.—A special meeting of the Central Midwives Board was held at Queen Anne's Gate Buildings, Westminster, on June 18th, with Sir Francis H. Champneys in the chair. Two midwives were struck off the Roll, the following charges, amongst others, having been brought forward:—

A case being one of abortion and the patient suffering from excessive bleeding the midwife did not explain that the attendance of a registered medical practitioner was required, as provided by Rule E. 21 (2 and 3); the midwife neglecting to take and record the pulse and temperature of the patient at each visit, as required by Rule E. 14; neglecting to enter her records of pulse and temperature in a notebook or on a chart, carefully preserved, as required by Rule E. 14, and falsely denying all knowledge of the case when questioned by the Inspector of Midwives, and making false statements as to the entries in her register of cases. Being in attendance as a midwife at a confinement, the case being one of twins, and medical aid having been sought for both children, the midwife neglected to notify the Local Supervising Authority thereof, as required by Rule E. 22 (1) (a); one of the twin children suffering from inflammation of, and discharge from, the eyes, she did not explain that the case was one in which the attendance of a registered medical practitioner was required, as provided by Rule E. 21 (5), and medical aid having been sought for the said child she neglected to notify the Local Supervising Authority thereof, as required by Rule E. 22 (1) (a).



**EPSOM COLLEGE.**—The sixty-sixth annual general meeting of the Governors of Epsom College was held on June 27th at 37, Soho-square, W., when Sir Henry Morris, the treasurer, presided, and was supported by a large number of governors. The treasurer moved the adoption of the report for the past year, which showed that there was a moderate surplus on the income and expenditure account, though this could only be looked upon as a temporary saving, in view of the fact that only pressing repairs had been carried out at the College owing to the Government's restriction on building, the lack of labour, and the high cost of materials. A bequest of £5000 less £500 duty was noted from the late Mr. Henry Duncalfe for the purpose of establishing annuities for "the daughters of medical practitioners who shall be and so long as they shall remain unmarried and who shall have attained the age of 50 years." The pensions will be of the annual value of £30, and the election remains in the hands of the council of the College. The report further stated that the War Memorial Fund, instituted by the Old Epsomian Club with a view to rebuilding the nave of the chapel in harmony with the new chancel and to place in it a suitable monument bearing the names of old Epsomians and Epsom masters who have sacrificed their lives in the war, had not been responded to so generously as the committee of the fund expected. It was pointed out that contributors to this fund would be given the same voting privileges as those allotted for contributions to the Royal Medical Foundation of the College. One of the vice-presidents of the College, Dr. Ralph Gooding, had established, said the report, a prize for annual competition amongst the students of the College to be called "The Ralph Gooding Botany Prize." The report concluded by stating that over 800 Old Epsomians had served with the Forces, and that in the Roll of Honour were included 122 who had died on active service. 72 Old Epsomians had been mentioned in despatches, 1 was awarded the Victoria Cross, and 83 received decorations and honours for war services.

In proposing the adoption of the report the Chairman drew attention to the fact that the bequest from the late Dr. Strong, which had been reported in the press recently, was left for the specific purpose of increasing pensions and for providing new pensions. He also mentioned the need of special gifts for other purposes, such as building, repairs, reducing the mortgage, making good the depreciation of stocks, and providing for increases in masters' salaries. The expenditure in future on the last-named item would be greatly increased owing to the provision of higher salaries for masters.

The meeting was concluded by a unanimous vote of thanks to the Chairman for presiding.

**THE Royal Society of Medicine** has nominated Sir Humphry Rolleston as representative of the society on the panel to be appointed by the Minister of Health to assist him in selecting a Consultative Council.

**THE RESEARCH DEFENCE SOCIETY.**—This society held its annual general meeting on June 26th at the house of the Medical Society of London, 11, Chandos-street, Cavendish-square, where it now has its office and official address. Lord Knutsford presided, and the meeting was very well attended. A short address was given by Sir Anthony Bowlby on Experimental Medicine and the Sick and Wounded in the War. Sir Frederick Macmillan proposed, and Captain Walter Elliot seconded, a vote of thanks to him. The committee's report gives an account of the society's lectures and of the measures taken against the Dogs' Protection Bill. "We have reason to congratulate ourselves on the strength of the opposition to the Bill in the newspapers, in the House of Commons, and at the Home Office; and we may fairly claim some of the credit for it. Certainly, ten years ago, neither the Government nor the press would have been so outspoken against a Bill which very naturally appealed to those who had not studied the subject." The honorary treasurer's report stated that the finances of the society were in a satisfactory state. "We have been able, after meeting all our expenses, to invest £500 in War Stock. This, added to our previous holding—amounting in all to over £1500—constitutes a valuable reserve to meet any extra expenditure which the work of the society may necessitate." Captain Walter Elliot, M.P. for Lanark, has consented to be assistant honorary secretary, working with Mr. Paget as honorary secretary. The committee greatly hope that some of the society's members will offer to give one or two simple, popular lantern lectures during the coming autumn and winter. There is a steady demand for lectures on such subjects as the work of Pasteur and of Lister, the recent discoveries in preventive medicine, and the medical and surgical facts of the war. It is quite simple lectures that are especially wanted in our small towns, our villages, our schools. The Research Defence Society has a good collection of lantern slides, and the honorary secretary will be very glad to be of any use to anybody who will give a lecture of this kind.

## Parliamentary Intelligence.

### NOTES ON CURRENT TOPICS.

#### *The Select Committee on Pensions.*

Field Marshal Sir DOUGLAS HAIG was a witness before the Select Committee on Pensions at the House of Commons on Tuesday, July 1st. In the course of his statement he called attention to the medical boards. In some cases, he said, the members of the board were ignorant of the actual diseases suffered. In others they were lacking in all sympathy and generosity. There was no uniformity in their decisions, and some treated every wretched individual who appeared before them as a malingeringer. He strongly advised the appointment of a selected combatant officer to act as assessor, so as to produce some confidence in the decision. Again, in some cases the disability was reassessed at the Ministry of Pensions to the individuals disadvantage. That this should be done without the individual being seen or heard was contrary to all ideas of British justice. He urged a more generous and sympathetic treatment to all who suffered from gas poisoning, shell shock, and neurasthenia. It was admitted that their suitable employment was no easy matter. Employers were shy of giving them appointments. The most piteous appeals brought to his notice cried for an immediate reform in the method of treatment.

### HOUSE OF COMMONS.

THURSDAY, JUNE 26TH.

#### *Ministry of Health Appointments.*

Lieutenant-Colonel DALRYMPLE WHITE asked the Prime Minister whether, as regards appointments to the new Ministry of Health, consideration would be given to the applications of officers and men who had served throughout the war, even though they might be slightly over the age hitherto laid down for admission to the Civil Service?—Mr. STANLEY BALDWIN (Financial Secretary to the Treasury) replied: The normal age limits for candidates for Civil Service appointments fixed before the war have been extended so that candidates at the competitions now being held under the reconstruction scheme who have served in the Forces may deduct from their age the full period of the war. This extension will apply to candidates for posts in all Departments alike, and I am not prepared to make any special provision for the new Ministries.

#### *Hospital at Chepstow.*

Mr. H. JONES asked the Parliamentary Secretary to the Shipping Controller whether the hospital built at Chepstow in connexion with the national shipyards, at a cost of about £100,000, was now empty and derelict; whether such hospital was built by contract; if so, who was the contractor; when was the work commenced; and on what date was the contract signed?—Colonel LESLIE WILSON replied: The hospital at Mount Pleasant, Chepstow, has been taken over by the Ministry of Pensions as from May 31st last for the treatment of neurasthenic and other cases. The building was erected by contract by Messrs. Henry Boot and Sons, and was commenced in December, 1917. The contract was finally signed on August 2nd, 1918.

#### *National Insurance Bill.*

Major ASTOR, Parliamentary Secretary to the Local Government Board, presented a Bill to alter the rate of remuneration for the purposes of exception from insurance under the National Insurance Acts, 1911 to 1918, and for purposes connected therewith. The Bill was read a first time.

FRIDAY, JUNE 27TH.

#### *Dogs' Protection Bill: Third Reading Negatived.*

On the motion for the third reading of the Dogs' Protection Bill proposed by Sir F. BANBURY,

Sir WATSON CHEYNE moved as an amendment that "This House declines to proceed further with a measure which would impose an unnecessary and vexatious obstacle to medical research." He said that he had not as yet spoken in the House on this Bill. He quite recognised the value of the amendment moved on the report stage as an alternative to the Bill itself, but the more he looked at the amendment the more he felt that it introduced a very great obstacle to research in these matters. It seemed a very little thing to get an additional certificate, but he would show that it really was not, and the very matter of getting this additional certificate was an obstacle which ought not to be introduced at the present time. From another point of view he did not think this Bill should be proceeded with, and that was because it involved a very grave censure upon a large body of honourable men and a great profession for which there was no justification whatever. He did not think the House realised what an



amount of obloquy had already been thrown upon men who were only trying to do something which might be of great use to mankind and science. The Bill as it stood practically stated that the House had gone carefully into the matter of all these accusations, and it implied that cruelty was being practised, that the medical profession delighted in torture, and that they could not be trusted in the matter of animals.

Sir F. BANBURY: That is not in the Bill.

Sir WATSON CHEYNE said that he asserted that that was what it implied; and for these reasons it was alleged that it was necessary to tie the hands of medical men still further, even though such a proceeding might involve a serious loss to humanity. He could speak of this matter from first-hand knowledge, because at one time he held certificates and licences for a number of years and later on in his career he became one of those who had the responsibility of signing certificates. Having sketched with some detail the rise of the study of bacteriology in connexion with clinical medicine and research, and the restrictions put upon animal investigations in the past, Sir Watson Cheyne protested against the further restrictions proposed by the Bill, which must result in lost enthusiasm and helated work. He gave a vivid picture of humanitarian exaggerations, illustrated to the House what an "animal experiment" really meant, showing why dogs were sometimes needed in the continuation of research, why post-mortem examinations could not take the place of experiments, and why many experiments, which had proved of immense value to the world in the past, might have been prevented by difficulties in the obtaining of certificates such as were foreshadowed in the Bill. The position then might be reached that we should have to go to Germany for our discoveries.

#### *Further Criticism of the Bad Effects of the Bill.*

Sir P. MAGNUS seconded the amendment. He said that the Bill proposed to impose further restrictions on a measure of great and fundamental importance to the health of the country. If it were for no other reason than preventing any reproach which was implied in the very title of the Bill attaching to the distinguished medical men who performed these experiments, that would be an amply sufficient reason for rejecting the Bill. If the Bill was passed in the form in which it stood, ignorant people who subscribed to the antivivisection funds would go about saying that the Bill had been passed in the House of Commons for the further restriction of experiments on animals, and that although it was true that the Bill had been passed with slight amendments, nevertheless a Bill had been passed saying that experiments on animals were cruel and inhuman. That would produce a very bad effect. Unless the Bill were rejected the friends of antivivisection would say that they had gained something from its passing, and the large sums of money which were absolutely wasted in the propaganda against vivisection would continue to be wasted, and the sums of money contributed by sympathetic and benevolent old ladies of both sexes which might be expended on founding research laboratories would be expended in the huge advertisements which met one wherever one went in support of objects which were not only useless but detrimental to the purposes of medical research. By the rejection of the Bill Parliament would show its appreciation of the efforts that had been made by scientific men through these researches to prevent and cure diseases, and it would be an argument in favour of research generally. The Bill itself was very inconclusive and contradictory.

Sir F. BANBURY said that the mover of the amendment seemed to have forgotten that a great change had been made in the Bill since it obtained its second reading. All that it did now was to require that a special certificate must be secured in the event of a dog being used for certain experiments. The amendment by which the form of the Bill was changed on the report stage was recommended to the House by a Member of the Government on the ground that the Government wished to make the measure accord with the recommendations of the Royal Commission, and all that the Bill now did was to say that a certificate must be required. Now they had the Government represented by another Minister sending out a three-line whip in order to cancel and render nugatory the amendment which they had themselves put into the Bill a short time ago.

HON. MEMBERS: And quite right, too!

Sir F. BANBURY said it was a breach of faith with the House. (Cries of "No, no" and "Nonsense.")

Sir H. CRAIK said he did not consider the attitude of the Government as inconsistent. He asked if it was suggested that men had no right to use animals for human advantage. If a shred of danger to human life was involved, would anyone in order to seek aid for a child of his own or anyone else's not even ride a horse to the death?

#### *The Bill Contrary to the National Well-being.*

Dr. ADDISON (Minister of Health) said he refused to bow under the reproach poured upon the Government and argued that there was nothing inconsistent in their attitude. They

had come to the conclusion that notwithstanding the amendment inserted on the report stage they would still advise the House to reject the Bill. There was no inconsistency in that procedure. The Bill, as it stood, would permit a number of experiments on dogs. Sir F. Banbury said it was only a question of a certain certificate being required. That was just it; it was something they had to do in addition to what they had to do now. Already a licence must be held for an experiment upon an animal, and the experiment must be performed in a licensed place; the animal must be fully anaesthetised, and must remain under the anaesthetic without recovery unless another certificate was obtained to permit the animal to recover, as was sometimes desirable when experiments in feeding were being made. A further condition in regard to dogs and cats was that an additional certificate was required that either a dog or a cat were necessary on which to make the experiment. By the Bill it was proposed to add to all these conditions and qualifications the requirement of a further certificate that the object of the experiment would necessarily be frustrated unless it were performed on a dog, and that no other animal was available for such experiment. That was a considerable thing to ask in addition to all the other requirements. The practical question was, were they justified in imposing that further restriction on people who were already very strictly restricted, especially in the case of dogs? He had not heard a case brought forward in which there had been an abuse of the existing procedure, or in which it had been shown that the present very exacting scheme of restrictions had been found to be insufficient. There seemed to him no reason for putting a further restriction on research. Dogs had been used in the research in connexion with poison gas because with them it could be seen, as it could not be seen with horses or mules, for example, whether the protection was reasonable or not; and the finest mask which was on the battle-field was elaborated. It would have been asking too much of the men who performed those experiments that they should need all the licences and certificates which he had enumerated. Then there were the series of painless experiments which were going on with relation to rickets in children, which some authorities believed to be due to the lack of a certain element of diet. Dogs could be kept in a laboratory and fed on a mixed diet at stated intervals, and they were being used for that purpose; but it would be unreasonable to require proof that the experiments would necessarily be frustrated unless they were performed upon dogs. These experiments were stated to be progressing, and it was to be hoped that they would be successful. It was still clear that as the Bill now stood it would make demonstration difficult and embarrassing, contrary to the best interests and well-being of the people. On that account, without any hesitation, any breach of faith, or any misgiving, he asked the House to reject the Bill on third reading.

After further discussion the House divided, when there voted—

For the third reading . . . . .	62
Against . . . . .	101

Majority against . . . . . 39

The Bill was accordingly rejected.

#### *Nurses' Registration Bill.*

The House considered the Nurses' Registration Bill as amended in Standing Committee.

An amendment was agreed to defining the term "registered children's nurse" as a children's nurse who was for the time being registered in the children's nurses' supplementary register.

Another amendment was also agreed to raising the membership of the Council from 42 to 45 members.

Lieutenant-Commander ASTBURY moved to leave out paragraphs (a) to (k) inclusive in Subsection (1) of Clause 4 relating to the constitution and appointment of the Council. The amendment was resisted by Dr. ADDISON in the name of the Government, and the debate upon it was adjourned.

MONDAY, JUNE 30TH.

#### *Local Government Board Vote.*

On a vote for £1,380,377 for the Local Government Board, Dr. ADDISON (Minister of Health) said that this Vote would in future be incorporated in the Vote for the Ministry of Health. In connexion with demobilisation, one of the earliest fears that had been entertained—which had been justified to some extent by the event—was that so many men serving overseas in countries where they were likely to be infected with tropical diseases of various kinds might mean the spread of the diseases in this country. An interdepartmental organisation was accordingly set up to prevent the spread of such diseases, and, in the main, the methods which had been adopted had proved to be successful. In addition, a committee dealt with the subject of tuberculosis, which in many cases had been aggravated by hardships arising out of the war, and the



Board hoped to receive their recommendations in a short time. On June 1st the number of soldiers infected with the disease in institutions was 2000, and on the waiting list there were 364.

*The Work of the Medical Department of the L.G.B.*

The medical services of the Board, which now became merged in the Ministry of Health, were very diverse, but with respect to some of them they were only at the beginning. Up to the present they had had only 19 cases of small-pox, all of which had been arrested, and there were several cases of cholera, dysentery, and so on, which also had been prevented from spreading.

*Rabies.*—With regard to rabies, 54 cases had been notified, and six centres had been established in the country where anti-rabies vaccine could be obtained. The first 19 persons affected had to be sent to Paris, but subsequently 24 were treated in England, and 11 were afterwards treated with vaccine prepared in our own laboratories. It was rather a reflection upon us as a nation that we were dependent upon supplies obtained from our Allies in the early stages of the disease. None of the cases, he was glad to say, had developed into hydrophobia.

*Influenza.*—During the six months ended March 31st in England and Wales alone there were 136,000 deaths where influenza. That indicated the necessity for spending money in conducting research and inquiry into influenza, but at the present time he would not hold out any sanguine hopes of what they might be able to do in that direction. A great deal of inquiry was necessary before they could speak with any hopefulness on that subject.

*Veneral diseases* was another topic on which he ought to say a word. They had a number of critics of the action they had taken. Under the Regulations issued in July, 1916, 75 per cent. of the cost of schemes designed to conquer venereal diseases was paid by the State. There were at the present time 146 centres, of which some were exceedingly good. A large number of those centres were not, in his opinion, doing as well as they would do in time, and they needed not only 140 but 1000 centres at the very least. The difficulty was to obtain the staff with the modern training arising out of the experiences of the war to carry them on. It would only be gradually, and they would develop and train the personnel and organisation throughout the whole country to make the best use of these centres. The Board had sometimes been blamed because they did not support compulsory notification. His view—and he thought the Committee would support him—was that it was quite hopeless to require compulsory notification until they had completely or substantially completely organised throughout the country efficient and up-to-date methods of treatment, otherwise they would drive people wholesale into various imperfect methods and very largely into the arms of quacks. One very important matter that they had got to work out in detail was to try to get the centre conducted on such lines that the people needing its assistance would readily go to it. The numbers in attendance in 1917 were 205,000; in 1918 they were 488,000.

*Tuberculosis.*—With regard to tuberculosis, although they had increased the number of beds available by 1500 during the past year, their methods were far from being sufficient, and it was quite useless to expect that they would be able successfully to cope with the disease until they had got an improved state of national housing. They had at present before them proposals for 3300 additional beds. The grants made last year were £383,000.

*Maternity and child welfare centres* was another branch of their work which they would have to develop, and this went hand in hand with improved nursing and midwifery services. All these services were to a great extent in an experimental stage, and in all of them the limiting factor was the getting of the trained assistance necessary to do the work.

*The blind.*—The latest development of all was in connexion with the treatment of the blind. A Committee which had been working since 1917 with certain regional committees had made the fullest survey of the blind population of the country and had examined all the institutes where training was given. Just lately the Government had sanctioned the provision of £125,000 to be distributed in assisting the blind in their workshops, in homes and hostels, for home teaching, and for various miscellaneous services in institutions that had been carefully examined and approved.

Sir D. MACLEAN thought and Dr. Addison's statement was interesting but not satisfactory. It was shocking to hear that in six months the country had suffered the loss of 136,000 lives, many of them, no doubt, old people who could not pull their full weight in the national boat, but still the majority men and women in full activity. As the health of the community ought to be their first and most important care, he threw out the suggestion that the right honourable gentleman should make a statement on housing conditions and health matters at least once a month in order to stimulate local authorities and to spread knowledge as to the best way of meeting what in many cases were easily preventable diseases.

Lieutenant-Colonel RAW deplored the ravages caused by tuberculosis, and said that with the advent of the Ministry of Health he was certain that a much greater effort would be made to stamp out what was a preventable disease. There should be a much more generous system, and facilities should be provided free of charge at the national expense for treatment in the early stages of tuberculosis. Prevention was far better than cure. He suggested the advisability of a great educational campaign, the establishment of a national health institute, and the appointment of lecturers to instruct the public that this disease ought not to be in our midst. He went on to criticise the milk-supply of the country.—Lord H. CAVENDISH-BENTINCK complained that the Government was not doing all it should do to improve the very unsatisfactory treatment which was being accorded to discharged soldiers suffering from tuberculosis.

Major ASTOR (Parliamentary Secretary to the Local Government Board), replying to the debate, said that the Ministry of Health would embark on its official career with a real vision of what it hoped to do. He would not say that the number of institutions now available for the treatment of tuberculosis was adequate either in number or quality. But there was great difficulty in providing fresh institutions during the war. In 1914 the number of deaths from tuberculosis was 38,600 and in 1917 it was 43,100. These figures, however, must not be taken too rigidly. Allowance must be made for the fact that diagnosis was improving. Still there was no diminution. The disease was one which depended upon the social conditions of the people, and these had to be improved. Generally speaking, their policy was more and better accommodation and better treatment. He believed that the development of workshops and the provision of occupation would assist enormously. The lines they were going on were that it was far better to provide treatment for the population as a whole than merely to provide treatment for the tuberculous ex-soldier. The whole tendency was against specialising in particular diseases, but to make the local authorities and medical officers competent to deal with anything that might arise.

*The Welsh Board of Health.*

Brigadier-General Sir OWEN THOMAS asked the Secretary to the Local Government Board, as representing the National Health Insurance Commissioners, if the Welsh Insurance Commissioners had been appointed the Welsh Board of Health under the Ministry of Health; if so, whether he consulted the Members representing Wales before making the appointment; and whether he was aware that there was dissatisfaction in Wales with the manner in which the Commissioners discharged their duties as insurance commissioners.—Major ASTOR replied: The members of the Board of Health in Wales are appointed by the Minister of Health under Section 5 of the Ministry of Health Act, 1919; the three persons appointed as initial members have hitherto been members of the Welsh Insurance Commission, but the Board is not yet complete. The answer to the concluding part of the question is in the negative.

Sir O. THOMAS: Will the honourable gentleman make inquiries as to whether these three gentlemen have been on speaking terms for the last two years?—Major ASTOR: It would be very difficult to find out.

TUESDAY, JULY 1ST.

*Disabled Men and Compulsory Insurance.*

Colonel ASHLEY asked the Minister of Health whether, in view of the inequality of treatment meted out to totally disabled pensioners as compared with partially disabled pensioners in the matter of sickness and disablement benefits, men in receipt of disablement pensions amounting to over £26 per annum might be regarded as eligible for exemption from compulsory insurance or, alternatively, that no reduction of benefit should be made to a man drawing a total disablement pension if he was incapacitated from following his employment owing to causes unconnected with his pensionable disabilities.—Major ASTOR replied: A man in receipt of any disability pension exceeding £26 per annum is entitled to a certificate of exemption under the National Insurance Acts. It would not be feasible to carry out the suggestion contained in the last part of the question owing to the difficulty in practice of differentiating between incapacity resulting from the original disability and incapacity resulting from other causes. But the 1917 Act provides for the resumption of the right to full sickness benefit in the case of any total disability pensioner who has, in fact, re-established his working capacity.

LITERARY INTELLIGENCE.—Mr. C. T. Kingzett, F.I.C., the chairman of the "Sanitas" Company, Ltd., and one of the founders of the Institute of Chemistry, is preparing for early publication by Messrs. Baillière Tindall, and Cox (London), an abridged "Popular Chemical Dictionary" in a single volume.—Mr. Kimpton will supply a copy of an erratum slip for Macleod's Physiology and Biochemistry in Modern Medicine, recently published, to any reader who desires it.



## Appointments.

BANKS, CYRIL, M.B., B.S. Lond., D.P.H., has been appointed Medical Officer of Health of Stafford.  
 BREWER, W. K., M.R.C.S., L.R.C.P. Lond., Honorary Anaesthetist to the National Dental Hospital, Great Portland-street.  
 GRAY, H. T., F.R.C.S., Honorary Surgeon to the Infants Hospital, Vincent-square, Westminster.  
 TIBBLES, SYDNEY, L.R.C.P. & S. Edin., Honorary Ophthalmic Surgeon to Western General Dispensary.  
 Royal West Sussex Hospital, Chichester.—H. E. RUTHERFORD, M.D., B.Ch., B.A.O. Dub., Honorary Physician; HAMILTON, G., M.B., B.S. Lond., Honorary Assistant Surgeon; and EUSTACE, G. W., M.D. Dub., Honorary Radiographer.  
 St. Thomas's Hospital.—BIRLEY, J. L., M.D., B.Ch. Oxon., and TIDY, H. L., M.D., Ch.B. Oxon., Physicians in charge of Out-patients; PAGE, C. M., M.B., M.S. Lond., and ROMANIS, W. H. C., M.B., M.C. Cantab., Surgeons in charge of Out-patients; JEWESBURY, R. C., M.D. Oxon., Physician in charge of the Children's Department; WYATT, J., M.B., B.S. Lond., Obstetric Physician in charge of Out-patients; JONES, SIR ROBERT, K.B.E., Director of the Orthopaedic Department; and WORDLEY, E., M.B., B.C. Cantab., Medical Registrar.

## Vacancies.

For further information refer to the advertisement columns.

Ashlon under Lyne, Lake Hospital.—Res. Asst. M.O. £300.  
 Barnsley, Beckwith Hospital.—H.S.  
 Belgrave Hospital for Children, Clapham-road, S.W.—Asst. P. Also Asst. S.  
 Bezel, Kent, London County Mental Hospital.—Asst. M.O. 7 gns a week.  
 Birkenhead Borough Hospital.—Hon. Dentist.  
 Birmingham General Hospital.—Res. M.O. £155.  
 Birmingham, St. Chod's Hospital, Edgbaston.—Res. M.O. £150.  
 Bradford City, Odal Sanatorium.—Res. Asst. M.O. £300.  
 Bristol, Cosham Memorial Hospital, Kingswood.—Res. M.O. £200.  
 Cape Town University, South Africa.—Profs. of Med., Surg., Obstet. and Gynec. £1250 each.  
 Carmarthen Mental Hospital.—Second Asst. M.O. £250.  
 Chelsea Hospital for Women, Arthur-street, S.W.—H.S. £120. Also Registrar. £50.  
 Chorley Borough Education Committee.—Asst. Sch. M.O. £400.  
 Devonport, Royal Albert Hospital.—Res. H.S. £200.  
 Edinbane, Isle of Skye, Gesto Hospital.—Res. M.O. £300.  
 Evelina Hospital for Children, Southwark, S.E.—Hon. P. and S. to Out-patients. Also Hon. Dental S. Also H.P. £160.  
 Glasgow Education Authority.—Asst. M.O. £400.  
 Great Northern Central Hospital, Holloway, N.—H.S. £150.  
 Greenwich Metropolitan Borough.—Female M.O. for Maternity and Child Welfare Work. £400.  
 Greenwich Union Infirmary, Vanbrugh Hill, East Greenwich, S.E.—Dep. Med. Supt. and Asst. Med. Supt. £400 and £300 respectively.  
 Hong Kong.—Bact. and Path. £600.  
 Hospital for Consumption and Diseases of the Chest, Brompton.—H.P. Hospital in Serbia.—Surgeon.  
 Hospital for Sick Children, Great Ormond-street, London, W.C.—P. and S. Also Surgical Registrar. £200. Also H.S. £50.  
 Huddersfield County Borough, Bradley Wood Sanatorium. Res. M.O. Hull, City and County of Kingston-upon-Hull Infectious Diseases Hospitals.—Res. M.O. £450.  
 Italian Hospital, Queen-square, London, W.C.—Hon. Asst. S.  
 London (Royal Free Hospital) School of Medicine for Women.—Two Demstrs. of Anat. £250. Also Female Pharm. £250.  
 London Temperance Hospital, Hampstead-road, N.W.—Cas. O. £120.  
 Loughborough and District General Hospital and Dispensary.—Res. H.S. £250.  
 Liverpool, Bootle Hospital, Derby-road.—Hon. Ophth. Surg. and Hon. Dent. Surg.  
 Maidstone, West Kent General Hospital.—H.S. and Asst. H.S. £250 and £125.  
 Manchester Children's Hospital, Gartside-street.—Asst. M.O. £200.  
 Manchester Children's Hospital, Pendlebury, near Manchester.—Res. M.O.'s £150.  
 Manchester City.—M.O. £450.  
 Manchester Ear Hospital, Grosvenor-square, All Saints—H.S.  
 Manchester, St. Mary's Hospitals for Women and Children.—Two H.S.'s £100.  
 Merthyr Tydfil County Borough.—Female M.O. for Maternity and Infant Welfare Work. £500.  
 Mile End Infirmary, Bouverie-road, E.—First Asst. M.O., Second Asst. M.O. £300 and £250.  
 Miller General Hospital for South East London, Greenwich-road, S.E.—Hon. Asst. Gynec.  
 Otago University, New Zealand.—Prof. of Syst. Med., Prof. of Clin. Med. and Therap., and Lect. on Clin. Med. £600, £500, and £400 respectively.  
 Plymouth, South Devon and East Cornwall Hospital.—H.P. £140.  
 Port Sunlight Cottage Hospital.—Res. M.O. £250.  
 Prince of Wales's General Hospital, Tottenham, N.—Hon. Asst. P., Hon. Med. Regist., and Hon. Anaesth. Also Clin. Assists.  
 Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—Phys. to Out-patients.  
 Queen Mary's Hospital for the East End, Stratford, E.—Two Asst. Hon. P.'s.  
 Rhondda Urban District Council.—Asst. Sch. M.O.'s and M.O.H.'s. £500. Also Two Dent. Surgeons. £400.  
 Royal Chest Hospital, City-road, E.C.—Asst. P.  
 Royal London Ophthalmic Hospital, City-road, E.C.—Curator and Librarian. £120.  
 St. Bartholomew's Hospital.—Asst. Administ. of Anaesth.  
 St. Helen's Education Committee.—Dentist. £400.  
 St. Mary's Hospital for Women and Children, Plaistow, E.—P. to In-patients and Out-patients, P. to Skin Out-patients, Dental S.

St. Peter's Hospital, Henrietta-street, Covent Garden, W.C.—Anaesth. £25.  
 Salford County Borough Education Committee.—Asst. School M.O. £400 to £600.  
 Salford Royal Hospital.—Three Anaesths. £50.  
 Sheffield Royal Infirmary.—Asst. H.P. £150. Oph. H.S. £150.  
 Southampton County Borough Isolation Hospital.—Res. M.O. £400.  
 Southern Rhodesia.—District S.'s. £375 to £500.  
 University College Hospital, Gower-street, W.C.—Clin. Asst.  
 Wakefield General Hospital.—Jun. H.S. £150.  
 Wigan Infirmary.—Jun. H.S. £225.  
 Willesden Urban District Council.—Locum Tenens Asst. M.O. 10 gns. p.w.  
 Winchester, Park Prewett Asylum.—Med. Supt. £1000.  
 Winchester, Royal Hampshire County Hospital.—Obstet. P.  
 Wolverhampton and Staffordshire General Hospital.—Path. & Bac. £350.  
 Also Res. M.O. £200.  
 Workop, Victoria Hospital and Dispensary.—H.S. and M.O. £250 to £300.  
 York Dispensary.—Res. M.O. £250.

## Births, Marriages, and Deaths.

### BIRTHS.

BLAKEWAY.—On June 29th, at The Cottage, Poplar-grove, Woking, the wife of the late Harry Blakeway, M.S., F.R.C.S., B.Sc., of a daughter.  
 COLLINS.—On June 26th, at the White House, Yoxford, Suffolk, the wife of Dr. E. A. Collins, of a son.  
 WINDER.—On June 23rd, at Upper Fitzwilliam-street, Dublin, the wife of Captain A. S. M. Winder, R.A.M.C., of a daughter.

### MARRIAGES.

HOWE—BARRETT.—On June 24th, at St. Barnabas Church, Woodside Park, George Hubert Howe, L.D.S. R.C.S. Eng., to Kathleen, elder daughter of the late Mr. S. G. Barrett, of Liskeard, Cornwall, and of Mrs. Jenking, Plymouth.  
 PHILLIPS—SMITH.—On July 2nd, 1919, at All Saints' Parish Church, Bradford, by the Rev. A. F. Alston, James Phillips, F.R.C.S.E., Major, R.A.M.C., to Rose Agnes Smith, daughter of Mr. David Smith, of Windsor-road, Southport.  
 SILLARS—OGILVY.—On June 26th, at the Parish Church of Clova, Kirriemuir, Joseph Sillars, M.B., C.M., Kirriemuir, to Margaret Elizabeth, youngest daughter of the late Mr. David Ogilvy and Mrs. Ogilvy, Rottal, Clova.  
 SMITH—DRUMMOND.—On June 28th, at St. Augustine's, Queen's Gate, Captain Charles Rees Smith, R.A.M.C., to Helen Fidena, youngest daughter of the late John Drummond, Esq., of Sevenoaks, and Mrs. Drummond, Manson-place, Queen's Gate, S.W.  
 WILLIAMS—DURANT.—On June 26th, at Highbury Chapel, Bristol, Captain Geoffrey Comeline Williams, R.A.M.C. (T.F.), to Irene Mary, daughter of the Rev. W. F. and Mrs. Durant, of Woodland-road, Tyndall's Park, Bristol.

### DEATHS.

CARTWRIGHT.—On June 23rd, at Oswestry, John Peplow Cartwright, M.R.C.S. Eng., aged 70.  
 FEARSIDES.—On June 28th, as the result of a boating accident, Edwin Greaves Fearnside, M.D., F.R.C.P., Assistant Physician at the Hospital for Epilepsy and Paralysis, Maida Vale, late Major, R.A.F. Medical Service.  
 MCCALL.—On June 27th, of pneumonia, at a nursing home, Sir John McCall, K.C.M.G., M.D., LL.D., Agent-General for Tasmania, aged 58.  
 PUREFOY.—On June 27th, at his residence, Merriem-square, Dublin, E. Dancer Purefoy, LL.D., M.D., F.R.C.S.I., late Master of the Retunda Hospital, Dublin.  
 SAVERY.—On June 25th, 1919, at Budleigh Salterton, Devon, Dr. W. H. Savery.  
 SIMPSON.—On June 27th, at Scroope-terrace, Cambridge, Captain James Christian Simpson, R.A.M.C. (T.), M.D. Edin.  
 N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

### BOOKS, ETC., RECEIVED.

BALE, JOHN, SONS, AND DANIELSSON, London.  
 Barbed Wire Disease: A Psychological Study of the Prisoner of War. By A. L. Vischer, M.D. Translated from the German with additions by the Author. With Introduction by S. A. Kinnier Wilson, M.D. Pp. 84. 3s. 6d.  
 CHURCHILL, J. AND A., London.  
 First Lines in Dispensing. By E. W. Lucas, F.I.C., and H. B. Stevens, F.I.C. 2nd ed. Pp. 182. 6s.  
 HEFFER, W., AND SONS, London.  
 Practical Physiological Chemistry. By S. W. Cole, M.A. 5th ed. With Introduction by Professor F. G. Hopkins. Pp. 401. 15s.  
 HEINEMANN, WILLIAM, London.  
 Anaesthesia and the Nurse's Duties. By A. de Prenderville. With Introduction by Sir James Cantlie, K.B.E. Pp. 100. 3s. 6d.  
 Anaphylaxis and Anti-Anaphylaxis and their Experimental Foundations. By Dr. A. Besredka and Dr. E. Roux. English edition by S. Roodhouse Gloyne, M.D. Pp. 143. 6s.  
 KEGAN PAUL, TRENCH, TRUBNER AND CO., London.  
 Geriatrics: The Diseases of Old Age and their Treatment. By I. L. Nascher, M.D. 2nd ed. Pp. 527. 21s.  
 Rest, Suggestion, and other Therapeutic Measures in Nervous and Mental Diseases. By F. N. Dercum, M.D. 2nd ed. Pp. 335. 21s.  
 MACMILLAN AND CO., London.  
 On Longevity and Means for the Prolongation of Life. By Sir Hermann Weber, M.D., F.R.C.P. 5th ed. Pp. 292. 12s. net.  
 MURRAY, JOHN, London.  
 Heredity. By Professor J. Arthur Thomson. 3rd ed. Pp. 627. 15s.  
 THE NILE MISSION PRESS, Cairo.  
 The Surgery of Egypt. By F. C. Madden, M.D. Pp. 394.



# Medical Diary for the ensuing Week.

## SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

### MEETINGS OF SECTIONS.

Wednesday, July 9th.

NEUROLOGY (Hon. Secretary—C. M. Hinds Howell): at 8.30 P.M.

Paper: Colonel E. Farquhar Buzzard: Encephalitis Lethargica and its Results.

Colonel Buzzard will also demonstrate Cases.

Friday, July 11th.

PSYCHIATRY (Hon. Secretaries—Bernard Hart, G. F. Barham): at 8.30 P.M.

Paper: Dr. C. G. Jung (of Zurich): The Problem of Psychogenesis in Mental Diseases.

### NOTICE.

The Society's house will be closed for cleaning during August.

The Royal Society of Medicine keeps open house for medical officers of all the Allied Forces, and invites them to make free use of its library and rooms. The Emergency Post Graduate Scheme, under the charge of the "Fellowship of Medicine," is also open to all medical officers. Particulars of this will be supplied by the Secretary. Fellowship of Medicine, 1, Wimpole-street, London, W.1.

## LECTURES, ADDRESSES, DEMONSTRATIONS, &c. HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.

WEDNESDAY, July 9th.—4.30 P.M., Lecture:—Dr. Gosse: Rheumatic Myocarditis.

## Communications, Letters, &c., to the Editor have been received from—

- A.—Col. J. G. Adams, C.B.E., A.D.M.S.; Major A. Abrahams, O.B.E., R.A.M.C.; Dr. J. L. Aymard, Cape Town; Sir T. Clifford Allbutt, K.C.B., Cambridge.
- B.—Miss M. A. Broadhurst, Lond.; Dr. S. G. Billington, Lond.; Dr. J. Brown, Blackpool; British Science Guild, Lond.; Major P. Bahr, D.S.O., R.A.M.C.; Dr. J. F. Briscoe, Bournemouth; Col. R. J. Blackburn, C.B., C.M.G., C.I.E.
- C.—Dr. H. G. P. Castellain, Lond.; Major W. B. Cosens, R.A.M.C.; Dr. H. P. Cholmeley, Forest Row; Dr. F. G. Crookshank, Lond.; Dr. P. J. Cammidge, Lond.
- D.—Mr. H. Dickinson, Lond.; Dr. J. F. H. Dally, Lond.; Mr. G. W. Dorley-Brown, Lond.
- E.—Dr. S. Elias, Rotterdam; Mr. D. L. Eadie, Edinburgh; Col. T. R. Elliott, C.B.E., D.S.O., A.M.S., Lond.
- F.—Dr. E. R. Fothergill, Hove; Mr. C. Frankau, C.B.E., D.S.O.; Miss Kate Fedarh, Southsea; Capt. J. N. Ferguson, R.A.M.C.
- G.—Major W. E. Gallie, R.A.M.C.; Mr. U. Ghilardi, Harrow; Dr. A. G. Gibson, Oxford; Col. G. H. Gask, C.M.G., D.S.O., A.M.S.; Dr. A. K. Gordon, Lond.; Capt. J. Geoghegan, R.A.M.C.; Dr. A. Gresswell, Lond.
- H.—Hampstead Medical War Committee.
- K.—Dr. W. Kidd, Cheltenham; Mr. H. Kimpton, Lond.
- L.—Dr. T. M. Legge, C.B.E., Lond.; Dr. C. E. Lakin, Lond.; London (Royal Free Hospital)
- School of Medicine for Women, Warden of; Mr. J. B. Lamb, Lond.; Mr. E. M. Little, Lond.; Dr. R. B. Low, C.B., Lond.
- M.—Dr. J. B. Mennell, Lond.; Minister of Health, Lond.; Dr. H. A. Macewen, Lond.; Dr. A. S. MacNalty, Streatham-on-Thames; Dr. D. Macfarlan, Philadelphia; Miss A. R. Martin, Eastbourne.
- N.—National League for Health, Maternity and Child Welfare, Lond., Sec. of; National Alliance of Employers and Employed, Lond., Sec. of; National Medical Union, Lond., Asst. Sec. of; Mr. A. E. Newbould, M.P., Lond.; N. E. O.
- O.—Dr. S. Otobe, Benenden.
- P.—Dr. A. S. Percival, Newcastle-on-Tyne; Mr. C. A. Pannett, Lond.; Dr. Bedford Pierce, York.
- R.—Royal Society of Medicine, Lond.; Dr. F. Rees, Wigan; Royal Society of Arts, Lond., Sec. of; Dr. J. D. Rolleston, Lond.; Dr. E. H. Ross, Lond.
- S.—Col. A. L. Smith, C.A.M.C.; Dr. Samy Sahong, Abhassieh; Dr. M. B. Shipsey, Erdington; Dr. E. B. Sherlock, Darenth; Prof. W. Stirling, Manchester; Dr. A. G. Shera, Lond.; Messrs. Siemens Bros. and Co., Lond.
- T.—Dr. W. W. C. Topley, Lond.; Sir John Tweedy, Lond.
- U.—University of Glasgow.
- V.—Mr. R. M. Vick, C.B.E., Lond.
- W.—Dr. J. V. Watson, Bolton; Dr. R. T. Williamson, Manchester; Dr. L. A. Weatherly, Bournemouth; Mr. A. C. Wilson, Lond.; Mrs. M. Whyte, Banteer; Dr. R. P. White, Wigan.

Communications relating to editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C.2.

THE Hampstead Medical War Committee announce that Lieutenant Colonel J. R. Whait, D.S.O., 124, Finchley-road, N.W.3; Major H. Meggitt, 180, Belsize-road, N.W.6; Captain W. S. George, 110, Finchley-road, N.W.3; Captain A. W. George, "Surrey House," Shootup Hill, N.W.2; Captain W. E. Hills, 25, Church-row, N.W.3; Captain H. C. Malleson, 30, Thurlow-road, N.W.3, are now demobilised and have returned to practice.

# Notes, Short Comments, and Answers to Correspondents.

## MEDICAL PIONEER AERONAUTS.

By F. JOHN POYNTON, M.D.

### The Airmen of the Eighteenth Century.

THE present seems to me an opportune time to give a few details, even though imperfect ones, of the part taken by our profession in the birth of aeronautics more than a century ago. We shall stray back to those fascinating times when brave pioneers, taking their lives in their hands, struggled to maintain the flickering life of this puling yet long-hopped-for infant, and we shall welcome with pride the men of our profession who helped to lead the way, Tytler and Jeffries, Sheldon and Sakaroff, among them. The reign of Louis XVI. was drawing to a close when his false brother, Egalité, the first royal aeronaut, was a witness of the classical ascents by de Rozier and d'Arlandes. How interesting, too, it is to recall that Garnerin, who first demonstrated to this country the use of the parachute, was aeronautical adviser to the great Napoleon. These early days were not wholly unscientific, for experiments were made with animals before de Rozier's first ascent in 1783, and I have in my possession an interesting little conversation in French dated 1783 and illustrated by a pencil sketch of the Montgolfier balloon with the conversationalists in the car. They were a cock, a duck, and a sheep, and their views on their elevated position are entertaining. A problem for the psycho-analyst is provided by the fact that the Comte d'Arlandes, who shared with de Rozier the glory of the first balloon ascent, was later broken for cowardice in the French army. The collector of medical pictures also will be interested in the first illustration of an injured aeronaut. This represents Arnold, who was pilloried in the *Gentleman's Magazine* in 1785, Vol. II., as "the Unsuccessful Aeronaut." He is seen with his balloon in one corner of the picture, dressed in the costume of the period, stumping on a wooden leg.

### The First British Aeronaut.

The first Briton to make an ascent in this island was "ballooning" or "enterprising" Tytler, who raised himself some 300 ft. from the Comeby Gardens, Edinburgh, on August 27th, 1784. He was a Scot born at Fearn, and was a strange and erratic genius whose fate should stir pity in us, if also, at the same time, some amusement. A poor man, the son of a Scotch minister, he earned a little money as a medical assistant on board a vessel plying to Greenland, with which he completed an honourable student's career at Edinburgh. He then made his first mistake, not unknown even in these days, by marrying a lady before he had means to support a family. He failed to establish himself in Edinburgh, and, always ahead of his times, tried next to conduct a laboratory at Newcastle. When that failed he started a chemist's shop at Leith. Meantime his wife left him and the children and retired to the Orkneys. Now Tytler had a literary turn with novel views on religion, and set to work to write some essays, which he printed on a printing machine of his own invention. This effort attracted attention and he commenced to establish a position for himself as a writer and editor. In 1776 he edited the second edition of the *Encyclopædia Britannica*, and apparently he was now on the up line to fortune. However, in 1783 the balloon epoch commenced, and he was badly bitten by the desire to become an aeronaut and took to the making of fire balloons. He snatched at great cost this one laurel leaf, the first ascent from the ground in this island. It was his only successful attempt, and from henceforth Tytler's career was once more downhill. Soon after he joined the cause of the "Friends of the People" and wrote a seditious article, for which he had to fly the country. After writing a treatise on surgery in Ireland he eventually went to America and died at Salem, away from all his relatives and friends.

### The First Cross-Channel Flight.

Jeffries was an American physician, but unfortunately at present I have not had the opportunity of discovering whether any biography is extant of his career, and would welcome any information on this point. He was the hero, with Blanchard, of the first crossing of the Channel, though he had previously ascended with the same aeronaut from the Rhedarium, near Grosvenor-square. The account of this Channel flight written by himself is a record of serene bravery, for an undertaking of this kind was a big thing in those days. Strong adverse winds had delayed the departure from Dover, and it was not until Jan. 7th, 1785, that the ascent was made on a still, bright, winter day. The aeronauts made very slow progress in their balloon,



for in 50 minutes they were only one-third of the way across the Channel! Trouble soon commenced and took a simple shape, the balloon insisting on descending into the sea. Ballast was heaved over, and then followed numerous pamphlets, which one would have thought from modern experience of such things would have lightened almost anything. For a while, indeed, there was an improvement but not for long, the precious instruments had to go, the balloon trappings, an empty bottle, their great coats, their lesser coats, their breeches, and so on. But what a man! He climbs up the netting and is enraptured at the lovely view he obtains as the balloon slowly revolves! Underneath a January sea is waiting for him, above is a winter sky, and around his immediate person a deficit of clothing! Fortunately for us all, just as they neared the French shore the balloon swept upward, cleared the cliffs, and carried them over the forest of Guines. Trouble was not over yet, but it was of a slightly different kind now, and the doctor's feelings must have been akin to those of the boy who eyes the volume and character of the birch that awaits him. It will be apparent that as the balloon was again rapidly falling, some importance was to be attached to the nature of the tops of the trees upon which they were landing. Jeffries thought they looked both high and hard, and he does incidentally admit that he and his colleague were cold. Now comes the acme of resource and as great a proof of bravery as ever the world can claim, he remembers that their bladders are full—for the weather was cold and the bottle they threw over was empty and the reflexes in those hardy old days were apparently impervious to fear. He estimated that thus they lightened the balloon by some 4 to 5 lb. and, glorious to tell, they landed softly on those trees and were soon warm and safe in the kindly hands of French hosts.

#### *A Professor in the Air.*

Sheldon has the credit of being the first Englishman to make a balloon ascent in England. This event was on Oct. 16th, 1784, although others have maintained that Sadler held this prize, ascending on the 12th from Oxford. There can be no doubt, however, that James Sadler was the first English aeronaut, for he made many successful journeys and had a great career as the first English aerial traveller. Sheldon at this time was professor of anatomy at the Royal Academy, and had been a pupil and assistant of William Hunter in Great Windmill-street. He subsequently became a surgeon to the Westminster Hospital and later to the Devon and Exeter Hospital. Blanchard took him under his wing and made his fourth ascent with him from Chelsea. One enthusiast described their trip as "the most extraordinary voyage ever performed by a sublunary being." Sheldon, too, was apparently satisfied, and returned to his anatomical and surgical studies somewhat humbled in scientific spirit, but not altogether sorry to be once more on the surface of the earth. It is of interest that in the second rapid ascent of the balloon Sheldon complained of pain in the ears.

#### *Remarkable Observations.*

Sakaroff was a Russian aurist who accompanied a very remarkable aeronaut, Robertson, in his Russian balloon ascents very early in 1800. Robertson was one of the few balloonists who made a real success of his job, for he died, we are informed, worth a million! He combined with courage enterprise and a bright imagination. He and his comrades were repeatedly making strange discoveries in the air. For example, one gentleman's head bulged so much that his hat would not fit, and on another occasion their voices became inaudible. One very interesting observation was, however, made by Robertson, that the electric spark is lengthened in the rarefied atmosphere, thus anticipating by many years the Geissler tubes. Sakaroff fades into shadow before his remarkable comrade, but doubtless he added to the early stock of knowledge upon ear troubles in aeronautics. These famous old heroes may make us smile over their difficulties, ambitions, and boasts, but it is with pride that one reads that our profession, apart from its purely scientific contributions to the subject, faced also the early practical dangers and brought us great honour.

#### COLONIAL HEALTH REPORTS.

*Leeward Islands.*—The total population of the colony at the last Census was 127,193. In the province of Antigua, with an estimated population of 31,782, the births in 1917 numbered 1076, being 33.86 per 1000, the percentage of legitimate and illegitimate births being 24.16 and 75.84 respectively. The death-rate was 29.89 per 1000, and the deaths of children under one year, exclusive of stillbirths, were 19.79 per cent. of the total. In St. Kitts the birth-rate was 34.909 per 1000, in Nevis 34.633, and in Anguilla 43.240, while the death-rate for St. Kitts was 29.245, for Nevis 21.207, and for Anguilla 14.767 per 1000. The illegitimate birth-rate for St. Kitts was 25.832 per 1000, for Nevis, 21.774, and for Anguilla 21.007, as against the legitimate birth-rate of 9.070, 12.908, and 22.254 for St. Kitts, Nevis, and Anguilla respectively. In Dominica the birth-rate was 30.65 and the

death-rate 28.18 per 1000; the illegitimate births exceeded the legitimate by 203. In Montserrat the birth-rate was 37.80 and the death-rate 16.21 per 1000. The general health was satisfactory. During 1917 6174 patients were admitted into the hospitals, and there were 340 deaths therein. The average number of inmates in the central lunatic asylum at Skerrets, Antigua, was 153. There are two leper asylums—one at Rat Island, Antigua, and the other at Port Charles in St. Kitts. The average daily number of inmates for the two institutions was 60 males and 48 females.

*British Honduras.*—The estimated mean population in 1917 was 42,732 (21,308 males and 21,424 females). The birth-rate was 40.275 and the death-rate 31.288 per 1000. Illegitimate births were 39.57 per cent. of the total. The health of the Colony during the year was remarkably good, and considerable progress was made in the campaign against the hook-worm disease, especially in the Orange Walk district.

*Sierra Leone.*—The number of European and American residents in 1917 was 1090, of whom 636 were military and 244 officials. The deaths of Europeans numbered 22, including 12 landed from vessels; nine officials were invalided during the year. The population of the Colony at the last Census was 51,572 (41,001 males and 34,571 females). The birth-rate in 1917 was 20 and the death-rate 24 per 1000; in Freetown the birth-rate was 23 and the death-rate 33 per 1000. The excess of deaths over births registered in the colony has been apparent in the returns for some years past and suggests that the population is on the decrease. There is, however, a constant influx into the peninsula of natives from the Protectorate, and the figures given must in any case be accepted with caution, as the present system of registration can hardly be described as effective. It is impossible to give any valuable account of the chief causes of death, as medical certification of death is neither compulsory nor usual. The population of the Protectorate at the Census of 1911 was estimated at 1,327,560, of whom 1,323,151 are natives other than those in military barracks, while the remainder, numbering 3426, are non-natives. In both the Colony and the Protectorate, but more especially in the latter, cases of small-pox made their appearance from time to time in 1917, but the infection was prevented from spreading into an epidemic. Thirteen public vaccinators were appointed, and out of a total of 105,988 vaccinations reported as performed 68,763 were returned as successful. The number of patients treated at hospitals and dispensaries throughout the Colony and Protectorate in 1917 was 51,765. At the Leper Asylum there were 4 patients at the beginning of the year and 4 were admitted; 2 died and 4 absconded. To the European Nursing Home there were 133 admissions during the year; of these, 62 were officials and 44 belonged to the mercantile and shipping communities.

*Strait Settlements.*—The estimated population of the Colony in 1917 was 809,869, the birth-rate was 30.65 per 1000, and the death-rate 36.98. The principal causes of death were malaria (3766 cases), infantile mortality (751), tuberculosis (3084), beri-beri (2075), and dysentery (1034). There were 176 deaths from small-pox, nine from cholera, and 44 from plague.

#### THE EUROPEAN CORN-BORER.

The appearance of the European corn-borer (*Pyrausta nubilalis*) in certain parts of the United States has led to the issue of an Order in Council prohibiting the importation of "all corn fodder or corn stalks, whether used for packing or otherwise, green sweet corn, roasting ears, corn in the cob, or corn cobs" from the affected areas into Canada. A circular dealing with this pest, said to be one of the most destructive that has ever reached America, has been issued by the Canadian Department of Agriculture, and can be obtained free from the Dominion entomologist at Ottawa.

#### LE CARNET DE POLITESSE.

The number of necessary "carnets"—or booklets entitling the owner to live, move, and have his being—has grown exceedingly in France, especially during the war, for, in spite of murmurings which are almost universal amongst his subjects, Monsieur Lebnean is still the reigning tyrant in French administration. That he should have captured the control of politeness among a people world-famous for the suavity of their manners is, indeed, a notable tribute to his stability and vigour. For many months there have been notices posted in tramcars and in the metro reminding passengers that they should give up their seats to the "mutilés"; now it seems that this has become a legal obligation. Every soldier who is blind or so wounded that standing becomes painful to him is entitled to a carnet, which gives him precedence in the seating accommodation. Even the phlegmatic Britisher needs no encouragement to make him offer his seat to a disabled fellow-countryman, and it is hard to believe that any wounded soldier, French or British, would stoop to enforce so obvious a right. The carnet de politesse is really an official aspersation on the nature of French politeness.



## The Goulstonian Lectures

ON

## THE SPREAD OF BACTERIAL INFECTION.

*Delivered before the Royal College of Physicians of London*BY W. W. C. TOPLEY, M.A., M.D. CANTAB., F.R.C.P.,  
DIRECTOR OF INSTITUTE OF PATHOLOGY, CHARING CROSS HOSPITAL.

## LECTURE II.

*(Continued from p. 5.)**B. Danysz INFECTIONS IN RODENTS.*

IN any attempt to obtain information on such points as these by experimental observation it is clearly necessary to work with some organism which is known to give rise to epidemic disease among the animals utilised. Such an organism is the bacillus isolated by Danysz, and the fact that the mouse is a susceptible animal is a distinct advantage in an inquiry of this type, where large numbers of animals must be employed.

Many observations have already been made on the effects produced by feeding cultures of this bacillus to small rodents, and some of the published reports contain data of considerable interest. This is especially true of the communication in which Danysz describes the original isolation of the bacillus, the difficulties which he met with in attempting to increase its virulence to such an extent as to make it practically useful in exterminating rats and mice, and the effects produced by the strain which he finally obtained.

The strain originally isolated, when fed to grey rats, produced a mortality of 20-30 per cent, some others becoming ill but eventually recovering, while the remainder were apparently unaffected. Many attempts were made to increase the virulence by passage. Whether this was carried out by feeding or by subcutaneous injection the final result was always a decrease instead of an increase in virulence, when the successively isolated strains were administered with the food. Sometimes there was a slight increase in virulence up to the second or third passage, but then it steadily decreased, and the final result was always the survival of all the animals fed on one of the later strains. For this reason it was very rarely possible to go beyond 10 or 12 passages. Passage obtained by allowing the animals of one experiment to eat the dead animals from the preceding one, so as to avoid the intermediate growth in artificial culture medium, led to exactly the same results. Passage carried out in collodion sacs placed in the peritoneal cavity again ended in greatly reducing the virulence as estimated by feeding.

*Explanation of Attenuation of Virulence.*

Danzs suggests as an explanation of this attenuation of the organism that it has to face different conditions in the alimentary canal and in the blood and tissues, and that increased virulence for the latter produced by successive subcutaneous injections, or in similar ways, results in lessened virulence for the former. He mentions in support of this view the fact that bacilli isolated from the blood or the spleen at the period when they are beginning to pass from the intestine into the tissues are more virulent, when fed to other animals, than organisms isolated after death—that is, after they have multiplied in the tissues for some considerable time.

He points out, further, that these results indicate that in epidemics caused by this bacillus the cessation of the epidemic will be due to the attenuation of the organism, as well as to the natural resistance of the rodents. An experiment is quoted in support of this.

Two mice, which had become ill after being fed on a culture of *B. Danysz*, were placed in a cage with 30 normal mice. At the same time another 30 normal mice were divided into six batches, all of which were fed on the same culture. All of these latter died in from four to six days. The first death occurred in the large cage three days after the death of the two sick mice. The epidemic lasted 23 days, at the end of which time there were three survivors. These, however, died a month later after being fed on a similar culture.

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Danzs considers that this proves that they were neither completely refractory nor completely immunised, and that their survival during the epidemic could only be explained by the attenuation of the organism. Though this explanation is quite probable, it should be noted that feeding with large quantities of culture is hardly a fair test, since size of dose is probably an all-important factor, and a degree of immunity which might well have served to preserve the three survivors from the dangers of infection in the cage might prove ineffective against such a massive dose of bacilli.

*Production of Virulent Strains.*

Danzs then describes the method by which he ultimately succeeded in producing a strain of his bacillus possessing a markedly increased virulence for rats, and reports the results of various practical tests with regard to the possibility of destroying these animals on a considerable scale. Sometimes the method proved entirely successful; at others it seemed to have little effect. He calls attention to the importance of repeated exposure of infected food in the rat-infested locality at 10-12 day intervals, in view of the attenuation by natural passage referred to above.

It will be observed that in the above summary of Danysz's paper the term "virulence" has been employed in describing the power of the bacillus to produce death or disease on being fed to rodents. This is the term which he actually employs, but it obviously covers several different attributes.

The reports of subsequent observers have been mainly confined to the efficacy of the different forms of virus placed on the market as a means for destroying rats and mice. Mühlens, Dahm and Fürst, Liston, and Bainbridge have all carried out investigations on this point. There is a very general agreement among these observers that the various strains of bacilli employed show wide variations in the mortality which they produce when fed to rats under many different conditions. The question of the spread of the infection to rodents not fed with the virus does not appear to have been especially studied.

*EXPERIMENTS ON B. Danysz.*

In the following experiments an attempt has been made to investigate the changes which may occur in the pathogenicity and other biological characteristics of *B. Danysz* as the result of repeated passage by feeding, and to arrive at some conclusion as regards the propagation of the infection from sick to normal mice.

The culture which formed the starting point of these experiments was kindly supplied to me by Dr. Arkwright, of the Lister Institute. It was originally obtained from the Pasteur Institute in Paris, and was the strain investigated by Bainbridge in 1908-09. The general technique adopted was as follows:—

Small pieces of bread were soaked with a 24-hour broth culture of the strain to be examined, and these were fed to a varying number of mice, which had not been fed for 12 hours previously and were not fed again until next day. In general only one feeding was carried out in any one experiment, but in a few cases the mice were fed on two or three occasions within the first four days.

When a mouse was found dead a post-mortem examination was made, and small portions of the spleen and liver were transferred to broth with due precautions as regards sterility. On the following day plate cultures were made from the broth tube on McConkey's medium. After 24 hours' incubation the plates were examined and likely colonies were subcultured into litmus-lactose-peptone-water. The full fermentation reactions were subsequently examined and the organism was tested against a powerful agglutinating serum. At the same time an agar-slope culture was prepared, sealed up with paraffin wax and placed in the ice-chest. When a given organism was fully identified as *B. Danysz*, and it was desired to investigate its action on mice, a tube of broth was inoculated from the agar culture and incubated for 24 hours. The culture so obtained was fed to a fresh series of mice in the manner indicated above. Certain deviations were made from this routine in particular cases, but these will be indicated where necessary.

When the broth tubes to which the portions of spleen and liver had been added appeared sterile after 24 hours' incubation, and the plates inoculated from them showed no growth, they were incubated for at least 24 hours longer and fresh plate cultures made before they were discarded. It hardly ever happened, however, that where the first plate cultures remained sterile a growth was subsequently obtained, and broth tubes which appeared sterile after 48 hours' incubation invariably remained so.



*Some Difficulties Encountered.*

It is well to consider at the outset certain difficulties which have been encountered, and which seem inherent in an investigation of this kind. It is by no means easy to decide in many cases whether or no a mouse has died as the result of a *B. Danysz* infection.

In the first place, it is not always possible to make a post-mortem examination. An appreciable proportion of the dead mice are found partially or almost entirely eaten by their companions.

In the second place, the post-mortem findings are neither so typical nor so constant that great reliance can be placed upon them. The spleen is usually enlarged, often very considerably so. In a minority of cases the spleen and liver show multiple minute yellow areas. There is often an apparent enlargement of the lymphatic glands throughout the body, but this would seem to be a common feature in mice which have died from a variety of causes. The condition of the intestines varies enormously. In almost all cases it is the small intestine which shows variations from the normal. The most common condition in my experience has been a marked distension of this portion of the bowel with a bright yellow fluid. In other cases the lower part of the small intestine is plum-coloured, sometimes nearly black and apparently gangrenous.

A large number of sections have been examined from the organs of the mice dying during the course of these experiments, and similar specimens from other mice have been studied as controls. It has not been possible, however, to make out any constant changes which could be regarded as diagnostic of an infection with *B. Danysz*.

Another disturbing factor is the fact that a considerable proportion of the mice were found to be harbouring intestinal parasites in the shape of cestode worms. Dr. Leiper has

the earlier stages of the experiment, and partly in order that the survivors might be examined for any possible acquired immunity. In mice kept over such long periods it is inevitable that death should occur from causes other than infection with *B. Danysz*. Deaths which have occurred from ascertainable and extraneous causes have not been recorded. Thus mice which showed serious wounds as the result of fighting and died within a short time afterwards have not been included.

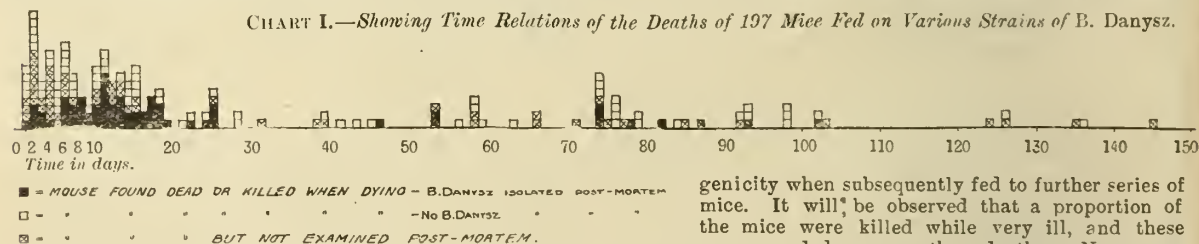
## RESULTS OF EXPERIMENTS.

Chart I. records the deaths of 197 mice which succumbed after being fed in the manner indicated. The black and shaded squares represent those animals from which *B. Danysz* was isolated post mortem. It will be seen that the majority of the deaths occurred within 30 days of feeding, and that, while *B. Danysz* was isolated from a high proportion of the mice dying during this period, it was seldom recovered from those dying at a later date. For this reason the records of each experiment are only given in the charts for the 30 days subsequent to that on which feeding was carried out, though in those few cases in which a late outbreak of disease occurred the fact is indicated in the text.

It is not possible to give full details of the various feedings, deaths, and post-mortem findings, but Chart II. indicates sufficiently the course of events during a series of such experiments lasting over about five months. The number of mice fed in each case is noted, and the deaths are recorded so as to show the time at which they occurred and the bacteriological results obtained.

Each experiment after the first was carried out by feeding a batch of mice on a culture of *B. Danysz* isolated from the liver or spleen of a mouse from a preceding experiment, the object in view being to ascertain whether any strains would be evolved showing striking variations as regards their patho-

CHART I.—Showing Time Relations of the Deaths of 197 Mice Fed on Various Strains of *B. Danysz*.



kindly given me the benefit of his great experience in this matter, and has examined some of the specimens obtained. He informs me that the degree of infection observed is not to be regarded as a heavy one, and gives it as his opinion that the only disturbing influence which the presence of these parasites might introduce into the general course of the experiments would be a certain degree of damage to the epithelium which might facilitate tissue invasion by the bacterial parasite.

Again, a mouse may die under circumstances which render it almost certain that it has succumbed to a *B. Danysz* infection, and pure cultures of this organism may be obtained from the spleen and liver, and yet the changes found post mortem may be practically negligible. Thus the bacteriological results seem to form our most certain criterion for diagnosis, but here, again, there are many difficulties to be faced. As pointed out above, a proportion of the dead mice are found partially eaten. In most cases the deaths were preceded by little or no evidence of illness, although there were exceptions to this. As a rule, one or more mice were found dead when the cages were examined in the morning. It would seem that post-mortem decomposition sets in very rapidly in these animals, and only a minority of the mice were in a condition which could be regarded as in any way ideal for bacteriological investigation. Although these facts must be borne in mind in drawing conclusions from the results obtained, yet the actual sequence of events, and the bacteriological results, leave little room for doubt as to the cause of death in the majority of cases. In most of the cases in which *B. Danysz* was isolated from the organs it was present in pure culture.

After a given batch of mice had been fed on a particular strain of the organism the animals were watched over a prolonged period, often several months. This was done partly to determine whether *B. Danysz* infections eventually develop in mice which show no evidence of illness during

genicity when subsequently fed to further series of mice. It will be observed that a proportion of the mice were killed while very ill, and these are recorded among the deaths. No mouse which became very ill was known to recover, and no error will be involved in this way. As pointed out above, most of the deaths have occurred in mice which showed no previous sign of illness, and definite symptoms have almost invariably been followed by death within 24 hours.

Preliminary feedings with the original strain showed little evidence of pathogenicity for mice, though subsequent re-testing at a much later date has credited it with more definite results. For this reason the original passage was carried out by feeding a small number of mice on the usual broth cultures on two occasions with an interval of one day between them, and then killing one of them with chloroform 24 hours after the second feeding. Cultures of *B. Danysz* were obtained from the liver and spleen, and that from the spleen was used in the next experiment. The survivors from this preliminary feeding showed no ill-effects during the considerable period for which they were kept under observation.

Examination of the chart reveals the fact that the strain from this first mouse showed definite pathogenicity on being fed to the 12 mice of Experiment 2. Eight of the 12 animals died, or were killed when dying, within 25 days, and from five of these cultures of *B. Danysz* were obtained post mortem. On the other hand, the deaths were unevenly distributed over the 25 days, and showed no tendency to be accumulated within a small time interval.

*Experiments 3, 3A, 3B, 3C, 3D, and 3E.*

Experiments 3, 3A, and 3B were carried out by feeding 12 mice in each case with a culture obtained from the spleen of a mouse which had been found dead during the course of Experiment 2. As will be seen, the strains employed in Experiment 3 and 3B were almost without effect.

In Experiment 3A six mice died within the first 24 days, but the first three of these were found almost entirely eaten, and in only one of the remaining three was



CHAPTER III.—*Experiments Showing Result of Inoculating Successive Series of Mice on Cultures of B. Danysz Isolated from Mice Dying in Preceding Experiments.*

Deaths only Recorded for 30 Days after Feeding

	I.	Fed on original strain of <i>B. danyesz</i> .					
	II.	Fed on strain from spleen of A. Exp. I.					
	III.	Fed on strain from spleen of B. Exp. II.					
	IIIA.	Fed on strain from spleen of C. Exp. II.					
	IIIB.	Fed on strain from spleen of D. Exp. II.					
	IIIC.	Fed on strain from spleen of E. Exp. II.					
	IIID.	Fed on strain from liver of E. Exp. II.					
	IIIE.	Fed on strain from spleen of F. Exp. II.					
	IV.	Fed on strain from spleen of G. Exp. IIIb.					
	IVB.	Fed on strain from liver of H. Exp. IIIb.					
	V.	Fed on strain from spleen of J. Exp. IV.					
	VB.	Fed on strain from spleen of K. Exp. IV.					
	IVx.	Fed on strain from spleen of G. Exp. IIIc.					
	Vx.	Fed on strain from whole spleen culture of L. Exp. IVx.					
	Vix.	Fed on strain from whole spleen culture of M. Exp. Vx.					
	VIXI.	Fed on strain from strain "A" from spleen of M. Exp. Vx.					
	VIX2.	Fed on strain from strain "B" from spleen of M. Exp. Vx.					
	VIX3.	Fed on strain from strain "C" from spleen of M. Exp. Vx.					
	VIX4.	Fed on strain from strain "D" from spleen of M. Exp. Vx.					
	VIX5.	Fed on strain from strain "E" from spleen of M. Exp. Vx.					
	VIX6.	Fed on strain from strain "F" from spleen of M. Exp. Vx.					
	VIX7.	Fed on strain from strain IIII from spleen of M. Exp. Vx.					
	VIX8.	Fed on strain from strain IIII from spleen of M. Exp. Vx.					
	VIX9.	Fed on strain from spleen of N. Exp. VIX8.					

Key to Charts II. and III.

Each square represents an individual mouse fed on strain indicated.  
A, B, C, &c. = origin of strains used in subsequent experiments.  
= Mouse killed while apparently healthy 24 hours after feeding. *B. danyesz* isolated P.M.  
= Mouse survived more than 30 days.  
= Mouse found dead. *B. danyesz* isolated P.M.  
= Mouse killed while very ill. *B. danyesz* isolated P.M.  
= Mouse found dead or killed while very ill. No *B. danyesz* isolated P.M.  
= Mouse found dead or killed while very ill. Not examined P.M.  
\* On day indicated in left upper portion of square.



*B. Danysz* isolated post mortem. The deaths in this case were probably the result of the feeding, but the connexion is less definite than in Experiment 2, and the pathogenicity of the strain is less rather than greater. Thus in these three experiments, in which strains obtained from the spleens of mice found dead during the course of Experiment 2 were utilised, the effect of passage had been definitely to decrease the pathogenicity for mice when administered by the alimentary tract.

A strain of *B. Danysz* isolated from the spleen of a mouse of Experiment 2 which was found dying on the 25th day after the first feeding was fed to the 12 mice of Experiment 3C. The results showed no evidence of an increase in pathogenicity.

The strain isolated from the liver of the same mouse, the culture from whose spleen was employed in Experiment 3C, was fed to the 12 mice of Experiment 3D. This experiment gave results which seemed to point to a definite variation in the pathogenicity of the bacillus. Nothing whatever occurred during the first nine days following that on which the mice were fed, but on the 10th day one mouse was found dead, two mice dying, and several others obviously ill. One of these succumbed on the 14th day, but the others recovered. This forms the only instance in which several mice, which were obviously ill, recovered from the infection. The liver and spleen from the mouse which was found dead proved sterile. The two dying mice were killed, and cultures from the livers of both and from the spleen of one yielded pure growths of *B. Danysz*. The second spleen culture remained sterile.

The marked difference between the strains isolated from the liver and spleen of the same mouse of Experiment 2, which is indicated in this and in the preceding experiment, is worthy of notice.

The strain isolated from the spleen of the second of the two mice of Experiment 2, which died on the 25th day after feeding, was fed to the 12 mice of Experiment 3E. There was a considerable early mortality, five mice dying between the 4th and 7th day, but no bacteriological evidence was forthcoming that they had succumbed to a *B. Danysz* infection.

#### Experiments 4A and 4B.

By far the most definite evidence of pathogenicity had so far been afforded in Experiment 3D. The culture obtained from the spleen of one of the mice found dying on the 10th day of this experiment was fed to the 12 mice of Experiment 4A. The results were definite and striking. There was a period of 14 days during which nothing happened. Between the 15th and the 25th day, eight of the 12 mice died, or were killed in a dying condition. From the tissues of six of the eight mice *B. Danysz* was isolated post mortem. There could be no doubt here that a variant strain had been isolated showing a definite increase in pathogenicity.

A culture obtained from the liver of another mouse of Experiment 3D, which was found dying on the same day as the mouse which yielded the strain used in Experiment 4A, was fed to the 12 mice of Experiment 4B. The result was in sharp contrast to that obtained in the previous experiment, for there appeared to be an almost entire absence of pathogenicity.

#### Experiments 5A and 5B.

In Experiments 5A and 5B strains were employed from the spleens of two mice found dying on the 17th day of Experiment 4A. The results were curious and somewhat similar in the two cases. Both strains appeared to be almost devoid of immediate pathogenicity, but in each case a late outbreak of disease occurred. In Experiment 5A three mice succumbed on the 53rd day, and the six survivors were all found dead on the 74th day. From five of these last nine mice *B. Danysz* was isolated post mortem.

In Experiment 5B six mice died between the 56th and the 59th day; but since *B. Danysz* was in no case isolated, it is difficult to affirm that the deaths were due to infection with this organism, though the post-mortem appearances were entirely compatible with this being the case.

In what way these late deaths are related to the original feeding it is impossible to determine, but they can hardly be regarded in the same light as the deaths occurring within the first 30 days of the experiment.

#### Survey of Results: Further Experiments.

If we survey the results thus far obtained we see that as the result of passing the original strain of *B. Danysz* through a series of mice, the strain isolated from the tissues of one animal being fed to the animals of the next experiment, a strain has been evolved showing a definite increase in pathogenicity. In the next passage, however, this pathogenicity seems to have been lost or radically altered. It is clear, indeed, from the whole series of experiments that this loss readily occurs as the result of passage carried out in this way, and the original findings of Danysz are amply confirmed. That a definite increase in pathogenicity may also result has, however, been established. Another fact is quite definitely shown. Strains obtained from mice killed when very ill are much more likely to be pathogenic than strains from mice which have been found dead. Here, again, the results are in accord with those reported by Danysz.

In order to see whether a further increase in pathogenicity could be obtained, a fresh series was started, commencing with the strain isolated in Experiment 3D, which had been fed to the mice of Experiment 4A. The results are indicated in Chart III. The four mice of Experiment 4X were fed with this strain. All four succumbed on the 13th day of the experiment. One was found dead and partially eaten, the other three were dying. From each of these three *B. Danysz* was isolated post mortem.

Certain of the previous experiments had indicated that bacilli of varying pathogenicity might be isolated from the tissues of a single mouse. For this reason the broth culture from the spleen of one of the mice from Experiment 4X was fed to the mice of the next experiment without previous plating. A subculture made from it immediately beforehand gave a pure culture of *B. Danysz*. The spleen tissue itself was not fed to the mice.

The result of this experiment (5X) was striking. Twelve mice were fed. Two died on the 4th day, one on the 5th, and the remaining nine succumbed on the 11th day. From six of these nine mice *B. Danysz* was isolated.

In order to examine further the possible differences of strains of the bacillus isolated from the spleen of a single mouse the following procedure was now adopted.

A portion of the spleen from one of the mice which was found dying on the 11th day of the above experiment was rubbed over the surface of a plate of McConkey's medium, and then dropped into a tube of broth, which was incubated for 24 hours. At the end of this time a second McConkey plate was inoculated. From the scanty growth which developed on the first plate eight colonies were subcultured into broth and the tubes labelled A-H. From the second plate six colonies were picked off and the corresponding broth tubes numbered 1-6. All cultures were identified as *B. Danysz* by fermentation and agglutination tests.

Into each of seven cages were placed six mice. The first batch were fed on the broth culture obtained from the whole spleen (Exp. 6X). The next five batches were fed on cultures A-E obtained from colonies which developed on the plate inoculated directly with spleen tissue (Exps. 6X 1-6X5). The last two batches were fed on strains 1 and 3 obtained from colonies which developed on the plate inoculated from the original broth tube (Exps. 6X 6 and 6X7).

The chart shows the results. All the strains, with the possible exception of strain 1, showed definite pathogenicity. The broth culture obtained directly from the spleen tissue was no more pathogenic than the rest. Strain 3 stands out prominently, all the six mice of this experiment succumbing within three days. As *B. Danysz* was only isolated from one of the six mice, a second batch of the same number were fed on a broth culture obtained from the agar slope of this strain which had been placed in the ice-chest.

The result (Exp. 6X 8) entirely confirmed the high pathogenicity of the strain, all six mice were found dead on the 6th day, and from four of them *B. Danysz* was isolated post mortem.

From the strain isolated from the spleen of one of these mice six other mice were fed (Exp. 7X). The loss of pathogenicity is obvious, and we see again the tendency for successive passages to lead to the final loss by the parasite of the power of producing disease when administered with the food.

#### Experiments to Test Results of Prolonged Cultivation.

To exclude the possibility of the results noted being due to some extraneous factor rather than to variations in the biological properties of the bacillus, and to determine what



alteration, if any, would result from prolonged cultivation on artificial media, the strains which showed the widest variations were retested at subsequent dates. As mentioned above, the various strains isolated were grown on agar slopes, sealed with paraffin wax, and placed in the ice-chest. They were subsequently subcultured on to further agar slopes at intervals of six weeks, the fresh cultures, after 24 hours in the incubator, being preserved in the same way.

The original strain was tested on five batches of mice between July, 1918, and February, 1919. On the first occasion no mouse succumbed within 30 days. In the later experiments a few mice died in each case. The highest mortality occurred in the last test carried out, when four of eight mice died during the 30 days over which the experiment continued. From only one of these mice, however, was *B. Danysz* isolated. Moreover, the deaths, when they occurred, were irregularly distributed in time. On no occasion were more than one mouse found dead on any one day.

The strain from the spleen of the mouse of Experiment 3 D which was used in Experiment 4 A was retested on four subsequent occasions between September, 1918, and February, 1919. In the first experiment 8 of 12 mice died within 30 days, a mortality of 66 per cent. In the second experiment the mortality during the same period was 100 per cent. In the three subsequent tests the mortality was 66, 66, and 62 per cent. respectively. Moreover, there was a most definite time distribution. In each of the three earlier experiments there was an incubation period of 12 to 15 days, followed by an outbreak involving the death of a large proportion of the mice within a few days. The difference between the results of these experiments and those carried out with the original strain were most striking when actually observed. On the last two occasions on which this strain was tested the tendency to produce a series of deaths within a short time interval and following a definite incubation period seemed to have been lost.

Similarly, the strain labelled "Spleen 3 : 5 x : 9.12," which was employed in Experiment 6 x 7, was retested on three occasions within the following two months. It showed on the first three occasions a consistent tendency to produce a high and early mortality. Thus all the mice of the first experiment died within three days. All the mice of the second experiment succumbed on the 6th day. Four of six mice fed in the third experiment died on the 3rd day, while a fifth died on the 16th. On the last retesting this strain seemed to have lost its peculiar properties.

Two other strains which had shown particularly low pathogenicity were subsequently retested, and the results confirmed those originally obtained.

Thus two strains at least were evolved which possessed quite definite infective properties. One tended to produce an outbreak of disease after an incubation period of 12 to 15 days. The other led to the death of all the animals fed within a few days. These properties were maintained for weeks or months under artificial cultivation, but were gradually lost, and when finally tested the strains were indistinguishable from the original strain of *B. Danysz*.

No attempt was made to maintain the pathogenicity of the cultures by special methods of cultivation and storage. The exact combination of properties on which this pathogenicity depended was a subject for surmise, but it was clearly not simply a question of virulence in the strict conventional sense. It seemed better, therefore, to rely on the simplest methods of culture and observe any changes which occurred.

The results of observations on the factors possibly concerned in the loss of pathogenicity by passage, and especially on the question of the spread of the infection from the mice fed on cultures of the bacillus to their normal companions, will be considered in my last lecture.

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ON

## STREPTOCOCCAL INFECTIONS OF SEPTIC WOUNDS AT A BASE HOSPITAL.

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IN connexion with streptococcus infections of wounds at base hospitals there are certain questions which are of fundamental importance.

*What are the Types of Streptococci that Require to be Seriously Considered in Wound Infections?*

There is one type of streptococcus which is predominant in septic wounds at the base. This type is responsible for almost all the severe septic complications of these wounds. It is to be found in pure culture in nearly all the infected joint cavities and fresh pockets of the wounds, and in our experience it has been responsible for all the streptococcal septicæmia following septic wounds.

**Characters of this streptococcus.**—It grows in broth in long chains of regular cocci. Some strains after 24 hours show very marked involution forms, the cocci being all shapes and sizes. The culture in broth consists of small woolly masses, which settle to the bottom of the tube (or along the side of the tube if it is incubated in a slanting position), leaving the upper portion of the medium clear. On agar (Douglas's tryptic agar) it grows well in moderate-sized colonies, which show by transmitted light a definite dark central portion, while the edges are slightly wavy and irregular. It does not liquefy gelatin. This streptococcus always grows better anaerobically, and not infrequently when first isolated it will not grow aerobically. After being cultivated for a short time, however, it grows freely under aerobic conditions. It is not constant in its sugar reactions. In the great majority of cases it ferments glucose, lactose, saccharose, and salicin, but not raffinose, mannite, or inulin. A few strains, however (about 12 per cent.), ferment mannite. These mannite-fermenting strains are identical morphologically with the non-mannite fermenters, and it has been shown by Douglas, Colebrook, and Fleming, in a report to the Medical Research Committee not yet published, by means of agglutination and absorption tests that serologically they are also identical.

**Clotting of milk.**—This test is very inconstant, and we have found that as regards the clotting of milk with these streptococci very much depends on the size of the tube in which the test is carried out. If the tube is of large size then the clotting is always delayed and it may even not take place in ten days, whereas in a small test-tube there is definite clotting in 24 hours. In a series of tubes of different sizes containing milk which had been heavily implanted with *Streptococcus pyogenes* and incubated for five days it was observed that no clotting had occurred in the two largest tubes, in the third tube clotting had occurred but there was no contraction of the clot, while in the smallest tube there was firm clotting with much contraction of the clot. This clotting of the milk in the smallest tube had occurred in the first 24 hours. Even in small tubes, however, the clotting of milk by *Streptococcus pyogenes* is quite inconstant and is worthless as a test.

**Hæmolytic power.**—All the strains of this streptococcus showed some hæmolytic power, but there seemed to be enormous differences in the amount of hæmolysin produced under the same conditions by streptococci which were isolated from the blood of septicæmic patients. In a number of cases the hæmolytic power was tested by centrifuging a broth culture and incubating for two hours at 37° C. dilutions of the clear supernatant fluid with washed human red corpuscles. In most cases, however, the question of whether these streptococci were hæmolytic or not was tested by noting the appearance produced by their growth on a blood agar plate (see Fig. 2).

**Incidence of this streptococcus.**—In a series of over 100 septic wounds (fractured femurs) which had remained at a base hospital for over seven days this streptococcus was present in almost every one. In cases of a similar nature where streptococci were recovered from the blood (47 cases) the organism was invariably of this type



*Is the "Hæmolytic" Character of the Streptococcus of Fundamental Importance—i.e., Can Non-hæmolytic Streptococci be Ignored for Practical Purposes in Wounds?*

As has been stated above, the only streptococcus which we have found to give rise to serious complications in a wound is the "pyogenes" type, which belongs to the hæmolytic group of streptococci, and we were forced to consider the non-hæmolytic streptococci to be of only secondary importance. In the more recent wounds, and especially in the wounds in which gas gangrene had developed, there is to be found very frequently streptococci of the "fæcalis" type. These are not present with anything like the same frequency in the latter cases. One of us (A. F.) in conjunction with Douglas and Colebrook<sup>1</sup> showed that streptococci (and other organisms) had a powerful effect in increasing the growth of anaerobic bacilli when grown with them in symbiosis. It may be that these streptococci of the "fæcalis" type have some importance in the wound on account of this symbiotic action, but alone they do not seem to be of any importance in wounds at the base.

*What is the Source of the Streptococci Found in Wounds?*

Examinations at a C.C.S. on recently inflicted wounds have shown that in only about 15 per cent. of cases is *Streptococcus pyogenes* present. Examinations at the base in cases which have been in more than a week reveal the presence of this organism in over 90 per cent. of the wounds.

During the summer of 1918 we examined a number of the gauze packs removed from wounds on arrival at the base. When the patient had been kept at the C.C.S. for more than three or four days *Streptococcus pyogenes* was present in almost every case. These cases correspond, therefore, closely with the patients who have been in base hospitals for more than a few days. Where, however, the patient had been sent straight on to the base after excision of the wound we found that *Streptococcus pyogenes* was present only in 15 out of 75 cases. Although in the majority of the packs from these recent cases we failed to find *Streptococcus pyogenes*, we were able to recover other microbes in every case from those portions of the packs which came from the depths of the wound, and often these microbes were present in very large numbers. The microbes isolated in these cases were chiefly anaerobic and aerobic bacilli and staphylococci.

It has been conclusively demonstrated that *Streptococcus pyogenes* will grow much better than these other microbes in the blood fluids<sup>2</sup> such as would be found in a recently excised wound, so that had the streptococcus been present as a primary infection it should have been demonstrable on arrival at the base. It is to be noted, therefore, that on arrival at the C.C.S. 15 per cent. of the men were infected with *Streptococcus pyogenes*; on arrival at the base (when the cases had been sent straight on after operation) 20 per cent. were infected, but after a stay at the base of a week over 90 per cent. were found to have *Streptococcus pyogenes* in their wounds. It would seem a warrantable deduction from these observations that the streptococcal infection of wounds is in most cases a hospital infection, and it is probable that in the dressing of the wound the infection is carried from one patient to another.

It has long been known that *B. pyocyaneus* is spread from one patient to another in a ward by faulty technique in dressing, as this infection is manifest to the naked eye by

the characteristic colour of the discharges. Other organisms which spread around a ward in the same way are *B. proteus* and diphtheroid bacilli. Now, as the *Streptococcus pyogenes* will grow in the discharges very much more readily than will these other organisms, it would be a miracle if it were not spread in the same way. It is unfortunate that infection by streptococci does not produce any characteristic change in the smell or colour of the discharges, as it does not obtrude itself on the notice of the surgeon until some serious complication arises.

*Have any Points Bearing on the Methods of Recovery from Streptococcus Infections Come to Light, and, if so, Can these be Exploited in Treatment?*

In cases of septicæmia following serious wounds the proportion of recoveries is very small. Out of a series of 40 cases of septicæmia following compound fracture of the femur we have seen only four recoveries. The reason for these recoveries is not very evident. All the patients who recovered were treated with streptococcus vaccine, but it was very difficult to demonstrate in any of these septicæmia cases any direct benefit from the vaccine.<sup>3</sup>

In some cases of pyæmia, however, and in many less severe cases, the administration of streptococcus vaccine in doses of 1,000,000 to 5,000,000 was repeatedly followed by a drop in the temperature and a feeling of well-being to the patient. It has often been demonstrated that, following the injection of streptococcus vaccine, there is a rise in the amount of antibodies in the blood. In cases of severe injury, such as a fractured femur, there are very often portions of the wound which are inefficiently drained and to which the blood fluids do not have access, and this militates against any very dramatic effect following the administration of vaccine in such cases. We hold a very strong opinion, however, that in all septic wounds where the surgeon secures good drainage no harm would be done and much good would result from a routine administration of stock streptococcus vaccine in doses of from 1,000,000 to 5,000,000 once a week. It is not practicable to make autogenous vaccines in every case, and it has been demonstrated by Douglas, Colebrook, and



Plate culture of 1 c.cm. of blood from a septicæmic patient taken immediately after being disturbed by being washed. Note the large number of streptococcus colonies and the zone of hæmolysis around each.

Fleming that when an animal is injected with one strain of *Streptococcus pyogenes* it develops antibodies (agglutinins) to the same degree to all strains. It would appear, therefore, that a stock vaccine would be as useful as an autogenous one.

In cases of septicæmia it seems much more likely that streptococci are being continually thrown into the blood stream from some septic focus than that they should actually be growing and multiplying in the blood stream. If they did flourish in the circulating blood, then they should be present in much larger number than they are. If 1 c.cm. of blood is taken from a septicæmic patient, mixed with liquid agar at 47° C., and plated, it is uncommon to get more than 100 colonies. Usually only two or three develop.

This method has been found to be the best for blood culture in such cases. In quite a large series of blood cultures it has never failed to reveal streptococci when they were found in fluid cultures, and in two cases streptococci were found when they failed to develop from blood added to

<sup>3</sup> It should be remembered, however, that in a large series of purpural septicæmia cases in which streptococci were demonstrated in the blood (Western (THE LANCET, 1912, i., 351) by the use of vaccines obtained a very high percentage of recoveries (45 as against about 10 in a control series not treated by vaccines). These purpural septicæmias do not seem to be very different from septicæmia following a septic wound.

<sup>1</sup> THE LANCET, 1917, i., 604.

<sup>2</sup> Wright: Proceedings of the Royal Society of Medicine, 1915.



broth or glucose broth. It has also the great merit that the number of streptococci in the circulating blood can be determined. The technique is as follows:—

1 c.cm. of blood from the suspected septicæmic case is added to about 5 c.cm. of water. The blood will thus be laked and the clotting power diminished, so that it can readily be carried back to the laboratory before coagulation takes place. It is then mixed with about 20 c.cm. of agar at 47° C., poured into a Petri dish, allowed to set, and incubated. In 24 hours the colonies can easily be seen.

Minced meat medium, such as is commonly used in the cultivation of anaerobes, furnishes a better fluid medium for blood culture in these surgical cases than does broth, glucose broth, or citrated broth. In several cases we have obtained growths of streptococcus from the blood in this medium when they failed to develop in the broth cultures. It has the advantage that anaerobes, if present, will also develop.

The figure represents a plate made from 1 c.cm. of blood from a patient with septicæmia following a flesh wound in the thigh. It shows very many more streptococci than are usually present in the blood. Two days after the specimen was taken the patient died, and the autopsy showed, in addition to a septic thigh wound, abscesses in the hand, wrist, both elbows, neck, and a very large abscess in the buttock. The specimen of blood was taken immediately the orderlies had finished washing the patient, during which process he must of necessity have been considerably disturbed, and it seems probable that the large number of streptococci in the blood was due rather to this disturbance than to their growth in the blood stream.

It is unlikely, also, that the small number of streptococci present in the blood stream in the ordinary case of septicæmia would be able to flourish in that situation, as the serum of these patients show by Sir Almroth Wright's sero-culture method a very much enhanced bactericidal power to *Streptococcus pyogenes*.<sup>4</sup> (The bactericidal power of normal serum to this microbe is practically nil.)

So far as we know, streptococci are destroyed in the body by three agencies: (1) bactericidal power of the serum; (2) direct bactericidal power of the leucocytes (without phagocytosis); (3) phagocytosis due to the combined action of the serum (opsonic power) and leucocytes. In streptococcal septicæmia these are changed from the normal as follows.

1. *Bactericidal power of the serum.* (This, as stated above, is increased.)

2. *Direct bactericidal power of the leucocytes.*—It has been shown<sup>5</sup> that living leucocytes have the power of destroying streptococci without ingesting them. This power of the leucocytes is apparently unaltered in septicæmia cases except that as there is always a leucocytosis in these cases the power is more manifest.

3. *Phagocytosis.*—In some cases of septicæmia the serum has lost completely or almost completely its opsonic power (and also its complementing power). The phagocytic power of the leucocytes is not diminished.

It would appear from these observations that, as a rule, it is not the circulating blood which is at fault in cases of streptococcal septicæmia, and in all probability we have to look for some deficiency in the local protective mechanism which allows access of the streptococci to the blood stream. It would seem to follow, also, that for the successful treatment of a case of septicæmia the most essential element would be the thorough local treatment of the infected focus.

It has been observed that when an infection has become circumscribed by the collection of leucocytes in the walls of the wound and by the other factors which operate locally in this connexion, it is very difficult to graft a serious streptococcal infection on the wound. It follows from this that the utmost care should be taken in the first few days after the injury to keep out the streptococcus and to avoid any treatment which will inhibit the defensive processes developing. In the after-treatment fresh tissue should only be opened up when there is a very urgent necessity.

In conclusion, we wish to express our thanks to Major M. Sinclair and our other surgical colleagues for permitting us to make observations on patients under their care; to Captain L. Colebrook for permission to use some of his experimental work; and to the Medical Research Committee for supplying us with apparatus which made the work easier.

## NOTE ON CERTAIN ORGANISMS ISOLATED FROM CASES OF INFLUENZA.

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IN the course of investigation of material derived from cases of influenza during the three waves of the present epidemic, when searching for Pfeiffer's bacillus, Gram-negative, "Pfeiffer-like" bacilli were frequently isolated. They were not, however, hæmophilic, and grew rapidly and readily on ordinary agar. They have been isolated from sputum, post-mortem material, and in blood culture. The organisms derived from the latter source deserve further description.

They were isolated from the blood of two German prisoners, out of four cases examined, at the commencement of the third wave of the epidemic in February, 1919. The camp to which the prisoners had belonged had escaped the two previous waves, but was overwhelmed by the present one, a large proportion of the prisoners being severely attacked.

The organism was obtained in 2 per cent. glucose broth, and appeared in 24 hours in the blood culture, as round or oval Gram-negative "yeast-like" bodies, 3–5  $\mu$  long by 2–4  $\mu$  broad. Subculture to agar produced, not the above organisms but Gram-negative bacilli, varying in size from coccoid or coccobacillary forms to short filaments. The "yeast-like" bodies rapidly disappeared from the blood culture, and were replaced by clumps of Gram-negative bacilli, in the neighbourhood of which could be seen, in some cases, Gram-negative amorphous masses, resembling the ruptured envelopes of the above-mentioned "yeast-like" bodies.

### *Characters of Organism: Pathogenesis.*

The bacilli were pure in subculture, and had the following morphological and cultural characters:—

*Morphology and cultural characters.*—Small non-sporing bacilli, often grouped in parallel, or as diplo-bacilli, 1–2  $\mu$  in length, but varying in size from coccoid forms to short filaments. The smaller forms are actively, but the larger forms are feebly, motile. They are Gram-negative but not acid-fast. Polar staining is not usually present. They are aerobic and grow rapidly and well on agar, forming a whitish-grey moist growth of circular, slightly flattened colonies, about 0.5 mm. in diameter. Viewed by transmitted light, the colonies are translucent and slightly iridescent. In stab-culture on gelatin there is a white growth, confined to the needle track, without extension on the surface, and the gelatin is not liquefied. Broth is rendered turbid, with a flocculent, whitish, stringy deposit.

The fermentation reactions are as follows: Acid production but no gas in dextrose, maltose, and mannite. No change in lactose, cane-sugar, salicin, or inulin. Litmus milk is first rendered faintly acid and then becomes strongly alkaline, without any clotting. Neutral-red broth is rendered alkaline. There is a fairly well-marked indol reaction after 48 hours' growth in peptone water. Stalactite growth was not obtained in butter-fat broth.

Grown on 6 per cent. salt agar, numerous yeast-like forms were obtained resembling those obtained in the blood culture, together with filamentous, curved, and swollen forms. The organism resists heating to 65° C. for 30 minutes, but is killed at a temperature of 60° C. for 1 hour.

*Pathogenesis.*—The organism was highly pathogenic to the rat and guinea-pig. 0.25 c.cm. of a saline emulsion of a 24-hour agar culture by intrathoracic injection killed a white rat in 17 hours. The lesions produced were ecchymoses and hæmorrhagic extravasations on the surfaces of both lungs, which were congested and oedematous. The heart was engorged and filled with clot. The organism was recovered in pure culture from heart, lungs, and spleen.

A similar dose by intrathoracic injection killed a guinea-pig in five days, causing a slight caseous nodule at the site of inoculation, sero-purulent effusions into both pleural sacs, and lobular pneumonia with hæmorrhages in both lungs. The bronchial glands were greatly enlarged and showed caseous nodules. The heart was dilated and filled with clot. The organism was recovered in pure culture from the pleural effusion, lungs, heart blood, tracheal mucus, and spleen. By intraperitoneal inoculation death was caused

<sup>4</sup> For this observation we are indebted to Captain L. Colebrook.

<sup>5</sup> Wright, Fleming, and Colebrook, THE LANCET, 1913, i., 831.



in four days, with sero-fibrinous peritonitis and hæmorrhagic infarcted areas in the lungs.

The organism appears, therefore, to be related to the hæmorrhagic septicæmic group of bacilli, and in its cultural and fermentation reactions is somewhat similar to *B. pseudotuberculosis*. According to MacConkey,<sup>1</sup> the fermentation reactions of *B. pseudotuberculosis* and of *B. pestis* are practically identical. This is of interest in view of the general resemblance which exists between the pathological changes in the lungs in acute influenza and pneumonic plague. Moreover, forms resembling *B. pestis* were obtained in culture from the rat. Similar forms have been noted by Donaldson<sup>2</sup> in the sputum, and in the lung juice by Harris.<sup>3</sup>

One of the patients from whom this organism was isolated died, but the other recovered. The serum obtained from the blood of the latter in the third week after onset of the disease failed to agglutinate the bacillus recovered from his blood. Complement-deviation tests with the patient's serum and the organism as antigen appear to be positive, but require further investigation.

*Addendum.*—Since writing the foregoing statement a careful complement-deviation test with full technique, using Harrison's method, has been kindly carried out for me by Captain Lundie, R.A.M.C. An antigen prepared from the Gram-negative bacilli, together with the serum of the above-mentioned patient, gave complete deviation of complement in the following dilutions:—

	Complement: M.H.D. units.			
	1½	2½	3	5
Antigen control... ..	...	...	—	...
Patient's serum... ..	++	++	+	—

+ No hæmolysis. — Complete hæmolysis.

In view of the importance of the above observation, it was repeated with controls both for the serum and the antigen. The result was as follows:—

		Complement: M.H.D. units.		
		1	2	3
Controls	Antigen ... ..	—	—	—
	Patient's serum ... ..	+	Tr.	—
Test—Patient's serum... ..		+	+	+

Tr. Almost complete hæmolysis.

These observations therefore confirm the fact that in this case of "influenza" antibodies were developed in the patient's serum in response to the infection by the Gram-negative bacilli isolated from his blood.

It is of interest and some importance that experiments on the above lines with sera from cases of "influenza" obtained during the two preceding waves of the disease also show distinct deviation of complement with the above antigen. The results of these experiments will be published shortly. It would be valuable to carry out further observations with sera derived from recent cases of "influenza," if such are obtainable, since the above sera were naturally not fresh.

The organism, however, appears to bear some relation to "influenza" not only in its manifestation in the third wave of the epidemic, during which the organism was isolated, but to the two preceding waves. The presence of antibodies in the sera suggests the possibility of the preparation of an antiserum.

What relation, if any, this organism may bear to the filter-passing virus described by Bradford, Bashford, and Wilson<sup>4</sup> and other observers cannot here be considered, but an analogy may be noted in the epizootic pneumo-pleurisy of horses, with which the Gram-negative Pfeiffer-like *B. bipolaris equisepticus* is associated. In this disease horses have been infected with inflammatory mucus at a stage of its microscopical sterility.<sup>5</sup> *B. bipolaris equisepticus* belongs to the group of "pasteurella," to which also the organism above described may belong.

#### Another Organism.

In addition to the above Gram-negative bacillus another organism has been found in material derived from widely

different sources in cases of influenza. This organism has the following characters:—

*Morphology.*—Round or oval spores, 4–5μ in diameter, staining deeply with Gram in young cultures, but showing Gram-negative forms in older cultures. It is aerobic and grows well at 37° C. on ordinary media, especially those containing glucose. On serum-glucose-agar it forms thick, white, confluent growths. Individual colonies on agar are white, moist, circular and opaque, 1 mm. in diameter or upwards. In gelatin stab-cultures growth is confined to needle track, and there is no liquefaction of the medium. On media containing glucose there is produced a sweetish odour of fermentation. Dextrose and maltose are fermented, but not lactose, cane-sugar, mannite, salicin, or inulin. In milk there is no change, nor in neutral-red broth. The organism is not pathogenic to the rat by intraperitoneal or intrathoracic injection.

This organism has been found in cases of influenza in the sputum, urine, and even in the faeces of influenza patients affected with hæmorrhagic diarrhoea, and has been isolated from the sputum and from the lungs post mortem. The interest which attaches to this organism lies, however, in the forms which are derived from it in culture.

Grown in a sterile hanging-drop of glucose-broth, or in culture on serum-glucose-agar, a remarkable variety of organisms is produced. Not only are large hyphal threads obtained, varying in their reaction to Gram staining, even in the same thread, and containing Gram-positive spore-like bodies, but from the large spores or the hyphæ are derived by budding coccil forms. These are seen as clumps of cocci, or as oval or lanceolate diplococci, or in chains as diplo-streptococci or streptococci composed of elements with flattened opposed sides. These coccil forms vary greatly in the reaction to Gram staining, even in young cultures, so that in diplococci one element may be Gram-positive and the other Gram-negative, and similarly in the streptococcal chains.

Certain forms intermediate between the finer hyphal threads and the coccil chains are seen as pleomorphic bacilli in rosettes or clumps breaking down into coccil elements.

Mention may here be made that various forms resembling the above have been obtained in blood cultures from cases of influenza and in sterile catheter specimens of urine. In sputum, the large spores or their derivatives can be seen in cases of influenza, and their presence may be of value in diagnosis.

The organism thus derived from the large spore shows considerable resemblances to the "Organism D" described by Donaldson.<sup>2</sup> The streptococcal forms isolated by plating the growth obtained from the large spores in a hanging-drop of glucose-broth have, however, the following characters, which differ in some respects from "Organism D."

Short chains, usually not more than 8–12 elements, strongly Gram-positive in young cultures, but variable in the chain in older cultures. Elements of the chain composed more often of diplococci with flattened opposed sides than of lanceolate forms. Both types are, however, seen. Growth on agar is slight or absent, but on serum-glucose-agar or blood media minute streptococcal colonies are obtained, round, discrete, and raised. The colonies appear slightly granular by transmitted light. They do not hæmolyse blood media. A slight granular deposit is formed in broth. The fermentation reactions are acid in glucose, lactose, and maltose, no change in cane-sugar, mannite, salicin, or inulin. Milk is acidified without clot. The reactions, therefore, differ slightly from those of Donaldson's organism.

The streptococci thus obtained by plating, and the staphylococcal forms, are not pathogenic to guinea-pigs. The pleomorphic bacillary form is also non-pathogenic to the guinea-pig.

It is of interest to note that by prolonged growth (7 weeks) in a glucose-broth hanging-drop, very minute coccil forms are obtained, reaching the limit of the microscopical powers available. Crookshank has recently emphasised the possibility of a relation between filter-passers and non-filter-passers. It was noted in the Medical Review of the Foreign Press<sup>6</sup> that strangles has been transmitted by means of filtrates of infectious material, a disease associated with the *Streptococcus equi*, which resembles the pleomorphic organism of Rosenow.



It can be definitely stated, however, that the various forms described here are derived from the large oval spore and are stages in the growth of that organism. This suggests that influenza may be of mycotic origin. Further work is needed and is being carried out on the above organisms. A statement, however, of the results at present obtained seemed to be of value. I am indebted to Lieutenant-Colonel S. G. Butler, D.S.O., R.A.M.C., for facilities in connexion with this work.

*References.*—1. MacConkey: Quoted in *Manual of Bacteriology*, Hewlett, 1908, p. 370. 2. Donaldson: *THE LANCET*, 1918, ii., 723. 3. Harris: *THE LANCET*, 1918, ii., 871. 4. Bradford, Bashford, and Wilson: *THE LANCET*, 1919, i., 169. 5. Medical Supplement to the Daily Review of the Foreign Press, October, 1918, 359. 6. Crookshank: *THE LANCET*, 1919, i., 314.

## THE RESULTS TO BE EXPECTED FROM ANTENATAL CARE.<sup>1</sup>

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I HAVE lately become convinced that both the medical profession and the lay public have been engaged in so impetuous a pursuit of antenatal work that they have not paused to consider what results they are really justified in expecting from it. What is the extent to which stillbirth and infant disease and mortality may be reduced by antenatal work?

Some, and they are the vast majority, expect too much. They believe that by something wonderful, almost magical, in treatment by drugs, diet, rest, and general hygienic measures almost every foetus doomed to death or disease may be made into a healthy infant. Others, who, I am glad to say, form a very small minority, are convinced that antenatal care will do positive harm by preserving the lives of those who would only become unfit and degenerate racial undesirables. It is easy enough to refute such a crude opinion as this, but the fact that it exists should make us all the more careful to be equipped with facts and figures in our advocacy of antenatal work.

### *The Need of Standardised Records.*

The time has come for us to make an assessment of our antenatal work; to balance our accounts and to find out what are our profits in relation to our capital outlay and expenditure. The amount of time, energy, and labour put into antenatal work at the present day is very great. Do the benefits gained therefrom represent a big, a moderate, or only an insignificant profit? We have got to find out whether our results justify our work. This paper has been written with that object, though the facts at present at my disposal do not allow me to do more than generalise. I hope to show that the present rate of foetal mortality is capable of being reduced by about one-half. But this end cannot be attained by antenatal methods alone; for not only are the majority of foetal deaths beyond the realm of antenatal care, since they are the direct result of the accidents and complications of labour, but antenatal care itself depends for its successful fulfilment on a high standard of midwifery. Without wishing for a moment to minimise the importance of the antenatal period, I desire to draw attention to the even greater importance of the intranatal period of foetal existence.

I should like to see records kept, on a standardised system, at every large maternity centre; this might well be insisted on by the State department which subsidises such centres. From the records of pregnancy, of labour, and of the year subsequent to labour, both for the mother and the infant, we should be able to state the profits of our enterprise. We should know how many foetuses were saved from probable death during pregnancy, how many from death or injury during labour; how many mothers were spared serious illness, or possible death, from the diseases of pregnancy and the injuries of labour.

The only records of pregnancy that have been published on these lines, so far as I am aware, have come from the pregnancy clinic of the Boston Lying-in Hospital. Dr. F. S.

Kellog considers what complications of pregnancy were found amongst 4996 cases. I will quote his own words:—

"Of these, 1524 showed some abnormality in pregnancy, 30 per cent.; albuminuria without other signs of toxæmia, 361, 7 per cent. of all cases, 23 per cent. of abnormal cases; elevated blood-pressure without other signs of toxæmia, 259 cases, 5 per cent. of all cases, 16 per cent. of abnormal cases; definite symptoms of toxæmia, 195 cases, 4 per cent. of all cases, 12 per cent. of abnormal cases; contracted pelvis of varying degree, 401, 8 per cent. of all cases, 26 per cent. of abnormal cases; heart lesions, 111 cases, 2 per cent. of all cases, 7 per cent. of abnormal cases; phthisis, 10 cases; antepartum hæmorrhage, 33 cases, which is 0.7 per cent. of all cases; pyelitis, 20 cases; syphilis 21 cases; gonorrhœa, 10 cases; chronic nephritis, 5 cases; diabetes, 3 cases; with occasional cases of fibroids in the lower segment, ovarian cysts, and other complications to the number of 30; also a large number of severe varicosities of the leg, and a small number of antepartum phlebitis. These figures establish the fact that pregnancy is not the normal physiological process it is so broadly considered, and that prenatal care is valuable in 30 per cent. of pregnancies that are in some degree abnormal; and that the only way to include this 30 per cent. is to give it to all; and that with 4 per cent. of all pregnancies showing definite toxæmic and pre-eclamptic symptoms, 2 per cent. of all pregnancies showing heart lesion, 8 per cent. of all pregnancies showing some degree of contracted pelvis, 0.7 per cent. of all pregnancies showing antepartum bleeding, to go no further, prenatal care is not only valuable, but is essential."

### *What is the Object of Antenatal Work?*

Antenatal work has for its aim the great economic principle of the prevention of waste. I am here dealing only with the foetus; the mother is another, a bigger, and—in my opinion—an even more important problem in relation to antenatal work. I will merely mention that maternal mortality and morbidity are enormously greater in cases of dead birth than of live birth. This is obvious, since the birth of a dead foetus is usually the consequence either of a pregnancy disease or of a severe labour, with the added risks of maternal injury or puerperal sepsis.

Quite apart from the waste of infants, it does not need a professional economist to appreciate the waste involved by the birth of a dead foetus. At the best there is a waste of time, a waste of energy, a waste of health, and a waste of money and material, distributed amongst the mother and family, the doctor, midwife and nurse, the National Health Insurance sickness and maternity benefits. At the worst there may be added to these permanent harm to the mother's health or even the loss of her life. The maternal mortality from childbirth is well enough known, but we have only a glimmering of the severe and slight illnesses that result from childbirth. We have not accurate figures for this, but they can and must be got. As some indication I have found that 40 per cent. of the patients who come to my gynaecological out-patients' department at the London Hospital come because of some post-parturient disease, usually only of a minor nature, but all the same it is enough to produce temporary, if not permanent, discomfort, or invalidism, or sterility. The only thing that can convert waste into gain; that can compensate for the discomfort, expense, and danger of child-birth, is the birth of a healthy infant. This is the object of antenatal care.

Let us consider what influence the reduction of foetal mortality is likely to have on the birth-rate. The desirability or otherwise of raising the birth-rate is a controversial point I will leave alone. The dead birth-rate for viable foetuses is about 3 per cent. Supposing we could by antenatal work reduce foetal mortality by one half, and thus cause an annual addition of about 12,000 infants to the population, would the birth-rate be thereby very much influenced? A birth-rate of 20 per 1000 would only be raised to 20.3. The reduction of the dead birth-rate by one half would be a most remarkable achievement, but it would only raise the live birth-rate by a fraction. If it is desirable to raise the live birth-rate there are quicker and more certain methods of doing so than antenatal care. There is a great deal of confused thought and loose writing about the tens of thousands of babies lost annually to the State from early abortion and dead-birth, excusable because it is good propaganda. The birth-rate is governed by profound economic factors beyond the influence of obstetrical science. If obstetrical science could bring it about that every conception reached healthy maturity the result would soon be a reduction in the number of conceptions.

<sup>1</sup> A paper read on July 1st at the National Conference on Infant Welfare organised by the National Association for the Prevention of Infant Mortality.



*Importance of Improved Intranatal Care.*

Leaving now the objects for which antenatal work strives, let us consider its results as regards foetal life. I intend to arrive at the answer to the question, "What really are the results to be expected from antenatal care?" by the consideration of two points: the distribution of the causes of foetal deaths amongst the 3 per cent. death-rate, and the preventive means at our disposal implied by the expression "antenatal care." We should thus be able to divide foetal death into two classes, (1) preventable and (2) not preventable, always with the sure hope that by scientific research, the class "preventable" may be constantly recruited from the class "not preventable."

Foetal death may occur during one of two periods: either during the long quiescent period of pregnancy, before the onset of labour—the antenatal period—or during the short stormy period of labour—the intranatal period. In the same way we must divide our preventive methods, our means for preserving the life and health of the foetus, into two distinct classes—antenatal methods and intranatal methods. By intranatal methods I mean the management of labour, normal or complicated. One of the chief points I wish to make is the immense importance in the prevention of foetal death of the management of the intranatal period. I do not hesitate to say that more foetuses can be saved by improved intranatal care than by antenatal care.

If a series of cases of dead birth be investigated the first great fact to become clear is that more foetuses are killed during labour from injury or accidental complications than die during pregnancy from foetal or maternal disease. A foetus that dies during the antenatal period is usually born in a state of maceration; one that dies during the intranatal period is in a fresh condition.

Out of every 100 dead-born viable foetuses you will generally find about 60 fresh and 40 macerated. Although the fresh foetuses will include a few that have died from antenatal causes shortly before the onset of labour, it is reasonably accurate to state that 60 per cent. of foetal mortality is due to the accidents and complications of labour. In other words, 60 per cent. are cases of intranatal death and 40 per cent. of antenatal death. This alone is an indication of the immense importance of improved intranatal methods for the reduction of foetal mortality.

*Relation of Antenatal to Intranatal Work.*

Another point which leads to the same conclusion is that antenatal work depends on a high standard of intranatal work for the fulfilment of its aims. Antenatal work is the strategy, intranatal work the tactics of preventive obstetrics. Consider for a moment the investigations we make at an antenatal clinic: (1) We measure the pelvis and estimate the relative sizes of the pelvis and foetal head, for we know the disasters of labour with a contracted pelvis; (2) we find out the presentation of the foetus, for we know that breech-labour has an appreciable foetal mortality; (3) we test the urine, for we know the consequences of untreated toxæmia of pregnancy; (4) we get the history of former pregnancies and labours, which often puts us on the track of syphilis; (5) we examine the pelvic cavity for obstructive tumours; (6) we investigate the general health of the mother, though we know that, with rare exceptions, the only unhealthy states of the mother, apart from the toxæmia of pregnancy, that cause foetal death are syphilis and renal disease. The list seems short enough, but its length is by no means commensurate with its great importance.

Now let us consider the treatment we adopt as the result of the above investigations. We find it is chiefly intranatal. The only purely antenatal treatment consists in the treatment of syphilis and in the treatment of the appropriate cases of toxæmia of pregnancy or of chronic renal disease by the simple means of diet, rest, and aperients. Otherwise we depend on the induction of premature labour, Cæsarean section, or on the careful management of labour with instrumental assistance when occasion demands.

*Causation of Foetal Death.*

I will now deal with the causes of foetal death and will try to indicate how many deaths are preventable, with special reference to the value of antenatal care in achieving this object. There is no need for me to enter in detail into these causes, for this part of the subject has already been dealt with by Dr. Amand Routh.

Taking first the macerated foetuses we can distribute them into the following groups: Syphilis, toxæmia of pregnancy, chronic renal disease, relative placental insufficiency from abnormal smallness of the placenta or excessive infarction, separation of the placenta by retroplacental hæmorrhages, and a great group in which the cause of death is undeterminable. Syphilis heads the list of deaths amongst macerated foetuses with 34 per cent., toxæmia of pregnancy comes next with about 20 per cent.; then comes the disappointing group with cause undetermined, about 20 per cent. We can place relative placental insufficiency and retroplacental hæmorrhage at about 18 per cent., and distribute the remainder amongst chronic renal and other maternal diseases and severe foetal deformities.

Turning now our attention to the fresh foetuses we shall find that in most of these death is due to the injuries and accidents of labour. There is a certain number due to the causes I have enumerated under the macerated foetuses, such as toxæmia of pregnancy or retroplacental hæmorrhage; cases in which the foetus died shortly before its birth and before it had had time to become macerated. Amongst these fresh foetuses we find that placenta prævia, accidental hæmorrhage, instrumental or natural delivery through a contracted pelvis, breech presentation, delivery by version, delayed labour from whatever cause, prolapse of the cord account for all but a very few. The most striking fact of all is that about one-half of these fresh dead-born foetuses show, on post-mortem examination, severe cerebral injury in the form of cerebral hæmorrhage and tearing of the septa of the dura mater; such injuries could only be caused by excessive cranial stress during labour.

*Consideration of Causes of Foetal Death in Regard to Prevention.*

I will now try to work out how many of these fatalities are preventable. It will be noticed that I have not attempted to give the ultimate causes of foetal death, but have only placed the cases in broad clinical groups. In giving the percentage frequency of each group I shall again only give approximate figures. This rough method is quite sufficient for the purpose, as I can only hope to indicate what can be done in a general, and not in a precise, way. For the purposes of preventive treatment we can conveniently place all cases of foetal death into four groups:—

1. Those, the cause of which can be discovered during the antenatal period and can be prevented by purely antenatal treatment. The great representative of this group is syphilis. Another example is toxæmia of pregnancy, many cases of which can be kept within reasonable bounds, or even cured, by simple antenatal treatment. Still another example is breech presentation, for which we can perform external version.

2. Those, the causes of which can be discovered during the antenatal period, but which depend for their prevention on intranatal methods. The best example of this is contracted pelvis. If discovered early enough in pregnancy the obstetrical treatment can be planned, and will be either waiting for natural labour, with the help of forceps if necessary, or induction of premature labour, or Cæsarean section. Another example is afforded by those cases of toxæmia of pregnancy which do not yield to antenatal treatment and which must be treated by induction of premature labour. Another rare example is obstructive pelvic tumours.

3. Those, the causes of which are not discoverable in the antenatal period, but which make their presence known just before or coincidently with the onset of labour, or during the course of labour. Examples of this group which are prolific of foetal death are the antepartum hæmorrhages. Other common ones are prolapse of the umbilical cord, cases of prolonged labour from such causes as persistent occipito-posterior presentations. In this group most of the foetuses have cerebral hæmorrhage and tearing of the septa of the dura mater, consequent on delivery by forceps or version.

4. Those, of which the causes, so far as our present state of knowledge stands, are not discoverable or preventable by any means whatever. These include the great group in which the cause of foetal death cannot be determined, the cases of relative placental insufficiency due to abnormal smallness of the placenta or to the destruction of a large area of placenta by infarction, those cases in which a blood-clot is found behind the placenta, and cases of severe foetal deformity such as anencephaly, hydrocephalus, and cedematous states of the foetus.



*The Respective Value of Preventive Methods.*

I will now attempt to make a rough estimate of how many foetal deaths are preventable and how many are not preventable, and will give a rough indication of the preventive part played by antenatal methods alone, by combined antenatal and intranatal methods, and by intranatal methods alone.

—	Incidence.	Preventable.	Antenatal.	Ante- and intranatal.	Intranatal.
Syphilis ... ..	15	15	15	...	...
Toxaemia of pregnancy ...	10	6	3	3	...
Complications of labour } (including antepartum } haemorrhage) ... ..	50	30	1	9	20
Chronic renal and other } maternal diseases ...	2	1	1	...	...
Cause undeterminable ...	12	0	...	...	...
Relative placental in- } sufficiency and retro- } placental clot ... ..	6	0	...	...	...
Foetal deformities ... ..	5	0	...	...	...
—	100	52	20	12	20

It is thus demonstrable that out of the 50 per cent. of foetal deaths which are theoretically preventable, about 20 per cent., of which three-quarters are syphilis, could be prevented by antenatal methods alone. We see that 12 per cent. depend for their prevention on combined antenatal and intranatal methods, and 20 per cent. on intranatal methods alone.

The point to which the foregoing line of reasoning has brought us is that although antenatal work is of immense importance, and we must not abate by one jot our enthusiasm for it, yet the importance of the intranatal period and the necessity of getting a better standard of midwifery must be recognised much more than it is at present. This conclusion is forced on us when we realise that the majority of dead foetuses have met their death in the intranatal period, that many cases of intranatal foetal death occur from causes beyond the control of antenatal care, and that antenatal care itself depends on intranatal skill for its successful issue.

In conclusion, I would appeal to this great National League, which has already done so much for maternity and child welfare, to use its influence in helping to bring about a higher standard of midwifery practice—an end which can only be attained through the better teaching of midwifery to medical students, midwives, and post-graduates alike, and by the establishment of enough maternity homes and hospitals to meet the needs of our population.

**PNEUMOKONIOSIS IN MAN AND HORSE.**

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WHEN dealing with nasal defect and mouth-breathing<sup>1</sup> as contributory causes to pulmonary tuberculosis I brought forward among a priori arguments the fact that the Equidae, which breathe exclusively by the nose, very rarely suffer from tuberculosis (especially the pulmonary form), although no better housed than cattle, which are very subject to that disease and possess an air-way by the mouth. The thought occurred that it would be interesting in this connexion to test the comparative incidence of pneumokoniosis in man and horse working in dusty occupations, as in coal-mines. Accordingly, investigation and inquiry were begun.

*Views of Various Investigators.*

Veterinary authorities agree that pneumokoniosis is very rare in horses. Smith<sup>2</sup> says: "There is no such thing as miners' lung amongst them (coal-pit ponies), though many never come to the surface for years." Coal-dust is not mentioned amongst the causes of equine interstitial pneumonia in Friedberger and Fröhner's work.<sup>3</sup> It is put last in the list of such causes by Hoare,<sup>4</sup> and pneumokoniosis is

stated to be only an occasional form of equine chronic pneumonia.

Professor McQueen of the Royal Veterinary College, Camden Town, kindly informed me that miners' lung was very rare in pit ponies. He added that an unpublished post-mortem investigation of pit ponies' heads (in relation to possible penetration of the facial sinuses by the coal-dust) revealed that the dust was nearly all stopped at the nose. Messrs. R. C. Trigger and W. Trigger, F.R.C.V.S., who furnished the material, told me that, clinically, any lung disease is highly uncommon in pit ponies, who nearly all cease work from old age. The latter added, however, "Post-mortem examination often reveals extensive anthracosis in an otherwise perfectly healthy lung and no symptoms in life."

*Other sources.*—In the Rand gold-mines, so Mr. Alex. Richardson kindly writes, no animals are used for haulage purposes; some years ago a few mules were employed, but nothing is discoverable as to their health. Dr. Johnson<sup>5</sup> kept white rats continuously down a Witwatersrand mine in the dustiest spot, their conditions of life being much worse than those of the miners. They developed silicosis but not tuberculosis; their general health was quite unaffected. Rats breathe through the nose exclusively. In a discussion following this paper the opinion was expressed that if the rats had been brought up out of the mine regularly like the men they would have developed hardly any silicosis in five years.

In Cornwall, Dr. Tonking, whose work on the local miners' phthisis is well known, tells me that there are no ponies underground in the Camborne district. In the St. Just area one mine uses them, but there, so Dr. Nesbitt is good enough to report, no silicosis or miners' phthisis exists, save a few cases returned from South Africa.

At Gartverrie, Scotland, the manager of the ganister-mine there (ganister, a component of firebrick, &c., is a great source of silicosis) tells me that men and horses work practically in an open quarry and that silicosis in either is unknown.

In a discussion following a paper by Dr. Haldane, F.R.S.,<sup>6</sup> Sir H. Cunningham said the dust<sup>7</sup> of the mines—this dust was not only coal, but also stone or shale put down to lessen risk of coal-dust explosions—did not hurt the pit ponies. Another speaker instanced a pony which had worked in very dusty parts of a mine for many years. It was shot, and on examination no dust was found in the lungs. Dr. Haldane related having examined coal-pit ponies killed in an explosion, and having been struck with the small amount of dust in their lungs, which were comparatively pink. He supposed that the ponies' noses filtered the dust off. Pit ponies all looked well and lived for many years.

Lastly, there is the case of the great Alpine tunnels, in making which men and horses were employed; it is certain that formerly both suffered a high mortality. The causes of death in the men are given as ankylostomiasis and "acute bronchial and pulmonary catarrhs." There is little mention of tuberculosis or chronic pulmonary disease. What the horses died from I have not been able to ascertain. But it is stated that there was a very high CO<sub>2</sub> content in the tunnel air, often exceeding 15 per 1000, so that the railway metals were chemically affected. This would probably lead to acute pulmonary ailments in the horses too; a certain incident related to me in connexion with coal-pit ponies seems, at any rate, to suggest so.

*Author's Investigations.*

My district contains many mines.

*Coal-mines.*—I have visited three, one employing over 200 ponies. What I heard and saw, with one exception, entirely confirmed the preceding literature. There were no lung ailments among them; they were hardly ever sick; they were invalided for old age; their average working life was 13 years; and so on. Certainly they all looked fat and well, and did not cough; many were obviously old. They never came to the surface except during a strike. The exception spoken of was that in one pit the stables had once, for the sake of proximity to work, been put in the "return" air-way. The ventilation of a coal-mine is artificial, and for this

<sup>1</sup> Three Clinical Studies in Tuberculous Predisposition. London: Allen and Unwin. 1917.

<sup>2</sup> F. Smith: A Manual of Veterinary Hygiene, London, 1905.

<sup>3</sup> Friedberger and Fröhner: Veterinary Pathology, translated by A. H. Hages, London, 1905.

<sup>4</sup> E. W. Hoare: A System of Veterinary Medicine, II., 889.

<sup>5</sup> J. P. Johnson: Journal of the Chemical, Metallurgical, and Mining Society of South Africa, March, 1917.

<sup>6</sup> J. S. Haldane: The Effects of Dust Inhalation, Institution of Mining Engineers Annual Meeting, London, June, 1918.



purpose there are mostly two sides to a mine, separated by a double set of doors having a dead space between. On the one side is the incoming good air from the surface, on the other the outgoing or return current. The latter is stated not to be more dusty than the former, but to contain some  $\text{CH}_4$  and a higher percentage of  $\text{CO}_2$ . After these ponies had lived for a little in this chemically somewhat deteriorated "return" air, against which the nasal filter would be no protection, they panted and wheezed, and one or two died. On changing the stables back to the intake air-way the ponies regained their health. It is allowable to suppose that a good deal of the equine mortality in the old Alpine tunnel-making arose in this way.

**Ganister-mines.**—I have visited six mines and made inquiries as to six more. Of these 12, four employed ponies underground; the largest number at any pit was five. The reports were that the health of the animals was excellent. However, it appeared that the conditions as regards possibility of dust inhalation were better for the ponies. They being required for traction purposes, waited in the roadway while the men were engaged at near quarters with the mineral. This was so at three of the four mines, including the one in which human silicosis was most common. At the fourth the conditions under which human and equine workers were employed were described as being about equal. At this place it was claimed that an improved system of ventilation had practically abolished silicosis, but I was told that when the disease was common in the men nothing analogous was noticed in the ponies, and a mule had worked for 20 years in good health. In all these ganister-mines the ponies, unlike coal-pit ponies, were stabled above ground, coming up after a shift of work. The shallower depth and smaller extent of the workings facilitated this practice.

#### Conclusions.

It will be admitted that the trend of the above evidence is in favour of horses being much less liable to pneumokoniosis than man is, and that there is some reason to think their exclusive nasal breathing responsible for this. With this result may be usefully coupled another similar one already mentioned—namely, that horses are also much less prone than man is to tubercle, especially pulmonary tubercle.

Does the same explanation hold? At all events, it is made more likely by the way this comparison of human and equine pneumokoniosis has turned out. Laboratory experiments on phthisiogenesis have often consisted in making animals inhale or ingest dust, and mine experience is obviously superior, in actuality and correspondence to natural conditions, to laboratory experiment. Parenthetically, it contradicts the conclusions of the school of Calmette as to the alimentary origin of pulmonary tubercle, conclusions already assailed by Cornet, a fellow bacteriologist. For these coal-pit ponies, although their food is now brought down fresh to them every day or two, must, by living in a coal-pit for years and champing their bits when at work, swallow great quantities of coal-dust; they must swallow much more than the men do. Yet Dr. Haldane finds their lungs much less black than the men's.

The freedom of horses from pulmonary tubercle cannot, on the other hand, be explained by specific humoral insusceptibility, as witness the experiments of MacFadyean, Ravenel, and Griffiths of artificial inoculation of horses with tubercle, in which copious pulmonary lesions were produced or fatal results reached. Again, specific humoral insusceptibility to tubercle would explain nothing of horses' freedom from pneumokoniosis. Exclusive nasal respiration will explain both, and in addition the especial rarity of the pulmonary location of natural equine tuberculosis.

So much for deductions as to the pathogeny of tuberculosis and ordinary consumption. As for the bearing upon silicosis and miners' phthisis, it would be of advantage to have more observations. The number of ganister-pit-ponies is so very few, seeing that the district I have spoken of contains the majority of these mines in the whole country. Something should be learnt from exposing ponies or mules to the same conditions in South African and Cornish mines as produce human miners' phthisis, or to rather more severe ones. The white rat is not a good animal for experiment in this connexion, it being notoriously resistant even to artificial inoculation with tubercle<sup>7</sup>; whereas horses are distinctly less difficult.

In the prophylaxis of the grave South African silicosis it might be worth trying if measures like oral obturators, as also nasal irrigation after work, were possible in practice. In the few cases of clinical anthracosis and typical fibroid phthisis (other than those in men who work in stony parts of the mine, roof tenders, and so forth) that one meets with in colliers, I have been struck with the frequency with which such subjects showed a wide atrophic nose, which would be useless as a dust-filter. The effect of all continuous dust inhalation is to cause some slight degree of intranasal atrophy, but if a man came to this work already nasally atrophic his lungs would obviously be at a great disadvantage. Saenger<sup>8</sup> said that in workers in dusty trades those with wide nasal passages showed dust in the respiratory tract as far down as the trachea, which was not the case when the nasal fossae were of normal size.

I wish to express thanks to all of my informants.

<sup>8</sup> Saenger: Centralblatt für Innere Medizin, March 19, 1893, No. 11.

## TUBERCULOSIS FROM A WEST INDIAN STANDPOINT.\*

BY JOSEPH GEOGHEGAN, M.B., F.R.C.S.E.,  
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THE Turks and Caicos Islands form the southern end of the arc of the Bahamas, but are attached to the government of Jamaica. Grand Turk is the capital. The population, of 5615 by the Census of 1911, is of the usual original negroid stock with, in cases, a dilution of white blood; there are a small number of whites to whom the remarks here made do not apply. The people are of a hardy, sturdy type, usually good boatmen, living by work on the salt-ponds—which give the staple product of the Dependency—sponging, and plantation labour, the last in a restricted and limited way. The islands are very barren; water is scarce, largely dependent on the small rainfall. The climate is warm but tempered by cool trade winds.

#### Mortality from Tuberculosis.

During the quinquennium 1909-13, of the total deaths registered in Grand Turk, the percentage recorded as due to tuberculosis was 14.4, indicating about 4 per 1000 of the population. No information is available as to the other settlements of the colony as a whole.

The corresponding rate in England is under 1. In the 15 largest towns of Scotland the quinquennial rate<sup>2</sup> at slightly over 1½ (1.6) is the same as that for the United States of America.

Comparison instituted between these figures and West Indian statistics is not to the benefit of the latter. In Jamaica<sup>3</sup> the death-rate per 1000 is under 2; 3.5 for Kingston. In Grenada<sup>4</sup> for quinquennium to 1913 the percentage of deaths due to tuberculosis was 5.72; 10.41 for the town of St. George. In St. John's, Antigua,<sup>5</sup> 6.13 per cent. In Trinidad (and Tobago)<sup>6</sup> for quinquennium (1909-13) 2.1 per 1000; 5.2 for the capital, Port of Spain. In the Bahamas the disease is said to be rife. Dr. Godfrey<sup>7</sup> points out for British Guiana that—

"the crowded villages near Georgetown and along the west bank of the Demerara River show phthisical death-rates of 4.2 and 4.3 per 1000 living, while the less crowded and scattered villages of the east bank and of the sea-coast have lower rates, 2.2 and 2.3 respectively. On the sugar plantations, where overcrowding is forbidden and where regular life obtains, the average phthisical death-rate during the years 1907 to 1910 is 1.15 per 1000, while in 1911 the rate is 0.9, which compares most favourably with any civilised country."

The histories of two families illustrate certain aspects of the question; the number could be readily amplified.

Summed up, there is in one family the case of a girl dying of the disease; her mother is now affected; amongst the family a young man, her uncle, dies of the disease, followed in succession by his father and his sister, his sister's fiancé being left tuberculous.

In the second series instanced the disease commences in the death of a young man; then follows in fatal sequence

<sup>7</sup> See Cobbett: The Causes of Tuberculosis, Cambridge, 1917, p. 444.

\* Abridged from a report submitted to the Colonial Office.



first the father, then a brother, then a sister, all living and dying in the same house, and leaving affected a sister from the house and a brother living elsewhere. I have not been able to gain precise information as to how long the last has been in existence, but, be it the origin or the result, the inference remains.

In neither of the series recorded is hereditary predisposition or transmission suggested or known to my information, but in the distinct lines of infection illustrated is shown the impress of other factors.

#### *Causation.*

All West Indian observers agree in the opinion that the incidence of phthisis pulmonalis greatly overweighs other tubercular diseases which are comparatively infrequent. In this Dependency only two joint affections have come under my notice in nearly four years' experience, and the glandular condition is but seldom noted. The boiling of milk is extensively practised in the West Indies; in Turks Islands tinned milk is almost solely depended on. Though the infantile mortality rates in the West Indies are admittedly high—in Turks Islands for 1914 and 1915, 204 and 229 respectively—there are other factors applicable of a certain importance.

In view of the negligible appearance of the condition in children,<sup>†</sup> and of the precise fields of the respective bacilli, such a sweeping statement that all tuberculosis commences in infancy (Behring<sup>9</sup>) may have an element of truth in it, but it has no minimising influence on the fact that pulmonary tuberculosis is under suitable environment highly contagious in the adult. Accentuation is lent to the question of direction of contagion by recent views on the respective spheres of influence of the human and bovine forms of the bacillus. The great preponderance of the human type in the sputum of phthisis pulmonalis is emphasised by A. S. Griffiths.<sup>10</sup>

It may therefore be concluded that it is to the human type that the prevalence of pulmonary tuberculosis in the West Indies is due. The mode of spread is apparent. Given an original focus, with or without a susceptibility, hereditary or racial, the disease is maintained by direct infection in virtue of the general ignorance of hygiene, in particular, the closing of every door and window at night, and the stopping up of nooks and crannies. This is common throughout the West Indies. Only prolonged perseverance can overcome the hatred of fresh air at night.

Other factors may be briefly scanned. All the West Indian towns have high rates as contrasted with the country districts. Reliable information is not to hand, but the house ratio in Grand Turk is 4·7 by a recent census. Overcrowding would not seem to present locally the terrible features of slum life in greater centres. As a concomitant to overcrowding it will be obvious that when a water-supply is inadequate or defective for any reason personal cleanliness may not be of a high order. The intimate association in thoroughly unhygienic sleeping-places of a number of individuals leaves little to be desired from the point of view of the bacillus.

Poverty is an important aspect. The West Indies possess a varied and rich dietary scale, but in Turks Islands the food as a whole is limited in variety, inferior in nature, and deficient in freshness. Starchy foods predominate and proteins are limited. If any influence can be attributed to food as a causative factor in tuberculosis, the dietary habits common to the West Indies may permit views palpably in alignment with those culminating in Philip's Zomotherapy.

Sanitary conditions leave much to be desired. Public or personal hygiene is unknown in the class forming nine-tenths of the population, but in all distant and small areas sanitation is a vexatious problem.

#### *The Question of Prevention.*

The figures quoted are solely derived from the comparative death-rates, and case-mortality will vary under the effects of administrative control and therapeutic advantages. In England it is said that, subject to surveillance from a reasonably early stage, a high percentage of cures may be expected. Grant Andrew,<sup>11</sup> in his careful résumé of a long series of hospital figures, out of 800 cases records a mortality of only 19·3 per cent. Recent administrative attention cannot fail

to have a repressive influence on the existence of a disease so common that no middle-aged person but bears the stigmata of infection. It is only fair to contrast the West Indies in the possession of the necessities of therapy in this direction with Victorian England, and to express the hope that a similar impetus of attention will give commensurate results.

The present case-mortality amongst those of negro stock in the West Indies is admitted by all observers to be indubitably high. Osler points out that the negroes in the Southern States have an extraordinarily high death-rate, especially in the cities. Of eight cases seen in sequence in 1915 in Turks Islands, all in an early stage (save one from abroad who is now alive) and all under constant supervision, no less than six were dead by March, 1916. Phthisis in Turks Islands has a most fatal complexion. Rather than that the disease is universal and widespread, the view should be taken that it is more fatal than frequent.

West Indian tuberculosis stands, therefore, in certain respects in contrast with English. This point is of high importance, since it must presumably be correlated either with an absence of therapeutic possibilities or with a special lack of immunising power in the negro. Whatever relation subsequent research establish, there can be no question but that attention to personal hygiene and public health must have a marked effect. Backward the West Indies may be at present, but the efforts recently begun cannot fail eventually to produce good results. Methods dissimilar to those suitable for England are needed. The people are a different race and must be approached in a more elementary manner. The actual infective danger of phthisis is decidedly greater than in England, from deficient sanitation, from hygienic ignorance, and from greater susceptibility; phthisis is, further, the stronghold of tuberculosis in the West Indies, and once successfully combated the other forms do not seem likely to give rise to serious concern.

The presence of such devitalising influences as malaria and ankylostomiasis and the difficulties of administration are not lightly to be ignored. Taking everything into consideration it must be admitted that the death-rates, while in cases remarkably low, preserve a fair average. St. Lucia with 17·4, St. Vincent with 17·56, Grenada with 19·27, Cayman Islands with 7·1, and Turks and Caicos Islands with 14·0, may be placed in contrast with Jamaica with 25·1, the Bahamas with 26·7, British Honduras with 24·2, and British Guiana with 29·2,<sup>12</sup> but there are usually special circumstances applicable in each case which must modify any stricture. The references indicate that the West Indies cannot be expected at present to maintain other than a fair standard. There is a fruitful field for investigation in the comparative study of tuberculosis in the different colonies, of which certain features in common have already been established.

Consideration of any tropical problem cannot fail to recur to the question of climate. It is, I believe, accepted that climate has little or no relation with the causation of tuberculosis. Taking, however, such a group as the Turks and Caicos Islands, even granting the unfortunate series of conditions noted, where the days are almost perpetual sunshine—perhaps the best and certainly the cheapest disinfectant known—there is an inclination to demand greater confirmation of such a statement. The effect of a few degrees of latitude on the sum of the obscure metabolic processes that make up life is well exhibited in the biological adaptations to very varying conditions that will readily recur to the mind. Man and the tubercle bacillus inhabit the known world, though it is said that the Bedouin of the Sahara and the Eskimo of the Far North are free of such an unnecessary adjunct. Is a tropical climate better suited to the tubercle in the lung or to the tubercle bacillus? Or is it that, in the extra-corporeal life of the bacillus, there is an optimum of climate for the parasite as well as for the host, which need not necessarily coincide?

*References.*—1. Proceedings of the First West Indian Intercolonial Tuberculosis Conference, Trinidad, 1913. 2. Glaister: Text-book of Public Health, p. 430. 3. Proceedings, &c., p. 21. 4. Ibid., p. 28. 5. Ibid., p. 57. 6. Ibid., p. 99. 7. Ibid., p. 87. 8. Ibid., p. 122. 9. Behring: Quoted in Quinquennium of Medicine and Surgery, 1906-10, p. 375. 10. Griffiths: Tubercle Bacilli Derived from the Sputum, THE LANCET, 1916, i, 723. 11. J. Grant Andrew: Age, Incidence, Sex, and Comparative Frequency in Disease, p. 232. 12. See Colonial Reports for St. Lucia, 1913, p. 19; St. Vincent, 1913-14, p. 24; Grenada, 1913-14; Cayman Islands, 1912-13, p. 13; Jamaica, 1913-14; Bahamas, 1912-13, p. 18; British Honduras, 1913, p. 17; British Guiana, 1912-13, p. 23.

<sup>†</sup> I have never seen a case of abdominal tuberculosis in the Turks and Caicos Islands.



## INFLUENZA-PNEUMONIA:

## THE BACTERIOLOGY OF THE COMPLICATIONS IN FATAL CASES.

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FROM the recent preliminary publication by Rose Bradford, Bashford, and Wilson<sup>1</sup> it appears that they have definitely unearthed the prime causal organism of the late "influenza" epidemic. On the other hand, it is not so obvious that this "filtrable virus" is the cause of the numerous deaths.

The work here recorded was commenced in October, 1918, when the epidemic had reached serious proportions in the area served by this hospital. It was undertaken solely with the idea of determining and isolating the micro-organisms responsible for the fatal cases, with a view to preparing an efficient vaccine for prophylactic and curative purposes. Attention was concentrated mainly on material obtained post mortem as soon after death as "leave" could be obtained, and on specimens of the serous fluids taken during life with aseptic precautions. The examination of sputa was not followed up to any great extent owing to shortage of staff, and because it was noticed early that frequently the most serious cases did not expectorate.

*Bacteriological Findings.*

*Post-mortem examinations.*—The bacteriology of the pericardial and pleural fluids and the lung "juice" or pus is recorded below. Four points attracted notice: 1. The frequency with which fluid was found in the serous cavities. 2. The invariable presence of red blood cells in the serous fluids, with a variable "quantum" of pus and living bacteria. 3. The large proportion of fatal cases which came from "low category" units—10 out of 16. 4. The frequency with which pneumococcus, streptococcus, or a diplo-streptococcus was isolated: from all except one, and in this one pneumococci were seen in the films, but the cultures were overgrown by a coliform *B. Morgan* No. 1.

In the British and foreign press attention has been directed to hæmorrhagic lesions of the serous membranes. Attention is here drawn to the frequency with which one finds, post mortem, an "inflammatory" fluid, containing living bacteria, in both pericardial and pleural fluids.

The type of coccus referred to as a "diplo-streptococcus" was a Gram + coccus, usually strongly capsulated, frequently lanceolate and suggesting pneumococci, more often rounded, but often (especially in lung "juice" or pus) showing chain formation. Pleomorphism was marked. Large and small cocci, Gram + and Gram - cocci, and large round or pear-shaped forms—"involution forms"—have all been seen in one chain of cocci. In one sputum films showed only large pear-shaped forms, while the cultures yielded a nearly pure growth of this "diplo-streptococcus." In culture this coccus grew best on media containing blood, more sparsely on agar. The colonies are pyramidal and gelatinous-looking, and about the third day are flattened with a central "boss" which may disappear later. Occasionally gelatinous lumps form, giving the appearance as if one had broken the medium in planting the culture.

The results obtained from these examinations are now set out, the organisms isolated being indicated under (a) pericardium, (b) pleura, and (c) lungs:—

- No. 1 (aged 23).—(a) and (c) *Pneumococcus* (pure); (b) —.  
No. 7 (aged 19).—(a), (b), and (c) *Pneumococcus*.  
No. 16 (aged 19).—(a) *Pneumococcus* (pure); (b) —; (c) *B. influenzae*, *pneumococcus*.  
No. 17 (aged 30).—(a) and (b) *Pneumococcus* (pure); (c) *pneumococcus*, *B. influenzae*.  
No. 18 (aged 28).—(a), (b), and (c) *Pneumococcus*.  
No. 19 (aged 27).—*Pneumococci* seen in films from plate, but all cultures overgrown by *B. Morgan* No. 1.  
No. 23 (aged 20).—(a) *Staphylococcus*, *diplo-streptococcus*; (b) —; (c) *diplo-streptococcus*, *M. catarrhalis*.  
No. 24 (aged 20).—(a) and (b) *Pneumococcus* (pure); (c) *pneumococcus*, *B. influenzae*, *M. catarrhalis*.  
No. 40 (aged 35).—(a), (b), and (c) *Diplo-streptococcus*.  
No. 41 (aged 19).—(a), (b), and (c) *Diplo-streptococcus*.  
No. 42 (aged 38).—(a), (b), and (c) *Diplo-streptococcus*.

No. 51 (aged 40).—All cultures yielded *diplo-streptococcus*, a short *streptococcus*, a small Gram - coccus.

No. 56 (aged 27).—All cultures yielded *streptococcus*, *staphylococcus*, *M. tetragenus*.

No. 57 (aged 25).—(a) *Staphylococcus*; (b) *staphylococcus*, *M. catarrhalis*, a *streptococcus*; (c) (unfinished owing to illness).

No. 58 (aged 51).—All cultures yielded *diplo-streptococcus* and a few colonies of *staphylococcus*.

No. 60 (aged 30).—All cultures yielded *diplo-streptococcus*, a *streptococcus*, *staphylococcus*.

The sputa of five of the above were examined during life.

No. 7.—Minute quantity. Purulent. Many pneumococci seen in films and isolated in pure culture.

No. 16.—Purulent. Many *B. influenzae* and a few pneumococci in films; both isolated in pure culture.

No. 19.—Purulent. Pneumococci seen in films of sputum and of plate-cultures, but cultures overgrown by a coliform bacillus.

No. 40.—Slightly purulent. The *M. catarrhalis* and a few pneumococci seen in film. *Pneumococcus* isolated in pure culture.

No. 51.—Mucopurulent. A few cocci resembling pneumococci seen in film. Cultivations not made.

*Bacteriology of serous fluids during life.*—Two examinations were made of pericardial and two of pleural fluids taken during life. The findings are now shown.

No. 12 (aged 34).—Fluid from pleura; purulent ++ *pneumococcus* seen; *pneumococcus* isolated.

No. 39 (aged 26).—Fluid from pericardium; purulent ++; *diplo-streptococcus*, *streptococcus*, and *staphylococcus* isolated (two examinations).

No. 50 (aged 25).—Fluid from pleura; slightly purulent; *staphylococcus* and diphtheroid bacillus isolated.

Notes on above cases:—

No. 12.—Sputum mucopurulent. Pneumococcal-like organisms not seen. Cultivations not made. Patient recovered.

No. 39.—Sputum purulent. Diplococci resembling pneumococci seen in film. Cultivations yielded a nearly pure growth of the *diplo-streptococcus*. Patient died.

No. 50.—Sputum contained fresh blood and clots, and was purulent. Later was only purulent. Cultivations yielded a *streptococcus* and a diphtheroid bacillus. Patient eventually developed a gangrenous cavity in the lung.

*Examination of sputa.*—Forty-six were examined, and cultivations made from 20 of these. Organisms isolated were: *Diplo-streptococcus* or pneumococcus 19, *streptococcus* 1, *M. catarrhalis* 4, *B. influenzae* 3, a diphtheroid bacillus 2.

In film preparations from all cases (46): Cocci resembling pneumococci seen in 44, bacilli resembling *B. influenzae* in 7, *M. catarrhalis* in 8.

*Summary.*

1. Pneumococcal or streptococcal organisms were found in all of 16 post mortems; in 2 out of 3 serous fluids taken during life; and in 19 out of 20 sputa examined bacteriologically.

2. Emphasis is laid on the hæmorrhagic and infective nature of the fluids found post mortem.

3. Attention is drawn to the high percentage of fatal cases which came from "low category" units.

A MEETING of the medical practitioners of Blackpool, including members of the British Medical Association and non-members, was held at the Town Hall, Blackpool, on July 2nd. Dr. W. J. McL. Baird, honorary secretary of the Blackpool division of the British Medical Association, was in the chair. Among other matters considered by the meeting, Dr. John Brown brought forward the "forthcoming election of Direct Representatives on the General Medical Council." He said that, judging from a paragraph in the *British Medical Journal* of June 28th, the Association intended to run as its candidates the four gentlemen who were its nominees in the last election. He protested against the action, as he thought it unfair for the Association to monopolise the representation of the general practitioner, particularly as the Association did not represent more than half the profession, and many of its members were not in accord with its policy. The secretary for the Blackpool division said that out of some 120 medical men in the area of this division only 39 were members of the British Medical Association. The meeting unanimously resolved to support Dr. Brown if he decided to stand as a candidate.

<sup>1</sup> THE LANCET and Brit. Med. Jour., February, 1919.



## Clinical Notes :

### MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

#### A CASE OF ACUTE SEPTIC MENINGITIS OF OTITIC ORIGIN; COMPLETE RECOVERY.

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THIS case is chiefly remarkable because of recovery.

The patient was admitted into hospital under my care on March 26th, 1918. A mastoid operation had been performed at a casualty clearing station 14 days previously. The notes stated that he had had sudden pain in the right ear with discharge; was delirious for a few hours; vomited. At the operation "offensive material" was found in the antrum and cells.

On admission on March 26th patient complained of headache and pain in the ear. Pus was freely draining through a small tube issuing from the mastoid incision and also from external meatus. Temperature, 99° F. No history of old-standing ear disease. On a daily antiseptic toilet the antro-tympanic cavity cleared up, and progress was good in every way. On May 14th he had an attack of benign tertian malaria which responded readily to quinine. From the 19th to 24th, diarrhoea; stools negative to bacilli and protozoa. On last date diarrhoea had ceased; complaint of headache and some aurial pain; slight mastoid tenderness. Temperature rose to 100°. On the 25th temperature normal, but other symptoms had increased. From examination with aurial speculum it was difficult to make out the anatomy of the operation cavity, so I reopened it under general anaesthesia. The antrum and tympanum had been thrown into one cavity and their roofs were absent, exposing a large area of dura covered with granulations. The antro-tympanic cavity was thoroughly cleansed and enlarged. No pus was found.

On May 26th patient had a much better night; the intense headache had gone. He now progressed well until June 5th, when he had a rigor; temperature 103°. Calomel gr. 3, aspirin gr. 15, followed by quinine hydrochloride gr. 20, given. On June 6th temperature 102°, pulse 94. Complained of headache; vomited in afternoon; no pain in ear; no mastoid tenderness; slight pain and rigidity back of neck; very slight Kernig's sign present. Reflexes normal; no definite signs of intracranial complications.

On June 7th temperature 101.2°, pulse 90; headache intense; slight retraction of head; Kernig's sign definitely present; no aurial pain. Lumbar puncture; a test-tube full of cerebro-spinal fluid under pressure and cloudy in appearance evacuated. Microscopical examination on the spot showed numerous pus cells. Subsequent report from pathologist showed Gram + staphylococci. Under general anaesthesia the antro-tympanic cavity was again reopened and thoroughly explored; no pus found. The brain substance of the middle fossa was explored with a needle; negative result. On June 8th and subsequent days patient was distinctly more comfortable. Headache and pain were absent, but he was drowsy; Kernig's sign persisted. The temperature gradually came down.

On the 12th there was a turn for the worse. Temperature rose to 103.6°; headache, pain in back and legs, was increasingly drowsy, and became slightly delirious. Another lumbar puncture; coconut-milk-like fluid withdrawn under pressure, containing far more pus cells than before. Subsequent report from pathologist showed Gram + diplococcus present. Immediate improvement in all symptoms followed. The temperature remained in the region of 102° for three days and then came down. On July 1st he began to get up from his bed, and when evacuated to hospital ship on the 14th, could walk several hundred yards without fatigue. Kernig's sign was much less marked.

Cases of definite septic meningitis with pus in the cerebro-spinal fluid which recover must be very rare. I have never met one in my own practice. There are two suggestive points. The organisms found in the cerebro-spinal fluid were of low virulence, and the resisting power of the patient was much weakened by malaria. Had his powers of resistance not been weakened by malaria, it is more than likely that no suppurative lesion of the meninges would have occurred. From over three years'

experience in Macedonia I have no hesitation in saying that complications of middle-ear suppuration are more common<sup>1</sup> than they would be in England under the same circumstances, and the reason for this is the deleterious effect of malaria on the resisting powers of the individual. Organisms of low virulence are thus able to bring about infections, but this very fact gives the patient a chance of ultimately overcoming them. Also noteworthy is the marked relief afforded by each lumbar puncture.

#### A CASE OF PERITONITIS FOLLOWING A NON-PENETRATING WOUND OF THE ABDOMINAL WALL.

By A. E. CHISHOLM, F.R.C.S. EDIN.,  
LATE CAPTAIN, R.A.M.C.

THAT peritonitis may result from a non-penetrating wound of the abdominal wall, with the abdominal viscera showing no gross lesion, seems proved by the following case.

##### Account of Case.

Gunner J. H., recently wounded, was admitted into hospital on Oct. 2nd, 1917; very collapsed and appeared to have lost much blood. Entrance wound, about  $\frac{1}{2}$  in. in diameter, in right buttock just external to posterior superior spine of ilium. Exit wound, about 1 in. across, in lateral sector of right iliac region. The patient was treated in the resuscitation ward for some time; no signs of improvement; it was decided to operate lest internal hæmorrhage was going on.

I opened up the anterior wound and found that the right lateral peritoneum was exposed in track of missile. Careful examination by Lieutenant Camps, who assisted, and myself, revealed no penetration of abdominal cavity. The right iliacus muscle was severely lacerated. Also fracture of the right iliac bone, involving separation of greater part of crest with part of body; comminution not very great. The damaged tissue was cut away, but not in region of exposed peritoneum, as it would have necessitated opening the abdomen. Bipp was rubbed gently, in a thin layer, into the raw surfaces. The muscles and skin were partly closed in layers, but greater part of wound was left open and very lightly packed with gauze. The entrance wound was then dealt with, the edges being excised and subjacent injured tissue clipped away; bipp was applied. Prior to operation a catheter was passed; small quantity of clear, rather concentrated urine was drawn off; urine not examined.

On the following day the patient seemed better; rather persistent vomiting. It is unnecessary to detail general treatment; various remedies, including alkaline treatment, were employed. On the morning of Oct. 4th patient was much worse. 1 c.cm. of pituitrin was given hypodermically and sodium bicarbonate and glucose solution intravenously. Death took place about midday. During all this time very little urine passed. There did not seem any very definite indication to open the abdomen, especially as one felt certain that the parietal peritoneum had not been punctured. The man would almost certainly have been unable to stand such a procedure.

*Post mortem.*—The following conditions were found. Peritonitis, apparently rather subacute, involving chiefly lower half of small intestine, pelvis, and region of cæcum. There were a good many plastic adhesions and patches of adherent lymph; small quantity of dark reddish semi-purulent fluid in pelvis. No *B. coli* infection smell. The stomach was not distended; tendency for intestines to be somewhat collapsed, except jejunum, but this was not actually distended. The bladder contained only a little fluid. The appendix was bound down over brim of pelvis by a recent soft plastic adhesion; otherwise appeared healthy. The parietal peritoneum in relation to the wound was very carefully examined; no perforation found. The small intestine was carefully examined from the duodeno-jejunal flexure downwards; no perforation; cæcum and ascending colon also appeared intact. The rest of the large intestine, not in relation to the wound, appeared whole. On opening the abdomen no free gas was detectable. The kidneys appeared rather cloudy. A swab from fluid in the pelvis was taken, but there had been already contamination, being taken on a second examination.

##### Inferences.

It would seem that the intraperitoneal infection must have taken place in one of three ways: 1. By direct spread of infection from the wound through damaged parietal peritoneum. No swab was taken from the wound, but on the day after operation it looked fairly clean. 2. By

<sup>1</sup> See also THE LANCET, 1918, I, 704.



escape of infection through a perforation in the bowel. But one has good reason that no such perforation existed. 3. By escape of infection through contused bowel. The absence of faecal odour in the peritoneal exudate tends to negative this. The probability is, I think, that the infection spread through the peritoneum from the wound.

The treatment of such a case presents difficulties. If the abdomen had been opened at the operation nothing pathological would have been found. Later the indications for opening the abdomen did not seem sufficiently clear; also the patient's condition did not warrant this.

The point arises, Should the soiled peritoneum in such a case be freely clipped away in spite of this involving the formation of a communication between the wound and the abdominal cavity? This idea is carried out by some in the knee-joint. A French surgeon informed me that if he found the outer surface of the joint capsule so soiled that the soiled tissue could not be removed without opening the joint, he freely excised it, opening the joint and afterwards stitching up the hole. Should this principle be applied to similar circumstances where the abdomen is involved? The proceeding would seem risky, and yet possibly not more so than in the knee-joint. Of course, it would never do to remove a large piece of parietal peritoneum in the wound, as it would be impossible to close the opening.

#### *Another Case.*

Since completing these notes another somewhat similar case has passed through my hands.

Private W. R., wounded on Feb. 27th, 1918; operation some 12 hours later. Entrance wound on right iliac crest anteriorly. No exit wound. Severe fracturing of right ilium and a good deal of laceration of right iliacus muscle. Peritoneum exposed in track of missile, but not lacerated. Patient was greatly shocked and had apparently lost a good deal of blood. An alkaline intravenous injection was given before, and a pint of blood after, operation. This consisted in cleaning up the wound and clipping away as much damaged tissue as was deemed wise, considering the patient's poor state. The parietal peritoneum was left intact. The wound was bipped and left open. Post mortem: Peritonitis with signs of bruising of bowel, but no perforation detected either of bowel or of parietal peritoneum.

### A CASE WITH COMPLETE CESSATION OF FITS RESEMBLING EPILEPSY.

BY H. DE C. WOODCOCK, M.D., F.R.C.P. EDIN.,  
D.P.H., &c.

THE following case came to my notice years ago.

A little Jewish boy had his tonsils removed. He lost a considerable amount of blood, and within a week or two he appeared to be an epileptic—that is, he had epileptic fits. Dr. A. H. Clark, of Morley, saw him, and he was treated with bromides without the slightest benefit. Dr. Clark and I were working together at that time, and we saw the case together at the boy's home. The boy on this occasion was undressed in my presence. As the sister took off the stocking from his right leg the patient went into an epileptic fit of the classical type, beginning on one side of the body and travelling to the other; clonic convulsions following tonic, and unconsciousness being complete. Recovery was speedy. On a subsequent visit the same phenomena were repeated, and it was then that the sister said: "Whenever we undress him he has a fit." As the treatment was doing no good it was discontinued. Patient recovered completely. I saw him some years later, and if the statement of his friends is to be relied on, there had been no subsequent attacks. It appears that peripheral irritation had induced the epilepsy, and that peripheral irritation had continued to excite the attacks.

The Jews are pathologically peculiar. The boy was highly intelligent and sensitive, and the attacks may not have been true epilepsy; all I can say is that they could not be distinguished from true epilepsy. Dr. Clark and I, not feeling secure in a position of clinicists in nervous diseases, did not publish the case at the time, but I have often felt that I must deliver myself of the description of this, to me, extraordinary case.

Leeds.

NEW HOSPITAL FOR EAST HAM.—The East Ham Hospital, which at present consists of 25 beds, is to be enlarged as a war memorial at a cost of over £30,000. Sir Samuel Waring has promised a donation of £2000.

## Medical Societies.

### ROYAL INSTITUTE OF PUBLIC HEALTH: LONDON CONFERENCE.

(Concluded from p. 13.)

#### III. HOUSING IN RELATION TO NATIONAL HEALTH.

IN the absence of Sir ASTON WEBB, the chair was occupied by Professor E. W. HOPE, medical officer of health for Liverpool. He said he was acquainted with the struggles to grapple with insanitary areas, which were the heritage of woe bequeathed by previous generations. The root trouble was the original vicious structural state of the houses. 22,000 tenements, many of the back-to-back character, and leading to blind alleys, were the monnment of Liverpool's rapid prosperity, when the one object was to crowd as many houses to the acre as possible, and the task of finding homes for the dispossessed which followed on improvements was left to the present generation, and it had been well grappled with.<sup>1</sup> The three-years mortality rate among infants in the insanitary areas before they were dealt with was 259, but in the three years 1916 to 1918 it had dropped to 162, and the phthisis rate had been reduced from 4 to 1.9 in the same time. The general death-rate was 37 in the old, 26 in the new. The birth-rate had always been high, averaging 45 for the three years prior to demolition, and 40 in the 1916 to 1918 period—almost double that of the country as a whole. These figures were in regard to a population of 12,000. Drunkenness had decreased, and the condition of the children had definitely improved. The housing question was inseparably mixed up with the welfare of the race, and he hoped for a continuance of interest now evoked by the housing schemes, with which, he hoped would be incorporated better and cheaper means of transport. The new houses for this prolific part of the population should include proper storage provision and appliances for domesticity.

#### *The Architectural Aspect of Housing.*

Professor S. D. ADSHEAD, F.R.I.B.A., dealt with the question from the architectural standpoint. He averred that the architectural aspect of housing seemed to have been largely lost sight of; it was an intangible quality, and might be termed the moral hygiene. He thought the new housing schemes should express the new organisations of society, as the old water-tight compartments of society were giving place to new conditions. There was need for standardisation of houses, but that did not mean mere repetition; the old days of 40 and 50 houses in a block of exactly the same construction were gone. There could be standardisation and yet such variations as reflected the social strata of the workers of the present day. Great variety could be produced by variants on only three plans, so that standardisation did not mean monotony. There had never been such an opportunity as the present for producing magnificent organised housing schemes, and he asked that the old-fashioned village should not be taken as the working model for the new, historically interesting though the former was.

#### *The Citizen's Ideals.*

Mr. NEVILLE CHAMBERLAIN, M.P., voiced the point of view of the citizen who was deeply impressed by the difference he saw in the best and the worst parts of a city, and whose earnest desire was to bring up the general average of health and comfort. He assumed that the citizen was willing to pay for his ideals; indeed, even economically, he would get back the expenditure on improvements by the diminished poor-law relief and other accompaniments of poverty and ill-health. The birth-rates of our cities were invariably highest in the economically worst parts, and schemes for betterment of those parts might lower the birth-rate; but that was counteracted by a lower death-rate too, and if the infants coming into the world had a better chance of surviving and living full and useful lives, the balance was certainly on the side of advantage. Large hopes had been raised by the mention of schemes which should transfer families from congested industrial districts to suburbs, but sufficient account had not been taken of three very important factors. First, it would take years

<sup>1</sup> THE LANCET, 1910, i., 1718; ii., 60.



to overcome the present house shortage, and until that was accomplished it was useless to talk of sweeping away the slums. In Birmingham there were 40,000 back-to-back houses. The second point was that large numbers of people did not wish to leave the slum localities, not because they were satisfied with their housing conditions, but they preferred improvement on the spot. Thirdly, a large number did not want to pay the rent which would be charged for new suburban houses. His point was that, even if all slum-dwellers wished to reside in suburbs, the provision for them would require years to bring about, and meantime every effort should be made to improve their present residences. Partial reconstruction would make an enormous difference, and this should not be left to private owners, some of whom, however willing, had not the necessary capital to carry out the needed structural alterations. Under Section 4 of the Housing Act of 1890 a local authority could pass a resolution that an area was unhealthy and that an improvement scheme should be carried out in respect of it, and in the new Housing and Town Planning Bill it was recognised that it ought to be possible to purchase lands in such area even before any improvement scheme had been formulated. The need was for a provision for compulsory purchase.

#### *Primary Importance of Housing Schemes.*

Mr. W. H. CADBURY said he agreed with those who said that every sovereign spent in the prevention of tuberculosis was of more value than £10 spent in sanatorium treatment and after-care schemes, and among preventive measures he considered that housing schemes came first, especially when due attention was given to through-and-through ventilation. Of 600 tuberculous soldiers who had been visited recently, 107 lived two families in one house. Preference should be given to soldiers who had fought in the war in letting the new houses. The birth-rate in Birmingham in 1865 was 39 per 1000; now—1918—it was 19.4, and it was still on the decline. Educated people seemed averse to bringing children into the world to face overcrowding, disease, and dirt. The Birmingham scheme was started with the stipulation that every house should have at least three bedrooms, but, yielding to pressure, a certain number of two-bedroomed houses had been arranged for.

#### *Earth Closets for Rural Areas.*

Sir RICHARD PAGET emphasised the importance of giving, in the new houses, the strictest scientific attention to the new needs of the community. He reminded the meeting that the main requirement in ventilation had been shown to be cool air in motion. The rural bungalow found great favour in his eyes, but with a cosy dressing-room, and this required a new design in cottage architecture. He also advocated a proper system of earth closets for rural areas and the use of the excreta on the garden. Sir William Crookes had estimated the loss of nitrogenous garden manure owing to the provision of water-closets at 14 million pounds per annum. He also advocated the use of labour-saving devices for the kitchen.

#### *Resolutions Approved.*

Mr. CHAMBERLAIN then moved the following resolution:—

This Conference is of opinion that while every effort should be made to provide the maximum number of houses on suburban sites, local authorities should be given further powers to enable them simultaneously to improve housing conditions in the central areas of large towns.

The further discussion revealed impatience at the delay in bringing the schemes about. The resolution was carried, 6 voting against. The following resolutions were also approved:—

(1) That the Conference is of opinion that the Housing and Town Planning Bill should include provision for the registration and more effective control of the subletting of dwelling houses, so that adequate provision may be made for proper washing, larder, laundry, and lavatory accommodation.

(2) That, notwithstanding the facilities already granted under the Orders of the Local Government Board in regard to the promotion of Housing and Town Planning Schemes, the Conference is of opinion that the Housing and Town Planning Bill now before Parliament should be passed into law without further delay.

(3) The Conference is of opinion that the erection of dwelling houses in the congested parts of cities and towns should be minimised, and that every facility should be provided to ensure their erection in open suburban areas, and that adequate, rapid, and cheap means of locomotion between the dwelling houses and places of occupation should be provided.

(4) That, in the view of this Conference, a wider and more liberal interpretation of the by-laws of many districts is necessary, and in others a more effective one, and that full discretionary power should

be given to the Ministry of Health to authorise modifications to meet local conditions. It is also of opinion that the improvement of the conditions of rural housing is of not less urgency than is that of the cities.

(5) The Conference recommends that the research now being carried out by the Government with respect to building materials and other details may be extended so as to include organised research as to the most efficient methods of ventilation, heating, sanitary and labour-saving devices, and their application to small houses in both urban and rural districts.

#### IV. MATERNITY AND CHILD WELFARE.

Mrs. Lloyd George had been invited to preside at this session, but found herself unable to do so.

Sir FRANCIS CHAMPNEYS (Chairman of the Central Midwives Board) occupied the chair, and opened the debate with an address on

#### *The Protection of Motherhood.*

He spoke first of the effect on the child of venereal disease in the mother. The immediate period to give attention to was that of pregnancy, parturition, and lying-in. Systematic attention to the questions of pelvic abnormalities and pelvic toxæmia, with pre-parturition examination of the mother, had resulted in a great increase in national health. Among the affluent the responsibility rested with the medical practitioner, in the case of the poor generally it rested with the midwife. The Central Midwives Board, however, discouraged diagnoses by midwives, but required them to inquire as to previous pregnancies, and if in any way abnormal to advise the expectant mother to seek advice at a hospital or other suitable institution. Should untoward symptoms occur she must report them at once; failure to do so was a penal offence and she was liable to be struck off the Register. Since the first operation of the Midwives Act in 1902 there had been a distinct improvement in these matters, but it had not been materially advanced, and it was desirable to ascertain in whose hands fatal cases continued to occur. It was a pity that the request of the Board that the death certificate should have a space for the name of the person who delivered the child was not granted, as this would have been very helpful. More information was also wanted as to the manner in which sepsis still occurred. There was need for many more obstetric institutions, so distributed over the country that no parturient or lying-in woman should be beyond the reach of one of them, and motor ambulances should be available. In 1914 there were 879,096 live children born in England and Wales. Stillbirths before 28 weeks of pregnancy were not yet registrable. If the average stay of the mother in an institution were taken as 25 days, it was calculated that 35,164 beds would be required in England and Wales per annum. At the foundation of the safety of the nation's motherhood was the training of the midwife, but the energies of the machinery set up by the Midwives Board were largely diverted into training women who never intended to practise midwifery; a serious position now that there was none too much material to train on. In 1918, of 19,357 midwives trained at approved institutions other than Poor-law, only 4640 notified their intention to practise it, a wastage, from this special standpoint, of 294,340 cases; and, adding other training centres, a total wastage of 356,420 cases! He considered that candidates should be required to bind themselves to practise as midwives for a definite term of years.

#### *The Protection of Infants and Children.*

Lady LESLIE MACKENZIE (Edinburgh) spoke eloquently on the question of the protection of infancy, pointing out how badly off were the many parts of the country where no gynaecologist was available; the thoughts on this subject were apt to be focussed on the city and the big town. All possible care should be given to every mother for the purpose of ensuring that she reared a healthy child; and this was rendered the easier by the fact that the Notification of Births Act allowed every public health authority to make whatever arrangements it thought fit to attend to the health of expectant and nursing mothers, and children up to 5 years of age. The present rate of death below 3 months of age was a disgrace to any civilised country. She insisted very strongly on the need in the young child of personal nursing by its mother, and the conscientious training of health visitors as well as nurses in the due care of the infant.

Mr. A. CARLESS dealt with the subject of the protection of childhood, pointing his remarks by reference to the case of Dr. Barnardo's Homes, through the doors of which



87,000 children had now passed. The death-rate had been phenomenally small, varying between 7.26 and 11.70 per 1000. He paid special attention to the question of sufficient and efficient food and plenty of sleep and exercise.

Dr. C. J. MACALISTER (Liverpool) said that the number of children attending the out-patient departments of Liverpool was larger than they could deal with. He described a scheme by which that city was to undertake a clearing-house arrangement for sending sick children to the most suitable institution for their particular ailment. He hoped to see established a great school for the study of children's diseases, which would probably take up research in children's ailments.

#### *Resolutions Approved.*

The sitting ended with the passage of the following resolutions:—

1. That this Conference views with great satisfaction the results already obtained from efforts made to promote the welfare of motherhood and infancy, and welcomes the prospect of fuller appreciation of the services which can be rendered by properly trained midwives and health visitors.

2. That the Conference considers the proper distribution of midwives and health visitors should come within the purview of the Ministry of Health.

#### V. THE TUBERCULOSIS PROBLEM UNDER AFTER-WAR CONDITIONS.

The concluding topic of the Conference was the Tuberculosis Problem under After-war Conditions. The chair was occupied by Professor HOPE.

#### *Mortality from Tuberculosis in England and Wales.*

Dr. H. HYSLOP THOMSON (tuberculosis officer for Herts) said that in 1911 there were in England and Wales 53,120 deaths from all forms of tuberculosis. In 1914 these had fallen to 50,298, but rose again in 1918 to 58,073, an increase common to both fighting forces and civilians, with a notable rise among asylum inmates, in one large asylum the 2 per cent. of 1914 rising to 11.7 per cent. last year. The increased mortality he attributed to the depleted resisting power of the population due to a prolonged war. One of the weakest links in systems for combating tuberculosis was the present method of notification, which included no information as to the danger of infection and the home conditions of the patient, and it placed no initial responsibility on the general practitioner. He considered that the services of the general practitioner needed to be extended in regard to the notification and prevention of disease. Dr. Thomson proceeded to discuss the various methods of prevention and treatment in detail. There should be segregation of acute cases, and adequate treatment of the advanced ones; he recommended their compulsory removal to a proper place. Much of the criticism of sanatoriums was due to the fact that too much was expected of them alone, though he admitted that the standard of such treatment throughout the country left much to be desired, both as to uniformity and efficiency. Sanatorium treatment could not be standardised, but certain general principles could be universally adopted. There was no other system which arrested the progress of the disease so well. No patient should be discharged from a sanatorium in whom there was further possibility of improvement. He dilated on the very poor provision for non-pulmonary cases of the disease, and entered into the question of domiciliary treatment, for which there was need of systematised effort on a large scale. His concluding remarks dealt with after-care.

#### *The Disease and its Treatment in Service Men.*

Dr. NATHAN RAW, M.P., spoke of the disease and its treatment among combatants. We must, he said, pay the highest tribute to the brave men who had fought for us and had developed tuberculosis. A large number of ex-service patients must have had the germs of the disease before the war, but the rigors and severities of trench warfare, and the great privations which soldiers had to endure were agents in stirring into activity what had hitherto been quiescent disease. He spoke of the desire of the Government to do everything possible for these men, and referred to the Commission which had been appointed to deal with the matter, of which he himself was a member. The number of Service men afflicted with tuberculosis was between 35,000 and 40,000, but a fair proportion were in the early curable stages, and many others were in a stage which permitted of their useful employment. He promised

that the provision for the ex-service men would be adequate, and he hoped the report of the Commission would soon be issued. A fact to be reckoned with was that a large number of the victims of the disease refused to enter a sanatorium, and he asked that every effort should be made to counteract the prevalent notion that tuberculosis, in any stage, was an incurable disease.

#### *Tuberculosis Communities.*

Dr. NOEL D. BARDSWELL (medical adviser to the London Insurance Committee) dealt with the question of tuberculosis communities. He said that unless the work of the various institutions could be associated with after-care, their work often fell to the ground. The factors which rendered ineffective the work of sanatoriums included the habits of the people, and economic questions, such as a living wage and housing accommodation. The root idea behind the tuberculosis settlement was the voluntary segregation of tuberculous persons in a community, which would allow of a more effective supervision than could be exercised at present. This, in order to be efficient, must be made attractive. Another important principle was the protection of the partially disabled worker from having to compete for his livelihood against physically sound men and women. These patients could not be dealt with to the exclusion of their families; hence the obvious need was for small village communities or something in the nature of garden cities. The prime object should be, not to give these patients seven or eight weeks of sanatorium treatment, but an opportunity of working under favourable conditions for the rest of their life. He believed the ordinary industrial occupations would prove more suitable in the long run than agricultural pursuits, and the opening was more extensive.<sup>2</sup> The case of the soldier presented a good opportunity to put the community system to the test; the soldier had his pension, and would be found very willing to take up some work. And what was found practicable for the discharged soldier could be applied to the case of the civilian.

Mr. H. J. GAUVAIN put in a plea for the non-pulmonary cases, for which nothing in an organised way had yet been done in this country. One or two large centres would probably suffice for all the cases of surgical tuberculosis in the country.

#### *The Necessity for Accurate Diagnosis.*

Lieutenant-Colonel W. MALLOCK HART referred to the disease as it affected the Canadian forces in the war, and pointed out the great importance of an accurate diagnosis. As director of the hospital for tuberculosis for Canadians here he could speak of its work. It had acted largely as a clearing centre, because many cases were sent back to Canada as soon as the disease was diagnosed. He felt in increasing degree the need for educating the general public with regard to tuberculosis; he had had experience in America with the results in educated communities and those in people who were ignorant on these matters. He did not consider that tuberculosis had increased as a result of men being on active service; indeed, he believed that the open-air life of the Army had preserved the health of many men who otherwise would have broken down. Of 900 cases he saw, 28 per cent. were in the incipient stage, 42 per cent. in a moderately advanced stage, 30 per cent. in an advanced condition.

#### *The Need for Combative Measures in Ireland.*

The Marchioness of ABERDEEN spoke on the question as it affects Ireland, pointing out the crying need of combative and remedial measures in the rural parts of the country. The educative campaign against tuberculosis which took place in Ireland a few years ago showed how quick were the Irish people to adopt the ordinary precautions, such as the open window. But the conference recently held in that country under the auspices of the Women's National Health Association showed that there was scarcely any provision for advanced cases of the disease; that conference unanimously urged the putting into force of compulsory notification of the disease. She concluded with a special and moving word on behalf of the Irish children.

#### *Return to Family Life a Factor in the Eradication of the Disease.*

Professor Sir G. SIMS WOODHEAD said he believed it was possible to stamp out tuberculosis; but there would be



but little chance of eradicating it unless the man who had been away could be brought back to his family life. It was not always the most robust person who was the most resistant to tubercle; and he urged that no one measure—such as open windows or good food—was sufficient; all means must be employed, and the machinery must not be allowed to hide the work.

The subsequent speakers included Dr. NASH, Dr. S. VERE PEARSON, Mr. DAG, Mrs. PALMER, Dr. SUTHERLAND, Dr. CECIL WALL, Mrs. SANDHALL, and Mr. BURNS.

#### *Resolutions Approved.*

The following resolutions were then put and approved:—

1. That in the opinion of this Conference schemes for the prevention of tuberculosis must be of general application, and it recognises that sanatoria, colonies, and other establishments for treatment and segregation are of the utmost value in the prevention of tuberculosis.

2. That the Conference recognises the obligation to provide not only for the tuberculous soldier, but for the tuberculous wife or child of the soldier or civilian or for any other member of the population.

3. That this Conference recognises the necessity for adequate provision being made for the treatment and training of sufferers from non-pulmonary tuberculosis, more especially in the case of adult sufferers, for whom no provision has hitherto been available.

4. That in the preparation of designs for the new houses which are to be erected in the near future special regard should be taken to the provision of the best methods of ventilating, heating, and sleeping accommodation, and a rigorous enforcement of by-laws designed to protect the dwellings from damp, with the object of combating and preventing tuberculosis by improving the general health of the community.

The Conference, which was carried on with much enthusiasm throughout and was very successful, concluded with the usual votes of thanks.

## ROYAL SOCIETY OF MEDICINE.

### SECTION FOR THE STUDY OF DISEASE IN CHILDREN.

A MEETING of this section was held on June 20th, Dr. J. PORTER PARKINSON, the President, being in the chair.

Dr. HAZEL CHODAK showed a case of

#### *Chorea, Complicated by Gangrene of the Fingers.*

The patient, aged 12 years, was admitted to hospital in December, 1918, suffering from chorea of a week's duration. This was a first attack, and there was no previous history of rheumatism; no history of shock or overwork. Two years previously she had had diphtheria, with a had attack of tonsillitis during convalescence. The mother had had rheumatism and one sister had had chorea. On admission the patient, a thin girl, was found to be suffering from a moderately severe attack of chorea, all parts of the body being affected. There was very little loss of strength on the left side, but the right-hand grip was poor and feebly sustained. All reflexes were exaggerated. On examination of the heart the apex beat was found in the fourth space, half an inch inside the nipple line; a soft blowing murmur accompanied the first sound at the apex, and was conducted a short way towards the axilla; the second sound was accentuated at the base.

Ten days after admission the right hand began to go white and the finger-nails blue, though the hand did not actually feel cold to the touch. The onset might be described as rapid rather than sudden, and it was fully a week before gangrene of the finger-tips and half of the thumb had definitely set in. During this time the pallor spread up the forearm. There was no pulse at the wrist, but the brachial artery could be felt pulsating about half-way down the upper arm, and after a time there was distinct pulsation of the superior profunda artery. The pain, which was also gradual in onset, became very severe after the first few days, and could only be relieved by morphia. Meanwhile the cardiac signs showed changes in degree rather than in kind. The systolic murmur became much louder and rougher, while the second sound at the aortic and pulmonary areas was markedly accentuated. At first the apex beat remained within the nipple line, but in a few days it was found to be displaced slightly outside the nipple line. The pulse, however, remained at about 80, and was never increased in frequency, except occasionally when the pain had been very severe. The temperature throughout never rose above 99° F., and was rarely as high as that. Later still, the brachial pulse slowly disappeared, and the brachial artery could be felt like a thick cord along the arm. The little finger recovered, and lines of demarcation gradually formed on the remaining fingers. The ball of the thumb appeared at first to have escaped, as the discoloured skin peeled away from it, but there must have been considerable damage to the muscle, followed by contraction of the scar tissue, which had led to considerable deformity of the thumb. The choreic movements subsided rapidly soon after gangrene was established. The heart signs also disappeared, but much more gradually.

The question of interest in this case was the exact cause of the gangrene. The three possible causes of gangrene complicating chorea were: (1) Embolus; (2) arteritis (leading to thrombosis); and (3) arterial spasm (resembling Raynaud's disease). Raynaud's disease was mentioned as an infrequent complication of acute rheumatism, and might lead to local gangrene, but in this case there was extensive thrombosis which could hardly have been caused by mere spasm. As between embolus and thrombosis, the diagnosis was not easy. Dr. Chodak did not think that the absence of abrupt onset negated the embolism theory, as conceivably the artery might be only partially blocked at first. It was difficult, however, to feel convinced that there was ever any gross organic lesion of the heart, as the pulse and temperature kept so steady. At the time, however, the slight dilatation, the character of the murmur, and the loud accentuation of the second sound, made one believe that this was the beginning of a rheumatic carditis. There remained the supposition that there was a primary thrombosis in the brachial artery. Arteritis was not an infrequent complication of acute rheumatism, and although this was generally located in the aorta, there seemed no reason to suppose that the brachial artery might not be affected also. Such a condition might be speedily followed by thrombosis. In these cases the circulation was usually kept up by anastomosing channels, so that gangrene did not often occur. Probably in this child the general condition of debility and anæmia was a predisposing cause.

Dr. F. S. LANGMEAD showed a case of

#### *Scleroderma with Calcification in a Mongol.*

The patient, a boy, aged 4½ years, was the last child of a family of three. The mother was aged 42 years at the child's birth. The other children were aged 17 and 15 years, ten years elapsing between the last gestation and the birth of the patient. The mother said that she had always been healthy except that she had been anæmic. During pregnancy she felt quite well. The father and his family were described as highly strung and nervous. There appeared to be no neuropathic tendency in the mother. No alcoholic history.

The boy was small and appeared healthy at birth, but the mother noticed a similar discolouration and rash to that which was now visible on the knees, face, and hands. She was sure that the rash had always been present, but had varied in intensity from time to time. He had always been backward, sitting up at 10 months, walking at 1 year and 10 months. Walking had never been properly acquired, but had been feeble, with the legs apart. Until the last few weeks he had ceased walking altogether for two and a half years, and became unable to stand. In October or November, 1917, he was admitted to a hospital for "blueness" over the fronts of the upper arms; this had begun to spread to the chest over the pectoral muscles, but apparently improved considerably before his discharge. In December, 1917, he developed pneumonia, but made a good recovery. In June, 1918, lumps began to appear on the surface. At first they were quite soft and limited to the area over the biceps, but about two months later began to harden. More recently they had been noticed to spread inwards over the pectoral region. Flushing of the face varied greatly. It had been noticed for about two years, and was more marked on warm days. The legs had been noticed to be getting thinner for about six months, and about two months ago stiffness of knees and ankles supervened.

The child was a moderately marked example of the Mongolian variety of amentia, but with mental capacity above the average in such cases. The cheeks had a dusky-red, patchy appearance, the skin being somewhat atrophic and shiny. A similar blotchy bluish-red discolouration was seen on the fingers and hands as far as the wrists. The fingers were shiny and small, but no definite sclerodactylia had developed. The skin on the knees, extending upwards on the outer aspects of the thighs, and on the buttocks in the neighbourhood of the ischial tuberosities, was similarly affected. On the arms the discolouration had disappeared, and was replaced by white, firm, contracted skin, thrown into unevenness and puckers by subcutaneous nodules of sizes varying from minute seed-like bodies to plaques larger than a shilling. Some of these were confluent, others discrete. They were roughly linear in distribution and symmetrical, though rather more extensive on the left side than on the right. This condition had spread inwards over the pectorals, and backwards over the triceps on each side. On the left it reached somewhat farther down beyond the elbow and over the extensor carpi ulnaris muscle. A similar alteration of skin and subcutaneous tissue appeared in a roughly symmetrical manner in other areas, notably on thighs, legs, and in popliteal spaces. Some of the subcutaneous thickened areas were adherent to the skin, others were not. Some of the nodules were very hard, feeling



almost like bone. Here and there a nodule had caused redness and soreness of the overlying skin and slight scab formation. X rays demonstrated that the subcutaneous tissue in the nodular and thickened areas was sprinkled with small pleomorphic calcareous deposits. The muscle did not seem to be affected, but it was questionable whether they were not being gradually infiltrated from the subcutaneous layer. The movements were limited by the inelasticity and fixation of the skin. In addition there was some limitation of movement of the knees and ankles disproportionate to the subcutaneous hardening, probably due to accompanying synovial changes.

The points of interest were (1) the discolouration of the skin dating from birth, and later being replaced by scleroderma; (2) the calcification of the sclerodermatous subcutaneous tissue (calcinosis, petrification)<sup>1</sup>; (3) the associated arthritic changes; and with respect to the Mongolism, (4) the long period of sterility before the child was born.

Mr. PAUL BERNARD ROTH described a case of

*Apophysitis of Os Calcis.*

The patient was a boy, aged 14 years, who was said to have suffered for some years with double flat-foot. For ten years or longer he had had trouble with his feet, and for the last two years had had pains in his feet and ankles up to his calves on running. When seen by Mr. Roth he could only just walk from his house to the schoolhouse (ten minutes' walk). He had had various arch supports and appliances, such as thickenings of the soles and heels of his boots, electric baths and massage, but the pain still continued. On examination there was found to be a slight tendency to talipes valgus when he walked; all the pain was at the back of the heel and up the tendo Achillis; there were tender spots on both sides of the insertion of this tendon. He considered the case to be one of inflammation from trauma of the posterior epiphysis of os calcis.

Radiograms showed a cartilaginous gap with irregular ossification between the upper part of the epiphysis and the os calcis, especially marked in the left—the worse—foot, and some rarefaction of the bone at this point. As these radiograms confirmed the diagnosis, treatment by prolonged rest in bed was suggested, to be followed by gradually increasing spells of walking in boots with a rubber disk fixed to each heel, a pad of sponge rubber beneath each heel inside the boot, and a  $\frac{1}{4}$  in. valgus wedge of leather applied to the inner side of each sole and heel. Complete rest in bed for six weeks was followed by some pain, evidently due to stiffness and muscular weakness from his long rest. A month later he was able to walk, and even to run a few steps without pain. Radiograms showed that the wide cartilaginous band with irregular ossification had given place to sound bony tissue through its entire length, except a very small portion at the top (most marked in left foot) where the junction of the epiphysis was not quite complete.

Dr. EDMUND CAUTLEY showed a case of

(1) *Chloroma.*

The child had been first admitted to hospital for screaming and cerebral irritability, and was found to be feverish and apathetic, with right facial palsy and left-sided torticollis. These symptoms were rapidly recovered from, but after discharge a profound anæmia developed, bulging occurred in the temporal region, and the left kidney became palpable. Then pain was complained of in a hip-joint. The child became rapidly worse, and a month later nodules appeared on the head. The spleen and liver were enlarged and considerable increase in size of lymphatic glands was noticed. The red blood cells were 1,690,000; Hb, 25.5 per cent.; colour index, 0.79; leucocytes increased from 8000 to 14,000. Of these, the polymorphs increased from 1940 to 5845, the lymphocytes from 5660 to 7140. There were many features of chloroma, including a faint greenish tinting of the skin. The other possible diagnosis was adrenal tumour with secondary neoplasms in bone. In favour of this was the palpable left kidney which was noticed in the earlier stages. Skiagrams showed rarefaction of femora, vertex, and occipital region.

*Multiple Glandular Swellings.*

Dr. CAUTLEY also showed a case of Multiple Glandular Swellings in a child aged 1 year and 9 months. There was no family history of tubercle. The patient had been ailing since Christmas with diarrhoea, anorexia, and malaise.

Enlarged glands were found in the abdomen. Others, large and freely movable, were present in the neck and axillæ, especially in the right. Red corpuscles numbered 6,000,000; white 4800. A differential count was not abnormal. The Wassermann reaction was negative. The diagnosis lay between tuberculosis and lymphadenoma, and Dr. Cantley favoured the latter.

Dr. E. A. COCKAYNE showed a case of

*Trophedema of Leg.*

The patient was a boy aged  $8\frac{1}{2}$  years. There was no history of any similar condition in the family. The boy was normal at birth. At  $1\frac{1}{2}$  years there was a swelling, rather soft and lobulated, on the right side in Scarpa's triangle. Three months later some swelling of the right leg below the knee was noticed, and had increased ever since. When exhibited there was swelling of the whole of the right leg below the gluteal fold. The thigh was soft and the swelling in Scarpa's triangle could no longer be felt; it was 1 in. greater in circumference than the left. The lower part of the leg and dorsum of foot were very much swollen; circumference of right calf  $13\frac{1}{2}$  in., left calf  $9\frac{1}{2}$  in. The leg sometimes pitted on pressure. There was no nœvus and no cyanosis. The texture of the skin was normal. X rays showed no difference in the size of the bones. There was no lengthening of the right leg. The right side of the face was a little longer than the left and the right palpebral fissure was wider. The condition caused the child very little inconvenience.

Dr. ERIC PRITCHARD showed specimens from a case of

*Purpura.*

The patient was aged 1 year and 2 months, and had been fed on milk; no fruit juice had been given. The father, mother, and another child were healthy. The child had had pneumonia in December, 1918, a burn on the neck three weeks ago, and for the past week had had an ulcerated mouth. On May 11th a bruise on the left leg was noticed, which increased in size so rapidly that the patient was admitted to hospital on the following day. On admission the temperature was  $99.4^{\circ}$  F. The child was well nourished but extremely pale. There were large blue areas over the left leg (6 in. by  $8\frac{1}{2}$  in.) and thigh ( $2\frac{1}{2}$  in. by  $3\frac{1}{2}$  in.), a patch on the right leg (3 in. by  $3\frac{1}{2}$  in.), and petechial hæmorrhages over both. Enlarged glands were present on the left side of the neck, and discrete glands on the right side. Nothing abnormal was detected in the lungs. The heart was normal. The gums were firm and there was no ulceration; the teeth were very discoloured; the liver extended 1 in. below the costal margin. On June 12th the scrotum was very œdematous. A purple patch was present over the left foot. The child died on the following day.

*Post-mortem examination.*—There was an unhealed ulcer on the left side of the neck, due to a burn, consisting of two areas of about  $\frac{1}{2}$  in. diameter each, joined together. There was a subcutaneous hæmorrhage about  $\frac{1}{2}$  in. across on the chin, another area of about the same size on the right side of the neck, and large subcutaneous dark purple hæmorrhages on both legs. On the right side one hæmorrhage was about 2 in. in diameter over the patella, another large one was situated on the inner side and back of the middle of the leg, and all but joined a third one on the front and outer side, just above the ankle. On the left side the lower part of the leg was encircled by a hæmorrhage measuring about 4 in. from above downwards, and the epidermis above it was raised as a bulla. Both kidneys with their perirenal fat were the seat of extensive hæmorrhages, which were almost entirely cortical. Both testes were dark red from hæmorrhage. The only other hæmorrhage was in the middle portion of the thyroid gland. The thymus was a well-marked bi-lobed structure of ivory-white colour. The prepuce was œdematous, the liver pale, and the spleen slightly enlarged. The heart, lungs, pericardium, stomach, intestines, pancreas, and adrenals were all healthy.

Dr. LANGMEAD said that the appearance of the kidneys was exactly that of acute lymphatic leukaemia, and suggested that sections should be examined microscopically.

Dr. PRITCHARD also showed a specimen of

*Liver Abscess with Septic Umbilical Vein.*

The patient, a female, was aged 5 weeks and a full-term, breast-fed child. The father, mother, and four children were healthy. Vomiting always occurred at various intervals after the feeds, the vomitus being small in amount. The bowels were acting normally. On May 29th the vomiting became more frequent and larger in amount, and was of

<sup>1</sup> Vide F. Parkes Weber, Brit. Jour. Child. Dis., x., p. 97, at the end of which article references are given.



a greenish-yellow colour. The bowels were constipated. The child was admitted on May 30th looking very ill, though fairly well nourished. The temperature was 101° F., the pulse 132, and the respiration 42 per minute. The vomitus consisted of bright green material, the abdomen was distended and soft, there was no visible peristalsis or visible tumour, and the liver and spleen were not palpable. The heart and lungs were normal. On May 31st the stomach wash-out two and three-quarter hours after feed contained 1 oz. of green slimy fluid and an abnormal amount of acid. Rectal lavage gave clear fluid, not offensive. On June 1st a turpentine enema resulted in a slight yellow stool; another yellow stool, large in amount and undigested, contained a very slight trace of mucus. On June 2nd the temperature was 102° F., and the child was vomiting its broth and water. A small green stool was passed after a turpentine enema, which did not lessen the distension. Subcutaneous saline was given, but the child died.

Post-mortem examination showed the abdomen to be distended. The peritoneal cavity contained 6 oz. or 8 oz. of yellow fluid, and the intestines were loosely matted together by plastic lymph. The umbilicus had healed. When the liver was cut into, the part of the vein within the liver was found to be greatly enlarged and to have thick walls, so that it measured about  $\frac{1}{2}$  in. in diameter. The lumen, however, was almost obliterated, but some greenish pus exuded from it, in which Gram-negative bacilli were found. All the organs in the thorax were healthy, as were also the kidneys, stomach, and intestines. The hepatic flexure of the large intestine was situated, however, beneath the neck of the gall-bladder, the ascending colon lay close along the right side of the spinal column, the cæcum was situated over the right ilio-sacral articulation, and the appendix lay across the fifth lumbar vertebra. The spleen was rather firmer in consistence than usual. The adrenals were rather large and the right one was of reddish hue.

#### SECTION OF OBSTETRICS AND GYNÆCOLOGY.

A MEETING of this section was held on July 3rd, Mr. J. D. MALCOLM, the President, being in the chair.

In the absence of Mr. W. GILLIATT, his paper on

##### *A Case of Obstruction to Labour due to Ventrofixation*

was read by Dr. COMYNS BERKELEY.

The patient, a primigravida, aged 32, was admitted to Queen Charlotte's Hospital; she had been in labour five days and had had two attacks of uterine hæmorrhage. Examination showed a median sub-umbilical scar about  $3\frac{1}{2}$  inches long. The uterus was tense and asymmetrical, and the foetal heart was not heard. The cervix was displaced upwards, backwards, and to the right, and the uterus seemed to be in early tonic contraction. Cæsarean section was decided on as the best method of procedure, as on examination under anæsthesia the inaccessibility of the cervix, its size and rigidity excluded vaginal methods.

On operation, the uterus was found fixed to the anterior abdominal wall by a thick tightly stretched band about 2 in. long which was attached to the posterior surface of the uterus 1 to  $1\frac{1}{2}$  in. behind a line joining the uterine ends of the Fallopian tubes. There was marked axial rotation of the uterus through almost a quarter of a circle, so that the right-sided bulging mentioned above was at the expense of the posterior wall of the uterus. A stillborn child lay in a cavity formed mainly by the posterior wall of the uterus, which was stretched very thin. The head was delivered with difficulty from a sacculation in the uterine wall, in which it was tightly gripped. The patient recovered from the operation, but died some days later from septic endocarditis. The nature of the previous operation was unknown on admission, but was afterwards discovered to be an amputation of the cervix uteri and ventrofixation.

In the course of the discussion on Mr. Gilliatt's paper, Dr. LAPHORNE SMITH commented on the fact that the ventrofixation had been performed by attaching the posterior wall of the uterus to the anterior abdominal wall, and for this reason probably caused the obstruction. His practice was to make the attachment from the front wall, and below the line of insertion of the tubes.—Dr. BERKELEY concurred with this view, and the PRESIDENT suggested that, as a rule, ventrofixation should not be done in patients likely to become pregnant.

##### *Demonstration.*

Dr. EARDLEY HOLLAND gave a demonstration on the effects of excessive cranial stress in the foetus during labour, and on the mode of origin of tears of the tentorium cerebelli and cerebral hæmorrhage.

## TUBERCULOSIS SOCIETY.

### *The Annual Meeting.*

AT the annual meeting and dinner held on June 28th, Dr. HALLIDAY SUTHERLAND, the retiring President, outlined the origin of the society, whose members now numbered nearly 200. Membership was open to all interested in tuberculosis work, and with the signing of peace it was hoped that the society would occupy a place of importance in guiding and advising the coming developments of tuberculosis work.

Dr. F. N. KAY MENZIES said that five years ago, when the London County Council undertook to provide treatment for tuberculous persons, there were only a few beds and one or two dispensaries available. Now there were 900 beds, shortly to be increased to 1000, and every area in the county was served by a dispensary. The difficulties hitherto existing between the Council and the Insurance Committee would soon be overcome, and he looked forward to the union of his work with that of Dr. Noel Bardswell, the medical adviser of that body.

Captain W. E. ELLIOT, M.P., said that the representation of medicine in Parliament looked to the society for guidance as to the united opinion of tuberculosis workers. He foresaw developments in the treatment at industrial colonies, and referred to the Hairmyres Colony in Lanarkshire. More thought should be given to the mental capacity of tuberculous men who might be used in the development of electric force and similar enterprises.

### *Tuberculosis Work: Hopeful Outlook.*

Dr. NATHAN RAW, M.P., said that now the strain of war was over there was a very hopeful future to look forward to in tuberculosis work. The problem had been increased enormously by the return of thousands of tuberculous discharged service men, whom it was the country's duty to look after.

Dr. NOEL BARDSWELL hoped that the society would encourage expression of opinion from the junior branches of tuberculosis work. Their present remuneration was inadequate, and he thought that better prospects should be offered to them.

### *A Social Problem.*

Dr. H. DE CARLE WOODCOCK, President-elect, said that the tuberculosis problem was a social as well as a clinical one and demanded administrative ability on the part of the tuberculosis officer. His present position as assistant to the medical officer of health required readjustment. The tuberculosis officer should be in control of his own district and responsible directly to his public health committee. Referring to the new housing schemes, he thought that it would be the gravest mistake to build new houses and then to allow advanced cases to carry infection into them. Legislation was needed to remove infective cases from overcrowded areas.

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.—A meeting was held on July 1st, at 11, Chandos-street, Lady Barrett, M.D., the President, being in the chair.—Dr. Octavia Lewin read a paper on Nasal Hygiene and National Health, and showed several cases of children successfully treated for nasal obstruction and deafness without operation. She also showed a case of stenosis of the posterior nares following an operation for adenoids in a child who was a diphtheria carrier. Dr. Lewin emphasised the fact that many operations would be avoided by proper attention to the nose and breathing.—Dr. Eleanor Lowry read a paper on the Nose in Relation to General Diseases. She referred to the importance of nasal obstruction and sinus suppuration in respiratory, digestive, and nervous diseases, and gave instances of mistakes in diagnosis and treatment of such cases. She mentioned some of the superstitions held by patients as to the connexion between gynaecological conditions and the nose and throat, and said that it was to be regretted that similar statements were still made in textbooks on gynaecology, and apparently copied into papers and books on the nose and throat.

THE LEAGUE OF MERCY.—Sir Frederick Green, K.B.E., honorary treasurer of the League of Mercy, has presented £10,000 to the League "in the hope that now that His Royal Highness the Prince of Wales has consented to become Grand President a new era of activity of the League may be inaugurated."



## Reviews and Notices of Books.

*A Text-book of Physiology.* By MARTIN FLACK, C.B.E., M.B., B.Ch. Oxon.; and LEONARD HILL, M.B., F.R.S. London: Edward Arnold. 1919. Pp. 800. 25s.

WE offer a very hearty welcome to the latest addition to the list of text-books of physiology. There is a vigour, originality, freshness, and attractive method in the exposition of certain parts of the subject such as one rarely finds in a text-book. The fundamental facts and theories are set forth in an easily understandable form with many an apt comparison and illustration. Although primarily written to meet the requirements of the medical student, it cannot fail to prove of value to the general practitioner. In the not very remote future "applied physiology" will come to be an integral part of medical education, and the authors have kept this end in view. Only a few of the great names and epochal dates in physiological discovery have found a place in the text. By abbreviating their work in this way the authors have, it is true, followed the example of Michael Foster, though we hardly agree with their decision. The student should know at least the century of Galen, Harvey, Galvani, Charles Bell, Bernard, Waller, and Helmholtz. There is nothing in the text to indicate whether certain important discoveries were made during this century or two centuries ago. We are unable to find an allusion to Bell's law. If it is in the text, it is not in the index. This may be the case, for the index is not complete.

The subject-matter is divided into 13 books—of unequal scientific and literary value—each of which is composed of several chapters. About 70 pages are given to General Physiology, while about 180 are devoted to Blood and the Circulation of Body Fluids. The description of Immunity and Allied Phenomena is terse and practical, and leads up to the students' later studies in these subjects. Book III., on the Circulation of the Body Fluids, is comprehensive and well thought out. The newer work on Cardiac Physiology is more successfully dealt with than in any text-book with which we are acquainted. The student ought to be familiar with the main facts of electrocardiology, and these are admirably set forth. One chapter is given to Effect of Change of Posture on the Circulation, a subject of particular clinical interest, and one which has not been treated adequately in the past. The Circulation in Special Parts is also excellent. Respiration occupies about 60 pages—not too much, considering the importance of the subject. We are glad to see that Dr. Hill's fundamental work is incorporated, as well as illustrated by several useful diagrams. The chapter on Principles of Ventilation is pithy and practical, and well worth perusal and study. We regard the chapters on Respiration as the most finished and the best in the whole book, or perhaps in any modern text-book.

Books V. and VI. (pp. 325–406) deal with General Metabolism and Dietetics, and the Processes of Digestion, and VII. with Special Metabolisms—e.g., proteins, carbohydrates, fat, nucleins. The spleen is very cursorily dismissed. These "books" have not the same merit as some of the others. There is evidence of imperfect revision, either on the authors' or proof-reader's part. Some of the rather vaguely described chemical processes might well be omitted. We are told that "appetite juice" "may be provoked by seeing, hearing, by smelling food"; "the injection of gastric mucous membrane of guinea-pig into rabbit may cause a specific cytolsin to form in the rabbit's serum"; and that gastric juice "is a clean watery liquid." "Meconium, the dark-greenish fæces passed by the newly-born child, are similarly acid in reaction, and inoffensive." Meconium does not find a place in the index.

The Functions of the Kidney, Skin, and Body Temperature form the next sections, and of these three the last is by far the best; indeed, it stands out as an excellent and practical exposition of the subject. We should like to have heard more of Cushman's recent work on the kidney. To the ductless glands (X.) only about 20 pages are given, illustrated by some good figures in the text; but even granting the controversial nature of much that is written about these glands and internal secretions, the subjects surely merit a more detailed survey. For the Tissues of Motion (XI.), including Animal Electricity, 40 pages

suffice. Galvani's period is not given, and the omission of the name of Du Bois-Reymond should make, to use the old tag, that philosopher turn in his grave. The Nervous System (XII.) occupies 185 pages, and of these less than six suffice for the "autonomic system," including several large illustrations. By omission of some details throughout the text space would easily be found for a fuller treatment of the central and sympathetic nervous systems, and perhaps also of the cranial nerves and sense organs. A curious slip occurs on p. 630—four of the ocular muscles arise "from the back of the eyeball." Several chapters on Growth and Reproduction (XIII.), which bring the book itself to a close, constitute an excellent suggestive epitome. Throughout the book histology is only introduced to elucidate definition.

We hope that in the second edition we shall find that the index has been revised and minor errors eliminated from the text. Perhaps the authors will change their minds, too, about the use of "drachms" as a fluid measure. Meanwhile, we think that this text-book of Flack and Hill—both experienced teachers and distinguished investigators—will prove most acceptable to medical students, and more especially to those who are preparing for the higher qualifications, not only on account of the marshalling of the main facts, but because the subject-matter is set forth in a readable and pleasant form, while its applications in practical medicine are steadily kept in view.

*Medical Annual for 1919.* Bristol: John Wright and Sons, Ltd. Pp. 675. £1 net.

THE editor is to be congratulated on the success he has achieved in the production, under difficult conditions, of this valuable record of medical progress. Some of the authors appear to have felt themselves cramped in their expositions of new work. This is inevitable where so much research has been carried out in certain special departments and where so many of the conclusions are still in a controversial stage. The discussion on war neuroses, for example, is obviously not a complete summary of the results obtained by different observers during the war. A good bibliography at the end of most of the important articles serves to correct this inequality, while providing useful assistance to those who wish to pursue a particular subject further. The articles on blood transfusion and amputations are adequate and well depicted. The illustrations in general, including five coloured plates, are clearly printed on good paper. The title-page of the book would be easier to find if the advertisements which precede it were removed or printed on coloured paper. The volume is, as usual, securely bound and of a reasonable size.

*Military Physical Orthopaedics. Part I.: Gunshot Wounds of Nerves.* By ARTHUR STANLEY HERBERT, M.D., B.S. Lond., Lieutenant-Colonel (Temporary), N.Z.M.C., P.M.O. of the Rotorua Orthopaedic Hospital, Government Balneologist. With 62 illustrations and 12 figures in appendices. Wellington: By Authority: Marcus F. Marks, Government Printer. 1918. Pp. 136. 6s.

THIS is a valuable little book. It represents the results of the experience of a surgeon who, being placed in charge of a large number of cases of nerve injury caused by war trauma, worked out his own methods of treating them remote from the great centres of military orthopaedics. It would have been still more valuable two years ago, but difficulties in printing prevented its appearance. The cessation of hostilities, however, will not affect the permanent value of the work.

Colonel Herbert seems to have been wonderfully successful in treating the disabilities following nerve injuries by means of very simple and cheap appliances, and particularly in his adaptation of the old principles of elastic traction to suit modern needs. Artificial muscles have a two-fold use. Firstly, by supplying a means of movement and preventing or correcting deformities, and secondly, by preventing stretching of paralysed or weakened muscles and thus helping them to regain function.

The importance of antagonist muscles is now well recognised, and by supplying artificial antagonists, elastic traction is of great value. In particular is the author's "long quadriceps strap," a very valuable addition to the



armamentarium of the orthopaedic surgeon. The great experience of the author as medical officer in charge of the New Zealand Government baths and sanatorium at Rotorua for 12 years before the war had well equipped him for the task which has since fallen upon him. The beautiful surroundings of the King George V. Hospital and of the sanatorium invite open-air treatment and it appears that nearly all cases are so treated. Colonel Herbert is to be congratulated on the ingenuity with which he has devised simple but efficient apparatus and on the good results achieved, all of which are well shown in the excellent illustrations of this book. It must not be supposed that because he insists on the value of these simple methods, he neglects the ordinary physiotherapeutic and electrical methods. These latter are adequately described and their use discussed.

From the fact that this volume is entitled Part. I. we hope that we may look forward to the appearance of another part dealing with injuries other than those of nerves.

*The Theory and Practice of Massage.* By BEATRICE M. GOODALL-COPESTAKE, Examiner to the Incorporated Society of Trained Masseuses; Teacher of Massage and Swedish Remedial Exercises to the Nursing Staff of the London Hospital. Second edition. London: H. K. Lewis and Co., Ltd. 1919. Pp. 265. 9s. net.

THE fact that only 15 months have elapsed since the appearance of the first edition of this book suggests that it has met a need. Our criticisms of the first edition have been largely met. Alterations in the chapters dealing with fractures, dislocations, and recent injury bring these matters far more nearly into accord with modern teaching. Colin Mackenzie's recent work receives recognition, with the result that the value of the chapters devoted to nerve affections is greatly enhanced. A new chapter on the after-treatment of war injuries is occupied in the main with a description of Mrs. Guthrie-Smith's well-known apparatus for the treatment of stiff joints, and the addition of a bibliography, though short, is welcome. Frequent smaller alterations in the text tend to convey a sense of confidence that was frequently lacking during the perusal of the first edition. The earlier part of the book still, we fear, conveys an unwelcome impression of stereotyped practice.

*Manual of Lip-reading.* By MARY E. B. STORMONTH. London: Constable and Co. 1919. Pp. 208. 5s. net.

Miss Stormonth's "Manual of Lip-reading" is intended to be an addition to a very limited branch of literature which it is by no means easy to extend. Teachers of lip-reading are so used to phonetics that perhaps they fail to realise how little the general public know about them. Any book on lip-reading intended for the use of the uninitiated should begin with a clear setting out of the phonetic system which is therein adopted. The omission of such a chapter is a great lack in Miss Stormonth's book. Mention is made of the need of natural speech, and stress might well be laid upon the need of distinctness of speech. No artificial way of speaking is required, but slipshod speech on the part of the teacher is a great drawback for the pupil. Apart from the caution given against the tendency of the teacher to exaggerate facial movements in voiceless speech, note might be made of the fact that the use of voice allows much greater natural play to the muscles of the face and throat. This is of considerable assistance to the learner and should not be ignored. Miss Stormonth seems to plunge at early stages into difficult words, and in dealing with the sounds set for each lesson treats them only as initial sounds. In Lesson I., for instance, treating of the sounds "a" and "p," a few preliminary easy words are given; then such words as "paralysis," "particular," and "paragraph" are introduced. Would it not have been equally satisfactory to have introduced the sounds in other positions, as in "tap," "clap," "happen," "appear"? The same remark applies to nearly every lesson.

Miss Stormonth has combined in a useful way the drill in words for the teaching of special sounds, with phrases on the "Look and Say" method. The two cannot be separated and give life to each other. Her advice as to the utterance and reading of sentences as a whole is very

important, whilst the use of word-building is well thought out and applied. She has faced, too, the difficulty of saving the adult learner of lip-reading from intellectual boredom, though her stilted and unusual sentences dealing with the "parson" and "factor" are rather tiring. The latter part of the book is most helpful in its classification of subjects and collection of proverbs and phrases, for in the teaching of lip-reading, unless a careful plan is laid, most unwelcome blanks are liable to reveal themselves at inopportune moments. The book may well prove of use, not only to amateurs, but also to those who are already engaged in teaching the art of lip-reading.

*Animal Parasites and Human Disease.* By ASA C. CHANDLER, M.S., Ph.D., Instructor in Zoology, Oregon Agricultural College, Corvallis, Oregon. London: Chapman and Hall, Ltd. New York: John Wiley and Sons, Inc. 1918. Pp. 570. 21s.

THE aim of this volume is to present the chief facts of parasitology as related to human disease in such a manner as to appeal to the general reader or to the laymen interested especially in the progress of preventive medicine and public health. Primarily the book is not one for the professed parasitologist. Without too greatly encumbering the text with roundabout phrases, scientific terms have been omitted or, where used, have been explained. The book, it is hoped, will supply the needs of teachers of hygiene and members of the public health service. The work, too, will have its interest for the medical man. As a result of the war there are probably more cases of tropical infections in the British Isles at present than at any previous time, and the author will have the satisfaction of knowing that the publication of his book in this country is peculiarly opportune. Recent advances in this particular branch of medical knowledge are embodied in the text and numerous sections are devoted to treatment. The book is divided into three parts, dealing respectively with protozoa, "worms," and arthropods. No bibliography is given. Instead there is inserted a list of "sources of information," which includes all the leading periodicals in which articles dealing with parasitological subjects appear, as well as a comprehensive list of books covering the field of parasitology; it is suggested that the student will find all the bibliographical references which he may require in these.

As would be expected from an American writer, a telling description of the economic ravages of the hookworm is incorporated. In the Southern States no less than 2,000,000 of the population are affected by this parasite, and "unlike many diseases, this one has no tendency to weed out the weak and unfit; it works subtly, progressively, undermining the physical and intellectual life of the community, each generation handing down an increased handicap to the next." In the treatment of this disease oil of chenopodium is rapidly supplanting other remedies like thymol, than which it is not only more efficient but also less dangerous. The book is well up to date, and there are excellent chapters dealing with malaria and trypanosomiasis, but while the results of Leiper's researches on bilharzia are included in the article dealing with schistosomiasis, we fail to find any reference to trench fever in the section devoted to lice and disease.

The book contains more than 250 illustrations, most of which have been drawn by the author either from specimens or from other illustrations. Pen-and-ink drawings have been used consistently in place of photographs, and, what is important in a work of this kind, in the majority of figures the magnification is indicated.

The author has succeeded in providing a really interesting and informing treatise on parasitology in its relation to human disease, and we think he goes far to succeed in his wish that his book may be instrumental in arousing the interest of more students in this branch of science to the ultimate end of enlisting a larger number in the ranks of its workers. He insists that the need of the present time is not so much additions to our knowledge as the efficient application of what we already know.

THE degree of D.Sc. hon. caus. has been conferred by the University of Philadelphia upon Professor A. Hopewell-Smith, M.R.C.S., L.D.S.



## JOURNALS.

*The Quarterly Journal of Medicine.* Edited by WILLIAM OSLER, J. ROSE BRADFORD, A. E. GARROD, R. HUTCHISON, H. D. ROLLESTON, and W. HALE WHITE. Vol. XII., No. 47. April, 1919. Oxford: At the Clarendon Press: London, Edinburgh, New York, Toronto, and Melbourne: Humphrey Milford. Subscription 25s. per annum. Double numbers 17s. net each; single numbers 8s. 6d. net each.—The present number includes the following papers: 1. Intrathoracic Pressure in Hæmothorax, Pneumothorax, and Pleural Effusion, and Effects of Aspiration and of Oxygen Replacement, by George C. Shattuck and E. E. Welles. The measurements of intrathoracic pressure were made with a water manometer graduated in centimetres. Readings showed that the pressure in a sterile hæmothorax changes little in the first 16 days after wounding, but in the case of small hæmothoraxes the respiratory excursion of pressure increases gradually during this time. Pressures observed in pleural effusions were similar to those in hæmothorax. By the simultaneous replacement of fluid by oxygen, volume for volume, the existing pressure in the pleural cavity could be maintained. 2. A Contribution to the Study of Contralateral Signs in Gunshot Wounds and Injuries of the Chest, by S. W. Curl. The author finds that contralateral signs are common, contralateral collapse being quite frequent. He emphasises the fact that the combination of physical signs supposed to be characteristic of solid lung is extremely fallacious and uncertain, since fluid effusions may give rise to identical signs. He considers that examination of cases by X rays, although helpful, is by no means sufficient for the differentiation of solid lung from a pleural effusion; and that the only safe guide is the exploring needle, and that this may fail unless used with discretion. He shows that in a small percentage of cases a fluid exudate may exist on the side towards which the heart is displaced, owing to the concomitant presence of a high degree of pulmonary collapse. 3. Two cases of Endocarditis due to *B. influenza*, by Archibald Malloch and Lawrence J. Rhea. In these cases bilateral broncho-pneumonia was present together with acute vegetative endocarditis. *B. influenza* was grown in pure culture from the terminal bronchi and from the centre of the vegetations in both cases. 4. The Therapeutic Action of Digitalis on the Rapid Regular Rheumatic Heart, by G. A. Sutherland. The writer illustrates his paper by accounts of ten cases in which he brings forward evidence to show that digitalis exerts a beneficial action even when there is no irregularity of the pulse. The drug, it is suggested, acts upon the auriculo-ventricular node and bundle, and where there is a sufficiency of sound contractile tissue in the ventricles leads to an effectual slowing of the ventricular rate. This contribution has a bearing upon a point at issue in a controversial correspondence which was carried on in THE LANCET in 1917. 5. Acute Leukæmia and so-called Mediastinal Lenkösarcomatosis (Sternberg), with the account of a case accompanied by Myeloid Substitution of the Hilus Fat of the Kidneys, by F. Parkes Weber. Most cases of mediastinal leukosarcomatosis have not been recognised as such until a post-mortem examination has revealed their nature. In a recent case the author was able by the microscopical blood picture and Roentgen-ray examination to make the diagnosis of the condition during life. The case is of further interest in that post-mortem examination showed the presence of deep-red, spongy, bone-marrow-like tissue in the hilus of each kidney. An informing survey of the literature accompanies the description of the case. 6. Observations upon Two Cases of Diabetes Insipidus: with an Account of the Literature relating to an Association Between the Pituitary Gland and this Disease, by E. L. Kennaway and J. C. Mottram. In this important paper data are given as to the composition of the urine and its molecular concentration in comparison with that of the serum in two cases of diabetes insipidus. The authors show that pituitary extract given by subcutaneous injection leads to a diminution in the amount of urine excreted, and recommend the injection of pituitary extract as a means of treatment. This anti-diuretic effect of pituitary extract appears to be due to its direct action upon the kidney. The restoration of a normal state of the urine when pituitary extract is given in diabetes insipidus provides, in the authors' opinion, the strongest evidence that the normal activity of the gland is concerned, in part at least, in regulating the secretion of urine. While the morbid anatomical findings, till now recorded in the literature, are insufficient to establish that diabetes insipidus is constantly accompanied by disease of the pituitary, there is much to suggest that diabetes insipidus is dependent generally upon such morbid changes. The authors point out, however, that disease of the pituitary can occur without any symptoms of diabetes insipidus supervening. 7. The Filter-passing Virus of Influenza, by John Rose Bradford, E. F. Bashford, and J. A. Wilson; together

with an Appendix of Clinical Notes on the Cases of Influenza from which the Virus was Recovered, by F. Clayton. This paper gives a detailed account of the extremely momentous investigations which the authors have been carrying out in their attempt to demonstrate the presence of a filtrable virus in the blood and other material obtained from cases of influenza.<sup>1</sup> That a filtrable virus was associated with influenza was first demonstrated by Nicolle and Lebaillly,<sup>2</sup> who by the subcutaneous inoculation into the human subject of a filtrate of sputum from a case of influenza produced a febrile illness comparable with the naturally acquired disease. The methods employed by the present writers are those of filtration, cultivation of the filtrate, and animal inoculation. The types of filters employed are the Berkefeld N and V and the Massén porcelain filter. The filter-passer has been seen microscopically in the filtrate and has been cultivated therefrom by the Noguchi method. The organism, which has definite morphological and cultural characteristics, can be demonstrated in the blood, sputum, and other exudates, as well as in the tissues post mortem by appropriate methods of staining. Inoculated into animals the pure culture reproduces lesions similar in character to those found in the disease in man—viz., the swollen, hæmorrhagic lung, the fatty change in heart and liver, the inflamed kidney, and the peculiar hæmorrhagic lesion in the voluntary and cardiac muscles. The organism, moreover, can be recovered from these tissues, so that the conditions ordinarily known as Koch's postulates are fulfilled. The whole horizon limiting our outlook over the field of infective disease has been enormously extended by the application of Loeffler and Frosch's method of filtration to the investigation of human infections, and the work of Sir John Rose Bradford and his coadjutors goes to show that a rich harvest awaits the patient worker in this field.

<sup>1</sup> THE LANCET, 1919, i., 163.

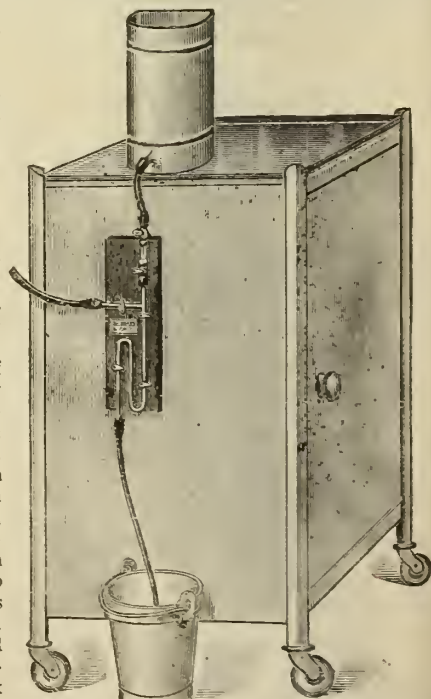
<sup>2</sup> Nicolle et Lebaillly, Compt. Rend. Acad. Sci., Paris, 1918, civiii., 607.

## New Inventions.

## A MODIFIED CATHCART'S APPARATUS.

THIS apparatus—in principle a Cathcart's but more compact and more easily applied—was devised in 1915 to cope with the spent fluid in the continuous irrigation treatment of wounds. It consists of a Canny-Ryall dropper connected to a metal T and siphon tube combined, the whole sunk in a wooden block which can be fixed to the patient's locker. The illustration explains the working principle. The amount of fluid necessary to create a continuous suction force is  $7\frac{1}{2}$  oz. per hour when draining an open cavity, and considerably less when the cavity to be drained is a closed one. It has proved useful in draining appendix and psoas abscesses, the bladder, gall-bladder, and chest, and also for removing filtrates in a small laboratory. It is made by Messrs. A. E. Braid, 30, Gower-place, London, W.C., and is sold with right- and left-sided blocks from which it is easily removed for sterilisation by boiling.

L. A. CÉLESTIN, M.C., M.D. Lond.





# THE LANCET.

LONDON: SATURDAY, JULY 12, 1919.

## The Liquor Traffic and the Public Health.

THE responsibility will shortly fall upon Parliament to decree the measures to be adopted in respect of the liquor traffic. The problem presented is an evergreen one in politics—it is to decide how and to what extent individual freedom shall be moulded for the public good; but where the control by the State of the sale of liquor is concerned the problem is one on which, to a greater degree perhaps than on any other social question, medical opinion has the right and the duty to speak with exceptional weight of authority. For the most serious results which ensue from the abuse of these beverages, and which, indeed, give to that abuse the importance of a social problem, are in the main ultimately reducible to the injurious influence of alcoholic excess on the bodily and mental health of the intemperate drinker. And this fact, that the effects of excessive drinking are chiefly manifest in disordered health, is not the only reason why the liquor problem in a special degree demands consideration from the medical point of view. The causes of intemperance, like its consequences, can only be justly appreciated when due regard is had to the fundamental facts concerning the action of alcohol on the body; and, as we shall have occasion to remark later on, the success achieved in dealing with alcoholism in this country in the last few years was obtained through the recognition of the truths of physiology in the enforcement of methods of regulation which were definitely and avowedly based on the indications of science. In all its more important aspects the liquor problem is essentially a medical problem, a problem of hygiene. And the new Commission, to whose jurisdiction the liquor traffic will be handed, will have to take this fact into consideration throughout.

The prevalence of alcoholism under the conditions obtaining to-day presents a striking comparison with its prevalence in the years before the war. It is, of course, to be understood that the statistical evidence which is available for such a comparison gives what is in certain respects an imperfect expression of the facts—that, for example, the deaths certified as due to alcoholism represent only a part, and doubtless a small part, of the mortality really attributable to alcoholic excess. This limitation, however, while it prevents us from regarding these statistics as any real measure of the amount of alcoholic mortality, does not affect their value as a standard for estimating the comparative frequency of intemperance in the two periods which we wish to compare. Taking, then, the year 1913 as representative of the state of things before the war, it appears from the official returns that under the then existent conditions of the liquor traffic there were in England and Wales 1831 deaths certified as due to or connected with alcoholism, and in addition to these there were 3880 deaths attributed to cirrhosis of the liver, while no less than 1226 infants under one year of age were suffocated in bed, well over a quarter of the latter fatalities

occurring on Saturday nights. Further, in those Poor-law infirmaries—unfortunately few in number—where records on the point were kept, there were 786 patients treated for delirium tremens. In the same year the number of convictions for drunkenness amounted to 188,877, being at the rate of 1 to every 135 of the population over 15 years of age. If we turn now to the figures for the year 1918, we find that deaths from alcoholism numbered 296, a reduction of over 84 per cent. on the 1913 level, and that deaths from cirrhosis of the liver fell to 1671, a decline of nearly 60 per cent., while deaths of infants from suffocation numbered 557—that is to say, they were more than 55 per cent. below what they were in 1913, and the predominant incidence of these deaths on Saturday nights, so marked in that year, no longer existed. Again, in the same institutions referred to above as furnishing returns of cases of delirium tremens, the number of patients treated for that disease in 1918 amounted only to 32, thus showing a decrease of no less than 95 per cent. on the figures for 1913. Finally, convictions for drunkenness totalled 29,019, or very little more than one-sixth of the number recorded in 1913. It might, perhaps, be suggested that the reduction in intemperance indicated by these figures is to be ascribed in part to the absence on military service of large numbers of adult males, but this explanation breaks down in view of the fact that the decrease has been equally or even more marked in the case of women. Thus deaths of women from alcoholism fell from 719 in 1913 to 74 in 1918, a reduction of nearly 90 per cent.; deaths from cirrhosis similarly declined from 1665 to 579, a fall of approximately 50 per cent., and in the Poor-law infirmaries keeping records of delirium tremens the cases of that disease in women, which numbered 214 in 1913, were only 6 in 1918. And, corresponding with this reduction in alcoholic disease and mortality, convictions of women for drunkenness declined from 35,765 to 7222, a reduction of practically 80 per cent. These figures provide adequate proof that during the war there has been in this country a real and substantial decrease of alcoholism; and since the greater part of the decrease followed immediately on the enforcement of the war-time regulations for the control of the liquor traffic, it is legitimate to conclude that these regulations were the chief agents in bringing about the improvement in national sobriety.

Alcoholism is, of course, a much bigger factor in the causation of disease and mortality than can be shown in official statistics, which necessarily represent only its most extreme and obtrusive results; and the improvement effected through the system of liquor control is correspondingly more important than is indicated by the evidence summarised above; but even if that evidence be taken merely at its face value, it will enable us to form some idea of the price, measured in terms of health and efficiency, which the community would have to pay for the full restoration of pre-war conditions in the liquor trade. Possibly public opinion would be prepared to pay that price, heavy as it is, if the regulations necessary for the control of alcoholism constituted a serious encroachment on public freedom and convenience. And on such grounds objection may, no doubt, be urged, and with some reason, against certain of the proposals which have recently been advocated under the guise of temperance reform, and notably against the method of direct limitation of the output of



liquor—a method which, when enforced by the Food Controller in the later stages of the war as a necessary measure for conserving cereal supplies, did, in fact, excite much irritation and unrest in the industrial classes. But no such criticism can lie against the policy of controlling alcoholism by regulating on physiological lines the hours and conditions of the sale of alcoholic beverages. This policy—in a form more stringent, maybe, than would be necessary or desirable in time of peace—was adopted by Lord D'ABERNON and the Liquor Control Board for the purpose of promoting the national efficiency during the war; it is a policy which does not involve any interference with the legitimate freedom of the temperate consumer of alcohol, and does not occasion any appreciable inconvenience to the general public—certainly none that is worth weighing against its great and unquestionable influence in promoting the well-being of the community. It contains, in a word, the minimum amount of restriction which is consistent with effective action in the control of alcoholism. And in this matter restriction of some sort is inevitable; not even the most extreme individualist has seriously proposed that there should be entire and absolute freedom in the production and sale of alcoholic beverages. The question is whether the restrictions which will be imposed by the new Commission are to be grounded on scientific principles and directed to safeguarding the health and efficiency of the nation.

### The Epidemiology of Pyogenic Infection.

No peace terms have been signed in man's warfare with bacteria, and there is little prospect of a truce with the minute vegetal foe. The ups and downs of the conflict have been closely studied in the case of typhoid, where success has fallen to man, and in so-called influenza, where the laurels must honestly be awarded to the other side. Dr. W. H. HAMER begins a report just published with the words: "The year 1918 stands out as a great influenza year." Of equal interest is the story of the struggle with the organisms which gain access to the body through obvious breaches of surface. While the war hygienist has taken some credit for the comparative absence of typhoid, typhus, and other such plagues from the Flanders front, no such congratulation is possible in regard to the epidemic diseases of wounds; for the wounded man, as Sir ALMRÖTH WRIGHT once reminded us, is simply a sick man with some surface discontinuity. Dr. W. W. C. TOPLEY's Goulstonian lectures, the second instalment of which we print this week, serve a useful purpose in bringing exact thought to bear upon the spread of bacterial infection from the standpoint of the bacteriologist. Three explanations are possible when confronted with epidemic disease: an increase in the power of the parasite to produce disease, a decrease in the resistance of the host, and some alteration in the surrounding circumstances furthering the transference of parasites from case to case. Dr. TOPLEY adds that the whole of biological knowledge is against the occurrence of a considerable epidemic in which the pathogenicity of the parasite and the resistance of the host remain constant, and rules out the third alternative as of minor importance. But he is speaking primarily of infections which enter the body through an intact surface.

There is, however, one organism, which has played a leading rôle in the drama of war wounds, in regard to the spread of which circumstances may chiefly be to blame. This is the type of hæmolytic streptococcus described in a paper by Mr. A. FLEMING and Dr. A. B. PORTEOUS on page 49, which has been held responsible for almost all the severe septic complications of wounds in Flanders and for all the streptococcal septicæmia. The number of its victims has been so large as to constitute an epidemic in the strict sense of the term, although an epidemic of very special character. Put briefly, this streptococcus was found actually responsible for a large number of deaths in those who "died of wounds," for a still larger amount of disability from continued suppuration, for various forms of infected skin lesions and joint infections, and, finally, for certain outbreaks of pharyngitis and laryngitis, as well as of pneumonia and pleurisy. An important committee was set up in 1918 by the Medical Service in France to deal with it. Any complete report on methods of prevention and treatment was first impeded by the rapid advance of the summer and then cut short by the cessation of hostilities. But the results obtained threw some light upon the origin of the infection. At a research casualty clearing station it was found that of patients admitted to the station a few hours after infliction of their wounds only a small proportion, under 15 per cent. in fact, were infected at that time with the hæmolytic streptococcus. Quite other was the experience at the base. Mr. FLEMING and Dr. PORTEOUS found that in a series of a hundred septic wounds remaining at a base hospital for over seven days this streptococcus was present in almost every case. Infection therefore presumably arose somewhere after the field dressing stage. Following up the search, they examined during last summer gauze packs removed from wounds on arrival at the base, and found the hæmolytic streptococcus in nearly every one when the man had been kept at the casualty clearing station for more than a week, whereas with the man sent straight on to the base the organism was present in 15 out of 75 excised wounds—that is to say, in only 20 per cent.

It would seem, as these authors state, a warrantable deduction that the streptococcal disease of wounds is in most cases a hospital infection, probably conveyed from patient to patient in the dressing of the wound. But while admitting the fact of infection at hospitals, other possibilities exist in regard to its conveyance than by manual transmission from wound to wound. At certain concentration camps in the United States of America it was noted that of new recruits entering the camp only a small proportion harboured streptococci in their throats, but after a short stay the majority were thus infected. It is at least possible that as with the meningococcus so with the streptococcus, some people are constant carriers of infection. Here Dr. TOPLEY is again enlightening. His conception is of a virus of a given disease being distributed fairly widely through the world as a comparatively harmless parasite on the human host, taking on during epidemic periods a new and sinister rôle. Under conditions of campaigning it may well be that the streptococcus carried in the throat gains an increased power of producing disease. Nor is the streptococcus the only pyogenic infection whose virulence or infectivity has become enhanced under war conditions. Mr. JOSEPH CUNNING's recent letter to our



columns on epidemic perinephric suppuration elicited from Sir THOMAS HORDER the opinion of a general rise in the incidence of staphylococcus infections. Furunculosis, syphilis, impetigo, blepharitis—all have been rife of late and individual cases more severe than usual. Soldiers returning home have apparently brought with them a more virulent strain of staphylococcus. Evidently pyogenic infections deserve the careful study of the epidemiologist.

## The Sense of Stability and Balance in the Air.

In the monograph on the above subject recently added to the valuable series of special reports published by the Medical Research Committee<sup>1</sup> Dr. HENRY HEAD, F.R.S., records investigations made upon both normal and abnormal subjects from the point of view of flying. Of particular interest is the section dealing with the sensations experienced by normal persons in heavier-than-air-machines. It is shown that conscious stability and comfort in the air depend primarily on the normal response of three groups of sense organs—namely, the vestibular apparatus, the eyes (including the eye muscles), and the proprioceptive system with its endings in muscles, tendons, and joints. Defective response from any one of these afferent end-organs disturbs the sense of equilibrium in the air, and leads to actions that affect the stability of the aeroplane. The report indicates that undue importance has hitherto been attached by many experts to the vestibular apparatus. It has become increasingly apparent to those connected with flying that although the sense of stability is dependent upon the integrity of the vestibular apparatus, the importance of the afferent impulses streaming in from eyes and the proprioceptive system must not be overlooked. An expert pilot finds it impossible to fly a machine with his eyes bandaged, and under these circumstances derives most of his information from cutaneous sensation and from the nerve endings in muscles, tendons, and joints. It is well known, as in the case of the recent Atlantic flight by ALCOCK and BROWN, that when the sense of vision is cut off the pilot loses himself in space, and may emerge from a fog or cloud with his machine at a steep angle or even upside down. Under these circumstances he is dependent almost entirely upon instrumental guidance for flying, and it may be that in future some instrument, such as Sir HORACE DARWIN'S "Turn Indicator," will be fitted to machines and be largely relied upon to give the pilot information in respect of his position to the earth.

Taking seriatim the chief points of interest brought out by Dr. HEAD: While flying an aeroplane an otherwise healthy man may suffer from disorders of vestibular and visual sensibility due to temporary causes. Such are giddiness through inability to regulate the tension in the middle ear with sufficient ease during a rapid descent, and defective visual orientation due to the development of heterophoria owing to disturbance in function of the eye muscles. Dr. HEAD shows that in some men, otherwise normal, rotatory stimuli produce a more powerful reaction than in the majority of their fellows. They become giddy easily. As children they could not swing with pleasure,

and some of them were habitually sick in the train. Such persons are not suffering from a pathological condition; their disability arises from the fact that sensory impulses from the semi-circular canals are not checked and controlled to the same extent as in the majority of healthy individuals. Consequently, when exposed to disturbances of equilibrium to which a normal man would adapt himself unconsciously, they suffer from discomfort, become giddy, and may even vomit in the air. Many who were giddy when first exposed to acrobatic evolutions succeed in conquering this disability. They learn to fly with ease, and the acquisition of this new facility is associated with control of the primary afferent impulses from the auditory and visual apparatus. Any condition which produces diminished control by the highest faculties over the activity of lower centres is liable, however, to lead to regression to the earlier mode of reaction. All healthy men can be affected if the intensity of the rotatory stimulus is pushed up to sufficiently high degree. This may occur either from the fact that the head is held in some unusual position, as, for example, when looking upwards during spinning, or the actual rotation may be mechanically increased in rapidity. In some cases the reaction to such excessive stimulation takes the form of giddiness, with or without nausea; in others it is associated with that withdrawal of consciousness known as "fainting." When a man is made giddy he is in a state of confusion with regard to his relations in space. In the preliminary stages of "fainting" his horizon is restricted and the world around disappears. Both states, pushed to the limits of endurance, end in unconsciousness.

Complete adaptation to disturbances of equilibrium in the air is associated with automatic control of the afferent and efferent activities of lower levels of the central nervous system. The normal pilot merely desires that his machine shall behave in a certain manner and the evolution occurs. This acquired facility can be disturbed by any condition which leads to diminished control. Just as a golfer can be "put off his game" by some physiological or mental state, so the aviator may lose his capacity to fly in consequence of conditions that vary so widely as a gastro-intestinal attack or domestic anxiety. Exhaustion, insomnia, the distress of war flying, anxiety, or fear can all lead to defective afferent and efferent control. Efficient automatic response is no longer possible, and the pilot begins to fly badly and to make bad landings. This loss of control over the activity of lower levels may be manifested, however, not only in bad management of the machine, but also in some dangerous reaction, such as "giddiness" or "fainting" in the air. When this abnormal reaction assumes the form of giddiness and nausea it is found in most cases that the patient has suffered from some discomfort when he first went into the air. Inquiry will usually reveal also that he was unable to swing with pleasure as a child, and that he tended to be sick when travelling by train. In this group rotatory impulses, when released from control, manifested their influence in giddiness, usually accompanied by nausea. When the reaction takes the form of "fainting" it is generally found that the subjects enjoyed their first flight and could swing with pleasure. Their resistance to vertiginous impressions was high and no excessive giddiness resulted, but they could induce the effects of shock with undue facility. Dr. HEAD

<sup>1</sup> Medical Research Committee Special Report, Series No. 28. Reports of the Air Medical Investigation Committee, "The Sense of Stability and Balance in the Air."



has performed signal service in drawing attention to the importance of regression in the airman, and showing that this may be produced by mechanical, physiological, or psychical causes.

In dealing with the tests for estimating the sense of balance used by the Examining Board of the Air Force Dr. HEAD criticises them adversely, since the results of the tests employed have, as is so commonly done, been entered frequently under heads such as "nervous debility," "muscle sense," and "vestibular stability" rather than under a heading indicating the actual tests employed. In his opinion the tests do not afford information in regard to the conditions they were designed to investigate. It is shown that the tests are of value in revealing the existence of some abnormal functional state, but are not otherwise an indication of ability to fly. Dr. HEAD, however, is not correct in his belief that the results of the tests employed have not been entered in detail on the admission forms of candidates for the Royal Air Force, and in this way has, no doubt quite unintentionally, done an injustice to the authorities concerned in his criticism of their records. We understand that many thousands of results of tests have been so entered, although, as indicated above, possibly under a wrong heading. A future study of these data will serve as a control to the experimental conclusions arrived at by Dr. HEAD as a result of the employment of the same tests. In conclusion, Dr. HEAD is to be congratulated on the way in which he has collected, described, and analysed individual examples of various abnormal states that may make their appearance during flight. The paper is a stimulating and original contribution to the medical aspects of flying.

## A Memorandum on Malaria for General Practitioners.

SIR RONALD ROSS and Lieutenant-Colonel S. P. JAMES have drawn up, for the information of medical practitioners, a booklet of suggestions for the care of malaria patients, which has been issued by the Ministry of Pensions and is to be obtained for 1d. from H.M. Stationery Office. An introductory section calls attention to the considerable number of demobilised men who have become infected with malaria during service abroad. These men will be entitled to receive treatment from Insurance practitioners, and it is the object of the Memorandum to bring within small compass particulars as to the nature of the disease, its clinical and other characters, the lines of treatment found to be most successful, and the measures necessary for preventing its spread. The medical man to whom malaria is reported must satisfy himself that the diagnosis is correct, supervise the treatment so as to cut short the attack, and notify the case to the medical officer of health. The Memorandum describes the three chief types of malarial fever, giving the main characteristics of benign and malignant forms, concluding with "pernicious symptoms" and the condition of "malarial cachexia." Differential diagnosis is considered clinically, microscopically, and in relation to the "therapeutic test." Quinine treatment and after-treatment are then dealt with at length. An appendix cites the relevant portions of the Local Government Board regulations in regard to notification.

## Annotations.

"Ne quid nimis."

### AMERICAN HOSPITAL FOR GREAT BRITAIN.

THE plans for the American Hospital are now in so advanced a stage that a meeting of the Governing Council will be held next week at the House of the Royal Society of Medicine, at which Lord Reading (who has accepted the Presidency of the Hospital) and the American Ambassador have promised to be present. Upon the signing of the Armistice last November the moment seemed ripe for bringing the project of an American hospital to the consideration of the medical profession in Great Britain, as well as to the American colony in London. Not only were the needs of the foundation of such a hospital obvious, but the exceptional opportunities of the moment were never likely to be repeated. The medical professions of America and Great Britain have hitherto worked too much apart, although each has much to learn from the other. The incidence of the war has brought them into closer contact. For two years American medical men have been attached to British units in the field, and have worked side by side with their British confrères upon the staffs of military hospitals in all parts of England and Scotland. The comradeship brought about by such friendly coöperation and interchange of scientific knowledge must be of vast importance in the future history of the two nations. A medical executive committee, consisting of Sir William Osler, Sir Arbuthnot Lane, Sir Humphry Rolleston, Sir John Bland-Sutton, Mr. J. Y. W. MacAlister, and Mr. Philip Franklin, sat in London and discussed the scope of the hospital; and at the Congress of the American Surgical and Medical Associations held in Atlantic City last month, Sir Arbuthnot Lane notified officially its establishment, pointing out that no more fitting monument could be raised to the fallen than a hospital designed to form the headquarters for American medical men who visited Europe for the purposes of post-graduate study. At this Congress the plans of the committee were received with enthusiasm, and Sir Arbuthnot Lane was assured by leading American medical men that their profession was keenly alive to the great value which such an institution might have as a centre for study and research.

A committee was then formed to establish the coöperation of American doctors upon a definite footing and to act in conjunction with the executive committee in London, and, if desirable, to operate under the National Research Council at Washington. This American Committee consists of Dr. George W. Crile, of Cleveland, appointed by the American Academy of Sciences on International Relations; Dr. W. J. Mayo and Dr. Charles H. Mayo, of Rochester, Minnesota; Dr. Albert J. Ochsner, of Chicago; Dr. Rudolph Matas, of New Orleans; and Dr. Franklin Martin, of Chicago, appointed by the American Gynaecological Association. This committee will send a delegate to London to assist the medical committee here in the detailed organisation of the hospital, which has been planned upon the most modern lines in every department of medical and surgical activity and of research directed towards every class of patient. A research institute, modelled upon the Rockefeller Foundation of New York, will form an integral part of the building.



The consulting staff will bring together distinguished members of the medical profession in the two countries. The visiting staff will be nominated by the executive medical committee.

The governing council of the hospital, which is likely to have for its patrons the highest personages on both sides of the Atlantic, consists of many prominent members of the American colony in London, including Mr. Walter Blackman, Mr. George M. Cassatt, Mr. R. Newton Crane, Mr. Wilson Cross, Mr. Clarence Graff, Mr. James Benson Kennedy, Mr. J. Blair MacAfee, Mr. George A. Mower, Mr. F. E. Powell, Mr. Henry E. Stoner, Mr. F. C. Van Duzer, and Mr. E. Bradner White, with Mr. Philip Franklin as honorary secretary.

#### LIGHT SENSE.

FOR a study on the "Performance of Night-glasses" we can recommend Bulletin No. 3, by L. C. Martin, D.I.C., &c., published for the Department of Science and Industrial Research by H.M. Stationery Office. The whole subject of light sense is indifferently understood. When we pass from bright sunlight to a dimly lighted room we can see nothing until our eyes have become adapted to the dark. This adaptation is supposed to depend principally upon some change in the relation between the bacillary layer of the retina and the adjoining pigment, and takes three-quarters of an hour or more to become complete, and in the second place upon the dilatation of the pupil, which occurs very rapidly. It is a curious fact that the fovea is physiologically night-blind, for a fully dark-adapted or scotopic eye is found to have a central scotoma; round the fovea is a ring that is most sensitive to light, and beyond this ring the light sense fades gradually towards the periphery. Again, the scotopic eye is colour blind, but on the admission of more light the first colours recognised are yellow and blue, after them the greens, and, finally, the reds. On a dark night the grass looks grey, while the colour of yellow flowers may still be distinguished, but the red geraniums appear black. As there are no rods in the fovea, though they are found in increasing numbers towards the periphery, it will be seen that there are some good *prima facie* grounds for considering the rods as the percipient elements for light sense and the cones for colour sense.

The light sense may be tested in two different ways: (1) Light difference (L.D.): The estimation of the smallest difference of brightness that can be appreciated between two sources of nearly equal luminosity; and (2) light minimum (L.M.): the estimation of the smallest quantity of light that can be recognised in a faintly illuminated patch on a black background. Ophthalmologists find that L.D. is most affected in diseases of the optic nerve, but that L.M. is chiefly diminished in glaucoma and in diseases of the retina and choroid. It is found that practice increases the L.D. sensibility enormously, and, indeed, the results of L.D. and L.M. tests vary so greatly in different individuals that no definite value can be assigned as the standard of either. When Professor E. M. Barnard (Yerkes Observatory, U.S.A.) found that he could detect a wire at such a distance that its diameter only subtended an angle of  $0.44''$  (i.e., less than half a second) at the nodal point of his eye, it is a proof of his extraordinary sensibility to light difference; it is no test of his form sense.

The minimum visible for form sense is  $53.1''$ , and is usually taken to be  $1'$ . Many tests that are supposed to deal with the form sense are really only testing L.D. Even the dot test cards that are so frequently used fall under suspicion for this reason. In practice this may not be very serious, as in many callings an adequate light sensibility is more important than a superior form sense. On a dark night most people have found that they see better without their spectacles than with them, as then they are relying upon their light sense and not upon their form sense, which is improved by increased definition. Every optical instrument entails some loss of light from absorption and from reflection at the surfaces of the glass; and yet, as is well known, telescopes enable one to see stars that are invisible to the naked eye, and night glasses are of invaluable use to the mariner. The principles underlying these two instruments are entirely different.

The apparent brightness of a surface in ordinary circumstances, if the size of the pupil remain constant, simply depends upon the intrinsic brightness of the surface. A piece of white paper 1 in. square at a distance of 4 ft. is as bright as a piece 1 ft. square. If, however, an object be so small that its image only falls on part of a bacillary element, unless it be exceedingly bright it may not succeed in stimulating this element. When faint stars are observed through a telescope their apparent size is not increased, for they still subtend an angle less than the minimum visible, but all the light which falls on the object glass may by a suitable eye-piece be concentrated on the observer's pupil, neglecting the light lost by transmission through the instrument. The action of the telescope is tantamount to increasing the area of the pupil to that of the object glass, and hence the brightness of the faint star is virtually increased. If, however, the object viewed subtend an angle (e.g.,  $10'$ ) greater than the minimum visible, no optical instrument can increase its brightness per unit area. Yet, as is well known, in the dusk a night-glass enables objects to be seen that are invisible to the naked eye, although telescopes with a magnification of 20 or so will prevent objects being seen that can be dimly distinguished without it. Similarly, all microscopists have noted that when high eye-pieces are used the field becomes much darker. This is simply because the emergent beam of light from a high ocular is so thin that only part of the pupil is filled with light; indeed, the pupil receives far less light than when a lower eye-piece is used. Now one advantage of a Galilean binocular is that the section of the emergent beam is never less than that of the pupil and, consequently, no light is lost from this cause. But we have said that the brightness per unit area cannot be increased, how then can the visibility of an object in a dim light be increased by night-glasses? All workers agree that the minimum intrinsic brightness necessary for the perception of an object varies greatly with its size. It is clear, then, that night-glasses with a magnification of 4 or 6 will increase the visibility of objects in a dim light owing to their increased apparent size. We may at once conclude that as long as the section of the emergent beam is not less than the pupil of the observer's eye advantage will be gained by increasing the magnification; but if the sectional area of the emergent beam is less than that of the pupil the image may become even



dimmer than the object when seen by the naked eye. Piper<sup>1</sup> has pointed out that in dark-adapted eyes the light sensibility is about twice as great with both eyes as with one, though in light-adapted eyes no such binocular summation takes place.

#### THE BRITISH SCIENTIFIC PRODUCTS EXHIBITION.

UNDER the auspices of the British Science Guild a very interesting exhibition of British scientific productions was opened by Lord Crewe at the Central Hall, Westminster, on Thursday, July 3rd. Encouraged by the success which attended a similar exhibition held last year at King's College, the authorities were amply justified in promoting another exhibition this year, the objects of which are to illustrate recent progress in British science and invention, and to help the establishment and development of new British industries. The demonstration is most instructive, and evidences in many directions the capacity and skill of the British manufacturer in acquiring new industries and in restoring old ones on a scientific basis. There is, indeed, a wealth of products shown, illustrating in the most satisfactory way a determination to press science into industrial service and to remove the long-standing reproach of our dependence on other nations for the supply of many valuable and important commodities. And there is a noble record presented of the work done in the research laboratories of the universities and schools of England. All is an eloquent story of the successes gained by the men trained in the scientific and technical laboratories. Mechanical science, physics, textiles, electrical appliances, medicine and surgery, paper and illustration, agriculture, chemistry, aircraft, fuels, and metallurgy form most interesting sections, in which examples are numerous enough of the talent, skill, and energy not yet lost to our race. Synthetics and dyes are conspicuous illustrations of recent commercial successes resting on scientific foundations, and the exhibition of optical glass and laboratory glass ware demonstrates a brilliant dual triumph of scientist and manufacturer. The great drug houses are well represented, showing what an essential equipment to the success of their business is the research laboratory. This opportunity of witnessing the remarkable developments arising out of the events of the war which have taken place in so many departments of our great industries should not be lost. The bearing of science upon industrial success and national prosperity is well brought out. The exhibition continues until August 5th.

#### THE MEDICAL AND DENTAL REGISTERS.

THE official Register of the General Medical Council, which has just been issued, contains the names of 43,926 persons, of whom 54 per cent. are on the local Register for England, 32 per cent. on that for Scotland, and 14 for Ireland. 1077 names were registered in 1918, being the smallest number recorded for a quarter of a century except at the low tide of 1910-11. On the other hand, the net increase of 107 registered names at the end of 1918 as compared with 1917 is quite without precedent in its smallness. The previously leanest years had some compensation, lacking in 1918, in names restored to the Register and short death rolls. The additional names registered during 1918 included 148 colonial and 16 foreign

diplomats, for the most part Belgian. 995 names have been removed from the Register during the year, 946 on evidence of death. Only one medical man has formally removed his name from the list as having ceased to practise.

The official Dentists Register for 1919 contains the names of 5567 dentists, of whom 13 are on the colonial and 19 on the foreign list. Of the 5535 United Kingdom dentists, 4290 hold degrees or licences in dental surgery, and 1245 are registered on their own declaration of being in bona-fide practice of dentistry. Of the former, 461 have additional surgical or medical qualifications, of the latter 7. The number added by registration during the year 1918 was 131, being one in excess of the figure for 1917 and barely one-half of the 1915 record. 102 names were removed on evidence of death, none on ceasing to practise.

#### EPIDEMIC ENCEPHALITIS (NONA).

A USEFUL contribution<sup>1</sup> to the subject of epidemic encephalitis, from the pen of Dr. Peter Bassoe, associate professor of medicine, Rush Medical College, Chicago, shows that the disease has made its appearance in America, with similar clinical and pathological features to those frequently described in this country and on the continent. Sainton has attempted to give a definition of the disease in the following terms: "A toxic, infective, epidemic syndrome, characterised clinically by the triad lethargy, ocular palsies, and a febrile state, and anatomically by a more or less diffuse encephalitis, most marked in the grey matter of the midbrain." It may be questioned, however, whether any useful purpose is served at present by condensed definitions; Sainton's is not sufficiently explicit to be distinctive. The association of epidemic encephalitis with influenza appears to be more than a mere coincidence, since it has been noted on a number of occasions. Dr. Bassoe quotes from a French source that Camerarius, who described an influenza epidemic in Tübingen in 1718, mentioned a "sleeping sickness" in connexion with it. In 1768, Lepeque de la Cloture recorded a "coma somnolentum" after influenza, and Ozanann (1835) mentioned epidemics of "catarrhal fever" with "soporosité" as having occurred in Germany in 1745, in Lyons in 1800, and in Milan in 1802. No doubt much of this is vague and indeterminate; influenzal meningitis is a different affection altogether, and what (much or little) of these epidemic conditions should be classed as encephalitis lethargica is a matter depending really on the interpretative proclivities of the reader. Dr. Bassoe describes 11 cases in his paper, and notes that in no one had there been definite preceding influenza, but suggests that the encephalitis "may be caused by a separate virus, which in order to become active must have been in contact at one time or another with that of influenza." Be this as it may, the bacteriological aspect of the question has been less completely investigated than the clinical and pathological, and has scarcely passed the stage of conjecture. It is an interesting observation that the brain-stem and basal ganglia are particularly liable to be affected by poisonous, endogenous or exogenous, though why this should be so is not at present clear. Dr. Bassoe has had the opportunity of making a complete pathological examination in two cases, and has found the changes with which previous writers

<sup>1</sup> Ztsch. f. Psychol. u. Physiol. d. Sinnesorg., xxxii., 98., 1904.

<sup>1</sup> Journal of the American Med. Assoc., April 5th, 1919, p. 971.



have made us familiar—œdema, congestion and minute hæmorrhages, these most numerous in brain-stem, basal ganglia, and centrum ovale, dense accumulations of small cells round the vessels, and comparatively little evidence of necrosis or tissue destruction. In his cases there was but little sign of inflammation in cortex or meninges. He makes the interesting remark that there is not so much real sleep as is indicated by the sleepy expression of the patient; in fact, some actually suffer from insomnia, "lethargy" bearing the same relation to sleep as the compulsive laughter of the patient with pseudo-bulbar paralysis does to a normal laugh. Among other clinical features also observed in various English cases may be specified coarse choreiform jerks, which sometimes have become very troublesome, and which Dr. Bassoe has been able to control temporarily with scopolamine. There is much more evidence than the casual observer would suspect to support the contention that the lethargy of these patients is a local and not a general symptom. The laboratory tests of the spinal fluid in Dr. Bassoe's 11 cases show that the cell content was less than 10 in the majority, with a maximum of 26; the fluid was always clear, and usually gave a slight increase of globulin. Results of cultures of blood and spinal fluid, both during life and after death, were negative. No bacteria were seen in section of the brain.

#### SIR CLIFFORD ALLBUTT'S PORTRAIT.

THE fund for presenting the President of the British Medical Association with his portrait remains open by request during the present month. Subscriptions have recently been received from India and America. The treasurer, Dr. G. E. Haslip, in a letter which appears in our correspondence columns, invites all those who wish to take part in the presentation, but who have not yet notified their intention, to do so without delay. After the portrait in oils has been painted it is intended to commission a mezzotint engraving from it, which subscribers to the fund will be able to purchase for their own collections.

#### RABID IGNORANCE.

THE worst kind of ignorance is that which springs from an instinctive refusal to acknowledge the truth. The Arabs long ago recognised how obstinate and intractable is this affliction when they said: "He that knows not, and knows not that he knows not, is stupid. Shun him." To argue with such people is clearly waste of time, for no amount of reason can prevail against a well-established complex. But to ignore the victims entirely would be as foolish as merely to avoid the company of a dangerous criminal. Indeed, if the definition of crime be a fairly broad one, such people are dangerous criminals, for, as Dr. Johnson says: "He that voluntarily continues ignorant is guilty of all the crimes that ignorance produces." The stamping out of rabies in this country 30 years ago was carried through in the face of violent and prejudiced opposition. It could hardly be expected that the arguments then used against the Muzzling Order of 1885 should be brought forward again to-day. Yet such does actually appear to be the case. At a recent meeting of the Animal Defence and Antivivisection Society (in the words of its secretary) strong feeling was expressed at the unscrupulous way in which the present scare is being worked

up. "To prevent rabies in dogs," he writes "it is essential that they should be well and carefully fed, given plenty of water, enough exercise, and not kept in the sun." By such well-meaning people the currency of truth is debased and it becomes important that the real nature of rabies and hydrophobia should be placed before the public by competent authorities in order that such misleading statements as that quoted above may be recognised at their true value. The Society for the Prevention of Hydrophobia, founded in 1886, is still, we are glad to say, in existence, and their first secretary, Mr. Frank Karslake, has rendered a valuable service in reissuing his pamphlet first published in 1889.<sup>1</sup> The arguments used in it remain as true to-day as they were at that time, and various additions have been made which bring them into more intimate contact with the world of to-day. May it have a wide circulation amongst the open-minded public, for it is a valuable prophylactic against the views of those who know not that they know not and are still at large. More than 200 cases of rabies have now been confirmed, and recent reports show that the disease is by no means arrested, a new outbreak having occurred this week. Dr. Addison, speaking last week on a vote to liquidate the Local Government Board, stated that 54 notifications had been received of persons bitten by rabid dogs, and of these 19 were sent to Paris for antirabic treatment; 24 were treated in England with vaccine obtained from the Pasteur Institute in Paris, and 11 others with vaccine prepared in the Board's own laboratory. In no case had hydrophobia resulted, and this admirable achievement of preventive medicine has been used by unscrupulous persons to suggest that no need for any treatment exists. Those who have been saved from the risk of a painful and horrible death will think otherwise, and the public meeting held last week in London under the auspices of the Kennel Club was unanimous in recommending the common-sense measure of a general Muzzling Order throughout the country. The Board of Agriculture may be assured of the support of well-informed public opinion in enforcing whatever regulations may be found to be necessary once again to deliver from this curse both man and his most faithful beast.

#### THE PATHOGENESIS OF DEFICIENCY DISEASE.

A VERY interesting contribution to the literature of this subject has recently been made by Lieutenant-Colonel R. McCarrison, I.M.S., of the Pasteur Institute of Southern India, in the *Indian Journal of Medical Research* (vol. vi., No. 3), in which he discusses the origin of diseases attributed to a deficiency of certain accessory food factors. He draws attention to the scantiness of our knowledge respecting the influence of "vitaminic" deficiency on the adrenal glands, pancreas, liver, spleen, thyroid, pituitary gland, and the reproductive organs, and he endeavours to fill up some of these gaps in our knowledge. Taking beri-beri as the typical deficiency disease, he expresses the opinion that "vitaminic" deficiency is the essential ætiological factor in the genesis of that malady, but that such deficiency is rarely so complete as to be the sole agency responsible for it. Bacterial organisms of whatever kind that may be isolated from the blood in human beri-beri may invade the blood and tissues under conditions of dietetic

<sup>1</sup> Rabies and Hydrophobia: their Cause and Prevention, by Frank Karslake. London: W. and G. Foyle, 1913. Price 1s.



deficiency and thus convert a state of potential morbidity into one of kinetic disease. Such organisms are not the cause of the malady, nor can they be expected to produce it in inoculation experiments. "They are but weeds which flourish in a soil made ready for them by dietetic deficiency." After making many animal experiments and observations Colonel McCarrison arrives at the conclusion that the absence of certain accessory food factors from the dietary—improperly called "anti-neuritic"—leads not only to functional degenerative changes in the central nervous system, but to similar changes in every organ and tissue in the body. The symptom-complex resulting from the absence of these substances is due (1) to chronic inanition; (2) to derangement of function of the organs of digestion and assimilation; (3) to disordered endocrine function, especially in the adrenal glands; and (4) to malnutrition of the nervous system. Certain organs undergo hypertrophy and others atrophy. Those which hypertrophy are the adrenals, and those which atrophy are, in the order of severity, the thymus, the testicles, spleen, ovary, pancreas, heart, liver, kidneys, stomach, thyroid, and brain. The presence of œdema in the patient has been invariably associated with great hypertrophy of the adrenal glands. Wet and dry beri-beri are essentially the same disease, the former differing from the latter in the greater derangement of the adrenal glands. Gastric, intestinal, and pancreatic disorders are important consequences of a dietary too rich in starch and too poor in vitamins and the essential constituents of food. It is suggested that some of the obscure metabolic disorders of childhood might be examined from this point of view as well as from that of endocrine gland starvation. Profound atrophy of the reproductive organs is also an important consequence of vitaminic deficiency, leading to the cessation of the function of spermatogenesis. In the male human subject it would result in sterility, and in the female in amenorrhœa and sterility. This would no doubt account in a great measure for the recent occurrence of so-called "war amenorrhœa," about which much has been written recently in the foreign press, and particularly in Germany. The central nervous system atrophies little, the paralytic symptoms in beri-beri being due mainly to impaired functional activity of nerve cells, much more rarely to their degeneration. It is thought that because of their atrophy, out of all proportion to other tissues, the thymus, testicles, ovary, and spleen provide a reserve of accessory food factors for use on occasion of metabolic stress, but this reserve is rapidly exhausted. Finally, although deficiency of certain accessory food factors is the essential ætiological factor in the genesis of beri-beri, Colonel McCarrison holds that infectious and parasitic agencies may often be important causes determining the onset of the symptoms of that disease. Vitaminic deficiency renders the body very liable to be overrun by the rank growth of bacteria, and it is probable that varying metabolic disturbances may determine the character of these growths. We are glad to learn that Colonel McCarrison proposes to continue his investigations on this most interesting subject, and that he promises shortly another contribution dealing with the effects of a deficiency of accessory food factors on the function of the thyroid gland, with a histological study of 69 pairs of thyroids removed in the course of his experiments on pigeons and other animals fed on a polished rice dietary.

## NATIONAL CONFERENCE ON INFANT WELFARE.

COMMENCING on July 1st, the League for Health, Maternity, and Child Welfare held at the Kingsway Hall a three days' conference, in which child welfare in all its aspects was discussed. The proceedings were opened on the first day by Dr. CHRISTOPHER ADDISON, M.P., who outlined the objects of the conference.

The first paper was read by Dr. AMAND ROUTH (consulting obstetric physician to Charing Cross Hospital) and was entitled—

### *Causes of Antenatal, Natal, and Neonatal Mortality.*

He said that the conference would that day discuss how to save the lives and ensure the health of babies, considering the question from the very beginning of life, from the moment of fertilisation to the end of the first month after birth. The natural increase of the population had for the first time in our statistical history ceased, for during the six months ending March 31st last the deaths in England and Wales had exceeded the births by 126,445. The approximate percentage causation of antenatal, natal, and neonatal deaths could be given as follows with fair accuracy: prematurity, 10 per cent.; syphilis, 20 per cent.; toxæmia, 10 per cent.; prolonged, difficult, or complicated labour, including antepartum hæmorrhage, 25 per cent.; other known causes, 10 per cent.; and "unknown" causes, 25 per cent. The fact that so large a percentage of the causes of antenatal death was "unknown" showed how much research and pathological team-work was still required.

The following table gives an estimate of the probable loss of life between fertilisation of the ovum and the end of the first year of life:—

*Antenatal and Infantile Death-rates per 1000 Births of Children of Married and Unmarried Women, including "Natal" Deaths, Based on the Figures for England and Wales in 1917.*

	Married.	Unmarried.
Antenatal.		
In latter 12 weeks ... ..	30 } = 150	60 } = 300
In former 28 weeks (estimated) ... ..	120 }	240 }
Infantile.		
Neonatal (first month) ... ..	37 } = 96	72 } = 207
Remainder of first year ... ..	59 }	135 }
Estimated deaths of children per 1000 births between conception and end of first year of life.	246	507

Note.—The actual deaths of mothers per 1000 births from causes connected with pregnancy and labour were: Married, 3.7; unmarried, 6.79.

It was evident, therefore, that the unmarried mother and her child needed the care of the State twice as much as the married woman if they were to be saved from this double rate of mortality and morbidity.

At the conference held last year Dr. J. W. Ballantyne wisely advised that the labour group of cases should be called distinctively "natal" or "intranatal," and he further suggested that the mortality of this period should be considered separately, for not only does it include all the operations needed to save the child in cases where there is a disproportion between the child and the maternal pelvis, but all the other complications of childbirth, such as maternal hæmorrhage, pelvic tumours, foetal malpresentations, and pressure on the umbilical cord. Many malnourished, diseased, malformed, and premature children who fail to survive their birth would also belong to this group.

At the same meeting of the conference Dr. Ballantyne suggested that the first month after labour should be designated "neonatal," and the phrase is now generally adopted. It is known that the deaths of this neonatal period include 37 per 1000 births of the children of married mothers, and 72 per 1000 births of unmarried mothers, or about a third of those who die in their first year of life. These early infantile deaths comprise (1) feeble, malnourished or premature children who survive their births, 50 per cent. of whom die in the first 24 hours of life; (2) diseased children, such as those born syphilitic; (3) abnormal or deformed children, such as those born with hydrocephalus, spina bifida, ventral hernia, or encephalocele; (4) many children who may survive some weeks but who cannot suck owing to prematurity, cleft palate, hare-lip, or "snuffles." This "neonatal" period not only includes the risks to the premature or diseased child which occur in the



first few days of life, but also includes a period when the obstetrician (medical practitioner or midwife) has ceased to attend and the pediatrician or infant-welfare doctor takes on the case of the child, while the gynaecologist perhaps is required for the mother.

Premature births are so called if they occur before the thirty-eighth week of gestation. The causation of prematurity has not been satisfactorily worked out, but is often due to antepartum hæmorrhage, toxæmia, or undue physical effort or mental strain in the mother, or to malnutrition or morbidity in the child, which conditions should be therefore viewed as the primary causes of the foetal death rather than the resulting prematurity at birth.

Amongst the main causes of death in both early and late pregnancy is venereal disease. Gonorrhœa is very rarely the cause of antenatal disease or death. Syphilis is estimated to cause at least 20 per cent. of the antenatal and neonatal deaths, and, if so, it would mean that about 27,000 deaths would thus result in England and Wales.<sup>1</sup> Stillbirths from antenatal syphilis in unmarried women are about double such deaths in legitimate pregnancies. Maternal toxæmia causes from 10 to 15 per cent. of foetal deaths. These toxæmias are said to occur in 5 per cent. of primigravidae, and are still more frequent in unmarried women who have to endure much more mental strain during their pregnancies. Accidents and complications of childbirth constitute the largest group of antenatal and neonatal deaths. Pelvic contractions, or tumours, or foetal malpresentations are not only dangerous to the mother if the condition is recognised first during labour, but are still more dangerous to the child, who may have to be sacrificed to save the mother, for obviously if the mother cannot be delivered the mother and child would die. Maternal hæmorrhages, such as those due to placenta prævia and accidental hæmorrhage, especially the concealed variety, are the most fatal of all complications if not treated promptly. There are other occasional maternal causes of foetal disease or death which could often be successfully treated if detected during pregnancy. He would only mention heart disease, Bright's disease, lead poisoning, malignant disease, acute specific exanthemata, pneumonia, and other acute and chronic lung conditions.

Dr. EARDLEY HOLLAND then read a paper on the Results to be Expected from Antenatal Care, which we print in full in another column.

Dr. J. J. BUCHAN (medical officer of health, Bradford) followed on the subject of

#### *Antenatal and Neonatal Mortality.*

He said: All those who have followed closely during the past 20 years the campaign in this country for the reduction of infantile mortality will have been struck with the varying phases of the movement and the great number of subjects investigated in relation to it. We have learned much in this time of the many factors that influence the health of the infant after birth and much good work has been done to reduce infantile mortality in the later months of the first year of life, but the field of knowledge of the conditions before birth affecting the welfare of the child when born is almost unbroken. We have hardly any accurate facts of antenatal or neonatal mortality; we cannot state with any degree of reasonable certainty the extent, the causes, or the steps to be taken to effect a reduction.

From the published figures of the Registrar-General it would seem clear that about 12 per cent. of the infantile mortality occurs before the infant is a day old and about 25 per cent. before it is a week old, and from 35 to 40 per cent. before it is a month old. If to these babies born living who died almost immediately the babies born dead are added, the number of deaths due to antenatal and neonatal causes is large indeed.

It would be well, without going further, to insist for the moment on the importance of increasing our avenues of knowledge so that these deaths may be more carefully investigated. Stillbirths are not recognised by the law for registration purposes, a great many do not come under the Notification of Births Act, and without doubt numerous others which should come under this Act escape notification. The blind position of the law, which only recognises life as commencing after birth, is responsible to a great extent for the lesser importance with which these births are regarded, and while from its own point of view the legal

position is a reasonable one some means should be devised to bring all stillbirths and miscarriages, certainly after quickening, before the notice of the health authority in the interests of infant life. The Notification of Births Act requires the notification of a stillbirth occurring after the twenty-eighth week of pregnancy. Anyone who has followed the administration of the Midwives Act will be struck by the apparently small proportion of stillbirths notified by midwives. This arises chiefly from the fact that stillbirths in midwives' cases occur largely among those cases for which they seek medical aid, so that the stillbirth is ultimately notified by the doctor and not by the midwife. Thus, in Bradford during the past three years, while the general rate of stillbirths notified was 4.6 per cent. of the births notified, the stillbirth-rate among doctors' notifications was 6.4 and among midwives' notifications 3.2 per cent. of births notified.

The causes of these deaths can be classified in two groups, those arising during the actual labour and those arising or existing during the pregnancy. Every improvement in the midwifery service of the country will tend to lessen materially the deaths arising from neonatal causes, but we have not yet seen any very vast improvement in the midwifery service of the country generally. Though the Midwives Act has now been in operation for many years, its full benefits are still to be enjoyed by the community, as the bona fide midwives still carry on large practices, and the general service of midwifery is not attracting those recently and well-trained women whose names have swelled the Midwives' Roll. In the towns of the North of England there is an average of 70 per cent. of the births attended by midwives, rising in some cases to over 90 per cent. The work these women are doing is of paramount importance to the mother and the child and to the whole community, and it is of the utmost importance that their ranks should be recruited from the best women trained in practical midwifery. In years gone by the inefficiency of particular midwives has been tolerated, especially in some of the worst districts of our large cities and towns, by the knowledge that if this inefficient midwife did not practise there no one else would. She was practising for a mere pittance, irregularly received, and she served to meet—badly as she did it—a public want.

Since the passing of the National Insurance Act, with the inauguration of maternity benefit, such circumstances have not been so frequent, but nevertheless I am afraid that in many districts they still do exist. A consideration of such circumstances as these has led to the inauguration of the municipal midwife, whose advent will probably do more for antenatal and neonatal mortality than has yet been done. At present, in the City of Bradford, we have 12 municipal midwives who are attending more than half the births attended by midwives in the city. Antenatal work has been constantly talked of these last few years but very little has been done anywhere. It is amazingly difficult work to develop; it is easy to start an antenatal centre and to set aside hours for consultation and the like, but this is not sufficient. Much has to be done to educate women as to the need for antenatal supervision and care, but I do not think that this is best, if at all, attained by a notification of pregnancy and the appearance of another supervisor of their health apart from their midwives and their doctors. It is necessary to enlist especially the midwife in the service of the antenatal authority. The midwife has been sought out by the expectant mother herself, and will have much more influence with her than anyone else. Midwives themselves have to be taught to appreciate the meaning and the importance of antenatal work, and they have to impress upon their clientèle the need for early booking of their confinement. The municipal midwife is required to see her patient very frequently before the birth and to seek the aid of the antenatal clinic on all occasions. A definite antenatal centre, though of very great importance in antenatal work, is relatively of less importance than a well-organised and educated midwifery service. Without such a service the work of the centre is set at naught. We have been feeling our way for the past few years to antenatal work, but as a result of experience I think it can be said that it is not much use to establish antenatal centres without sufficient means of getting into touch with the work to be done. Antenatal centres must work in close association with hospital accommodation for gynaecological and maternity cases, and they have to establish a very intimate coöperation with the means of treatment for venereal disease.

<sup>1</sup> THE LANCET, 1918, I., 45.



Miss OLIVE HAYDON (formerly sister, York-road Lying-in Hospital), in the absence of Dr. VERA FOLEY, then gave the conference the benefit of her experiences on the subject of

*The Work of the Midwife in Relation to Antenatal and Neonatal Mortality.*

The speaker began by emphasising: 1. The need of educating women in hygiene and mothercraft. 2. The high mortality during intra- and extra-uterine life due to preventable illness, and the insidiousness of the manifestations of diseases, such as syphilis, gonorrhoea, and the toxemias of pregnancy. 3. The need for further research work into the cause of ante- and neo-natal mortality. 4. The difficulty of bearing and rearing healthy children in poverty-stricken homes by unfit parents.

Midwives, she went on, besides practising independently and as staff midwives in institutions, are working under medical supervision as health visitors, creche nurses, rescue workers, infant welfare superintendents. Personally, I think every midwife, when qualified, should practise her profession for at least a year before taking up other work. This would lead to a broader and more sympathetic attitude to those who are practising midwives. To do more efficient work the midwife needs progressive education on broad lines, better economic conditions that will allow her to take fewer cases, and devote full attention to each patient she attends—and a status and consideration commensurate with the importance of her work for maternity and child welfare.

In conclusion, Miss Haydon touched on the midwife's work *vis-à-vis* with the patient. It is, she said, mainly threefold—educative, preventive, and practical—and of these three perhaps the most important is the education of the expectant mother, the mother, and the baby. The education begins at booking; unfortunately, this is seldom before the sixth month. Much writing has already been done on what Professor Thomson has called "the docket" of the new-born child, and much is irremediable. But the normal rapid growth and development of a normal foetus may be retarded or interrupted by the ill-health or excesses of the mother during the last three months; hence the need for forewarning help and continued careful observation for abnormal signs and symptoms, so as to secure early medical treatment for physiological breakdown or infection. The former history, the general condition, and the physical examination of the patient should guide the midwife in dealing with the patient and help her to form an opinion as to whether it is advisable in the interests of the mother and unborn child to be attended by her. The midwife will receive with caution and some inward scepticism the explanation of the causes of previous miscarriages; she knows that thousands are attributed to shocks and falls, a very few to albuminuria, syphilis, &c., and still fewer to the taking of noxious drugs and drastic purges. She ought not to be content that a series of miscarriages should be attributed to those refuges of the destitute "habit" and "a weak inside." She may even dare to inspire with optimism the woman who has been told she would never carry a child to full term. The careful examination of the breasts and nipples begins the education on the value of breast-feeding; careful investigation into the causes that led to its abandonment with previous children forewarn and forearm the midwife. If it has been given up because the mother has had to go to work, there is always hope that she may be convinced that her primary duty is not washing or charring, or any other work in the labour market, but the persistence in breast-feeding. With an eight-hourly working day, and four-hourly feeding, there should now be fewer children fed from tins or poisoned slowly with contaminated milk, deprived of its accessory growth products by sterilisation.

The midwife is shrewd enough to know that faulty mothercraft, poverty, the health and character of the parents, bad hygienic surroundings are far greater factors in antenatal and neonatal mortality than hard work, smoke-laden atmosphere, bad midwifery, or even those plagues of the midwife's life—the "born before arrivals." A midwife's judgment of the character and capacity of the mother and home life is by no means to be despised; she has unique opportunities of studying these in her repeated and welcomed visits to the home.

Miss M. BURNSIDE, O.B.E., inspector of midwives and county health visitor, Hertfordshire County Council, then spoke on the work of the midwife in relation to antenatal and neonatal mortality in rural districts.

The afternoon session on July 2nd was given up to a discussion on Industrial Employment of Mothers in Relation to Infant Mortality, when the speakers were Dr. Rhoda Adamson, clinical lecturer in obstetrics at the University of Leeds, Miss L. Barker, of the Training Department, Ministry of Labour, and Mrs. Holden, of Dewsbury. Both sessions on July 3rd were occupied in discussing the subject of the Unmarried Mother and the Unwanted Child.

## AMERICAN MEDICAL ASSOCIATION : ANNUAL MEETING.

THE Seventieth Annual Meeting of the American Medical Association was held in Atlantic City from June 9th to 13th. The first day was taken up with business matters by the House of Delegates.

### *Report on Medical Education.*

Among other questions of interest Dr. JOHN A. DODSON, of Chicago, submitted the report of the Council on Medical Education. A fact in this report worthy of emphasis was that of the 20,678 students who graduated during the past six years 15,025, or 72.6 per cent., were admitted under the higher entrance requirements, and received their training in the Class A medical schools.

### *Report on Social Insurance.*

Dr. ALEXANDER LAMBERT, of New York, submitted the supplementary report of the subcommittee on social insurance. He stated that during the years 1915, 1916, and 1917 the committee had inquired extensively into the question of whether there was a sickness problem, what it was, and how it was to be met. The findings were that 2.6 per cent. of the population were seriously sick all the time, 1.5 per cent. were more or less disabled, and that among the 38,000,000 employees in the United States there was an average of nine days' illness per man per year. In figures about \$500,000,000 (£100,000,000) a year would represent the loss in wages by the wage-earners from sickness. The amount of sickness in a family was found to vary inversely as the wages of the family; also the sickness rate was higher in proportion as the number in the family increased. In well-to-do families the infant mortality-rate in America averaged 41 per 1000 births, while among the poor it averaged 225 per 1000 births. Only 25 per cent. of pregnant women received anything like adequate antenatal care. In Philadelphia 60 per cent. of the sick poor had only home care, and patent medicines were found to be used by from 25 to 50 per cent. of these persons. In about 35 per cent. of the cases the wage-earners had sickness insurance amounting to 10 or 15 per cent. of the wages; some carried a voluntary insurance, but the larger proportion had no insurance at all against sickness.

The report considered the question of sickness insurance, and after pointing out that general insurance schemes in Germany and England had not been found to work well, the opinion was stated that a solution must be found through the organised aid of the medical profession with the help of the State and county medical societies. The medical profession should decide whether better protection against sickness could be obtained through the increase of State Health Department control, or whether it should be sought, as in England, through a *pro rata* per man per year fund.

### *Distinguished Guests.*

The meeting proper began on Tuesday, June 10th. A feature of the meeting was the presence of a number of foreign guests. Among these were Mr. Ernest W. Hey Groves, Sir StClair Thomson, Major-General Sir Bertrand Dawson, Sir Shirley Murphy, Sir W. Arbuthnot Lane, Sir Arthur Newsholme, Colonel Sir W. T. Lister, and others, including representatives from France, Belgium, Greece, Norway, Sweden, Cuba, and Japan.

### *The Presidential Address.*

Dr. ALEXANDER LAMBERT, the President-elect, delivered the presidential address on Medicine, a Determining Factor in War. He pointed out the success of preventive medicine in the war just over. As for the lessons learned in determining action in future, Dr. Lambert thought that the experience of the last war and the history of recent wars had shown clearly that only through proper



representation on the general staff of armies by those men trained in the methods of salvage and by experts in sanitation could these duties be efficiently performed. The final paragraph of the address discussed the national control of preventable diseases. The war had taught that there remained economic value in the maimed and wounded, and it was the duty of the State to develop this value to the fullest extent. The maiming and injury of workers in the everyday work of industry far exceeded each year the battle casualties of this war, and there was an economic necessity and duty to be performed in the salvage and reconstruction of the industrially injured. The President ended an eloquent address by urging that it was the duty of the American Medical Association and of each member of each State association to press on Congress the need for the establishment of a National Department of Health.

#### *Health of the United States Navy.*

At the meeting which was held on the evening of Wednesday, June 11th, national organisations, the activities of each of which have a definite medical interest, were represented by speakers chosen by these organisations. Among these speakers was Commandant JAMES R. PHELPS, U.S.A., who spoke as the representative of Surgeon-General Braisted. He said that the death-rate for the first year of the war in the United States Navy was lower than for the previous year of peace. The rate was 8.8 per 1000, the lowest ever reached by the naval or military service at war.

#### *The Public Health Service.*

Dr. C. C. PIERCE, of the United States Public Health Service, spoke as the representative of Surgeon-General Blue, and outlined briefly the activities of the Public Health Service in connexion with the war.

#### *The American College of Surgeons.*

Dr. FRANKLIN MARTIN, as the representative of the American College of Surgeons, spoke of the organisation of that body, which had been patterned after the Royal College of Surgeons of England. They had now a membership of 4000 in the United States and 400 in Canada.

#### *War Surgery and the Surgery of Civil Life.*

In the Section of Surgery, General and Abdominal, Dr. JOHN J. BOTTOMLEY, of Boston, the chairman, discussed briefly the influence of the surgery of the great war on the surgery of civil life. He pointed out that no entirely new surgical principle was discovered during the war, but in this fact there was no discredit to surgery since the long-established principles upon which it rested had emerged triumphant from a tremendous test. At no period of the war were the principles of asepsis and antisepsis in danger; their practice, however, was at first rudely shaken because of the novelty of military conditions. Dr. Bottomley then dealt with the accomplishments of recent military surgery in their relation to civil practice. It had been demonstrated, he said, that even in severe wounds, with existing contamination, infection could be prevented or controlled. Tetanus had practically been banished because of the preventive property of the antitoxin. Treatment by magnesium sulphate and carbolic acid had been definitely put aside. The wound conditions favouring the development of gas gangrene were recognised, its pathology was known, and the earliest signs of its presence were tabulated, and consequently its treatment was now on a more scientific and successful basis. There were promising indications that an effective antitoxin for it might be developed. There was no longer any question as to the proper treatment either in peace or war of penetrating wounds of the abdomen. The contention of the civilian surgeon had been upheld. Many of our doubts as to chest surgery had been dispelled. The need for complicated pressure apparatus had gone with the establishment of the fact that without it the pleural cavity might be opened freely and the lung handled without special danger. Convincing evidence had established beyond doubt the position of those who in pre-war days asserted that synovial membrane had strong powers of resistance to infection, and that drainage of joints recently wounded was not only unnecessary but often harmful. The factors entering into the production of shock and the details of its treatment had been so vividly delineated that no surgeon who had to do with the great industries in which severe injuries were common could afford to neglect provision for the prompt and efficacious treatment of the shock that might accompany them. The treatment of

fractures had been stabilised by the standardisation of splints and other apparatus for immobilisation, which had largely supplanted the use of plaster-of-Paris.

#### *Influenza in the A. E. F.*

Among the instructive papers read was one surveying the epidemic of influenza in the American Expeditionary Force, by Dr. WARFIELD I. LONGCOPE, of New York.

#### *Malaria Treated by Disinfection.*

Another paper which attracted a good deal of attention was that by Dr. C. C. BASS, of New Orleans, dealing with the effective and practical treatment of malaria by disinfecting infected persons. From 50 to 68 per cent. of the malaria occurring in a representative malarial locality of the United States was relapse and not new infection. The chief cause of ineffective treatment was the employment of spectacular and unpractical methods. The discomfort and inconvenience of quinine in solution was referred to as an example of improper and unpractical methods of treatment. Blood examination could not be depended upon to determine when disinfection had been accomplished. The only trustworthy guide was the length of time proper quinine treatment had been kept up. An effective method of treatment was to administer ten grains of quinine sulphate every night before retiring for a period of eight weeks. This was effective in about 90 per cent. of cases.

#### *War Hysteria.*

In the Section on Nervous and Mental Diseases Dr. TOM A. WILLIAMS, of Washington, D.C., read a paper on the Management of War Hysteria. He said that most patients could be restored immediately if skilfully treated, but differentiation must be made between cerebral commotion and chronic emotivity. Cardiac fatigue in hysterical subjects often suggested the long-continued incapacity which might manifest itself as an effort syndrome. In a majority of cases collective suggestion was an important feature of treatment, but in a more complex case individual analysis was essential. The methods most generally and successfully used had been: 1. Direct suggestion in the early stages at the front. 2. Indirect suggestion and persuasion, often combined with torpor or other uncomfortable applications or by isolation. 3. Best of all, however, a metamorphosis of the patient's mental attitude by re-educative procedure as well as by collective suggestion.

#### *The Pituitary Gland in Epilepsy.*

In the same section Dr. BEVERLEY R. TUCKER, of Richmond, Va., in a paper on the Role of the Pituitary Gland in Epilepsy, said that he believed that convulsions, whether pathological and called epilepsy or otherwise, were symptoms of underlying diseased conditions, and therefore were organic and not functional. Among these underlying conditions was a secretion of the pituitary gland. He agreed with Cushing that the pituitary secretion gave a substance which had to do with cortical cell stability, and that when the secretion was diminished or absent convulsions might ensue. Hypopituitarism was divided into two types: first, the congenital or chronic type, in which the patient gave evidence in the past of the usual syndrome of the hypopituitarism, and might have convulsions as he approached adolescence. The second or transitional type might present clinical evidence of normal or even hyperpituitary secretion in the past, but as adolescence approached diminished secretion was shown by lack of perspiration, increase in fat, increased sugar tolerance, slowed pulse, lowered blood pressure, and at times convulsions. The radiographic findings in the cases reported confirmed the clinical observations. The first type showed a small fossa with enlarged processes and roughened sella, and the second type enlarged fossa with large processes and roughened sella. These bony outgrowths encroached on the fossæ. A number of cases were reported and the satisfactory result of pituitary feeding was shown.

#### *The Therapeutic Aspect of Blood Transfusion.*

In the Section of Pharmacology and Therapeutics Dr. LESTER UNGER, of New York, spoke on the Therapeutic Aspect of Blood Transfusion, and referred to the respective merits and indications of transfusion with unmodified blood and with citrated blood. The technique of the method devised by the author was explained, as well as the microscopic method of testing the compatibility of the donor's and recipient's blood.



*Alcoholic Liquors in Relation to Health.*

Dr. LAMBERT OTT, of Philadelphia, discussed the question of light wines and beer in relation to health, and said that after 40 years of observance among wine, beer, and whisky drinkers he had come to the conclusion that the use of light wines and beer was healthful, and he thought that their sale under Federal and State supervision should be continued. He was of the opinion, however, that the sale should be closely supervised to see that no ingredients were used as preservatives which would be harmful.

## CONTROL OF VENEREAL DISEASE.

*Provision of Treatment Centres.*

SPEAKING to the Local Government Board vote in the House of Commons on June 30th, Dr. Addison suggested that the work of the 146 existing centres was good but susceptible of improvement, while at least 1000 such centres would be needed. Organisation of these centres and training of the expert personnel were a matter of time, and increase in efficiency could not be other than gradual. Compulsory notification before efficient treatment had been organised substantially throughout the country would, he thought, drive patients into the hands of inept and quacks. The numbers in attendance at the treatment centres approached half a million in 1918, having been barely over 200,000 in the previous year.

*Compulsory Notification.*

The subject of compulsory notification of venereal diseases continues to receive attention. Committees have sat on it, commissions have considered it, correspondents to the daily press have commented upon it, lecturers have enunciated their views upon it. It is time to arrive at a decision as to the desirability of initiating some scheme of notification, so that if the verdict be affirmative that scheme may be put into practice at once, or, if negative, our energies may be concentrated on other methods for the protection of society. In general we believe opinion to be in favour of a system of notification, if thereby a larger number of patients were brought under early treatment. The paramount objection advanced is the fear of deterring patients from seeking qualified treatment if they knew that this involved notification. If an unsuitable plan was put into operation there would, it is true, be reason to fear such a result. Experience in America and Australia, however, points to an efficient method to which no objection can be taken. The February issue of *National Health* enunciates the main features of the American scheme:—

The physician in the city of Chicago, as an instance, notifies the Public Health Department of Case "A," whom he is treating for syphilis. The Department registers the case with an identification number—e.g., Case 5000—and sends to the doctor literature, each leaflet of which is stamped with the patient's registered number, to hand on to him. The patient is urged to pay great attention to the instructions, which are of an educational, not a remedial, nature. If he desires for any reason to change his physician, all that will be necessary for him to do is to report his registered number to the next physician who takes up the case. He is informed that provided he continues treatment till pronounced cured, and observes the necessary precautions to prevent spreading infection, the State is satisfied, but if he fails to observe these requirements his identity will be disclosed by the physician to the Public Health Department, which will then take proceedings.

The gist of this scheme was laid before the Commission on Birth Control by Miss Norah March on June 13th, and was in harmony with the trenchant letter to the *Times* of April 5th over the signatures of Sir William Osler, Dr. Eric Pritchard, Sir William Hale White, Sir G. L. Cheate, Mr. W. H. Clayton-Greene, and Sir James Purves Stewart. As a result of the activities of the Local Government Board in opening treatment centres, of the admirable propaganda work of the National Council and its branches, and last, but not least, the information, interest, and fears which are filtering through the various social strata, the demand is undoubtedly increasing for some form of "Government action" directed towards the repression of venereal disease. Altruism and Parliamentary expediency for once are in unison and call for an immediate constructive policy. The method of notification adopted at first may not be perfect, but if elastically contrived now it can later be modified by

experience. To reduce what opposition may still linger two courses are open. Firstly, to inform large corporate bodies, representative of the industrial classes, of the innate meaning and powers for good of the scheme to be adopted. Their sympathetic interest, thus gained, should influence or compel acceptance of the scheme by their nominees. Secondly, to lay before the medical profession a concise and systematic statement of the proposed scheme in all its bearings. This would reach many who are prevented by time or distance from attending meetings or conferences. Where possible addresses should be given enabling the practitioner to answer objections encountered in the course of his professional work.

*Prophylaxis v. Early Treatment.*

Controversy still centres round the epoch at which disinfection of venereal contact is admissible. Certain obvious facts are apt to be overlooked. Whilst those who oppose earnestly the issue of prophylactic packets for fear that such facilities may tempt the fearful to plunge into venery, they are apparently forgetful of one pertinent fact. All their arguments against the use of packets are effectively advertising the existence of the very articles they refuse to sanction and are playing into the hands of the dealer in so-called rubber goods and the unscrupulous druggists, who, without actually infringing the Venereal Disease Act, are bringing these articles more and more prominently to the notice of the public. These facts must be understood and then faced.

Nothing but good can come of the frank public discussion at the Guildhall Conference of the Royal Institute of Public Health on June 25th, of which we published a long summary last week. Sir Malcolm Morris, preferring not to enter into the ethical side of the question, described prophylaxis as a panicky measure. Dr. J. H. Sequeira admitted that his opinion in regard to prophylaxis had changed after seeing important results follow from it at the treatment centre of which he was in charge. He was himself unable to differentiate ethically between supplying a man with a prophylactic outfit and giving him an address to which he could go for so-called early disinfection. Sir Thomas Barlow, whilst deprecating the issue of packets, called attention to the value of a 2 per cent. solution of ordinary yellow soap in destroying the gonococcus. It may usefully be recalled that the prophylaxis at birth of gonorrhoeal ophthalmia has been practised with conspicuous benefit for many years.

## PARIS.

(FROM OUR OWN CORRESPONDENT.)

*A League against Cancer.*

A VAST international league has just been initiated in Paris, largely owing to the efforts of Professor Hartmann, to deal with all aspects of the cancer problem—research, study of preventive means, and treatment. It bears the name of Franco-Anglo-American League against Cancer. Patrons are: Lord Bertie of Thame, the British Ambassador in Paris; Mr. William Sharp, late U.S.A. Ambassador; M. Mesureur, director of the Assistance Publique in Paris; Dr. Roux, director of the Pasteur Institute; Professor Roger, doyen of the Faculty of Medicine; and M. Leclainche, inspector-general of veterinary services. The administrative council is made up as follows:—

*President:* M. Justin Godart, late Under-Secretary of State for the Service de Santé.

*Vice Presidents:* Professor Hartmann, professor of clinical surgery in the Faculty of Medicine; Sir John Piltier, honorary president, British Chamber of Commerce; Professor Mark Baldwin, corresponding member of the Institute of France; Baron Edouard de Rothschild. *Other Members:* Mr. Laurence Benet, Mr. Walter Berry (President of the U.S.A. Chamber of Commerce), Professor Borrel, Dr. Branch, Dr. Cunéo, Professor Depage, Dr. Dabrujeaud, Dr. Helme, Major Lambert, Augustin Lumière, Professor Regaud, Professor Roger, Dr. Henri de Rothschild, Dr. Shoninger, M. Félix Vernes, M. François de Wendel (deputy). *Treasurer:* M. Deharme. *Legal Advisers:* M. Boccon-Gibod, solicitor; M. Chavanne, notary. *Scientific Committee:* Professor Roger, Professor Achard, Professor J. L. Faure, Professor Gilbert, Professor Hartmann, Professor Letulle, Professor Ménétrier (Member of the Academy of Medicine), Professor Borrel (head of the cancer laboratory of the Pasteur Institute), Professor Regaud (head of the biological laboratory of the Radium Institute), Professor Bérard and Professor Pavot (Lyon), Dr. Calmette (Lille), Professor Chavannaz (Bordeaux), Professor Forgue (Montpellier), Professor Depage and Professor Dautin (Brussels), Committee of patronesses with the Dowager Duchesse d'Uzès in France and Lady Derby in England at its head. *General Secretary:* M. Robert Le Bret, 2, Avenue Marceau, Paris. *Assistant Secretary:* Mme. (Dr.) Fabre.



A circular has been addressed to all the medical men in France calling attention to the fact that cancer claims more than 33,000 victims a year in France, and last year claimed 3420 in Paris alone. The circular insists on the benefits of early surgical interference, which gives, at the end of five years, an immunity from relapse amounting to 50 per cent. where the breast is concerned, 59 per cent. for the cervix uteri, 35 per cent. for the stomach, and 45 per cent. for the rectum. The attention of medical practitioners is called to the importance of noting the slight early signs of cancer, and these are described minutely under the various topographical headings. A questionnaire is sent out, replies to which are to form the basis of a vast inquiry, leading to a system of rational prophylaxis.

1. Is cancer frequent or not in the region where you practise? In your experience what is the cause of this frequency or relative immunity—heredity, habitat, manner of life, &c.? From the point of view of age has the date of onset of cancer been lowered?

2. Is cancer on the increase amongst your patients; if so, since when? Has this rate of increase been greater during the war? Have you observed cases of cancer occurring at the same time in husband and wife? Have you noted the existence of cancer in people dwelling together or successively in a certain house?

#### *Medical War Benefit.*

The medical benefit fund is a section of the General Association of the Doctors of France concerned with collecting subscriptions to found a relief fund for doctors and their families in difficult circumstances owing to the war. More than a million francs has already been collected in voluntary donations from the medical profession in France and abroad. At the last general meeting, at which the Under Secretary of State for the Service de Santé presided, held in the large amphitheatre of the Faculty of Medicine, it was stated that frs. 900,000 had been distributed in aid of the practitioners in the devastated districts, of widows and orphans of medical men, and of students deprived of the necessary resources for pursuing their studies.

#### *Stereoscopic Radioscopy.*

Dr. Chabry has devised a simple and ingenious method of examining radiograms in the stereoscope to produce a striking effect of relief. Two plates having been taken at a different angle they are reduced to stereoscope dimensions and placed side by side on the same slide. The first plate is then reproduced again on the far side of the second, giving three pictures side by side on the same slide. The slide thus prepared is placed in the stereoscope, when plates 1 and 2 give a fine relief of the anterior surface, and plates 2 and 3 the same relief of the posterior surface. By this manoeuvre it is claimed that a perfect localisation is obtained, and as the dimensions of the slides are small a valuable documentary collection can be made in a small space.

July 5th.

### URBAN VITAL STATISTICS.

(Week ended July 5th, 1919.)

*English and Welsh Towns.*—In the 96 English and Welsh towns with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had been 9.9, 10.0, and 9.6 per 1000 in the three preceding weeks, rose to 10.0 per 1000. In London, with a population slightly exceeding 4,000,000 persons the annual rate was also 10.0, against 9.0 per 1000 in the previous week, while among the remaining towns the rates ranged from 2.9 in Carlisle, 3.8 in Gloucester, and 4.4 in Newport (Mon.) to 15.7 in Oxford, 16.1 in Hastings, and 16.9 in Wigan. The principal epidemic diseases caused 153 deaths, which corresponded to an annual rate of 0.5 per 1000, and included 49 from infantile diarrhoea, 40 from diphtheria, 29 from measles, 15 each from scarlet fever and whooping-cough, and 5 from enteric fever. Measles caused a death-rate of 1.4 in Newcastle-on-Tyne and 1.5 in Warrington. There were 2 cases of small-pox, 1236 of scarlet fever, and 990 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 2, 1143, and 1030 respectively at the end of the previous week. The causes of 18 deaths in the 96 towns were uncertified, of which 5 were registered in Birmingham, 3 in Liverpool, and 2 in Warrington.

*Scotch Towns.*—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had been 12.4, 11.0, and 11.5 per 1000 in the three preceding weeks, fell to 9.9 per 1000. The 213 deaths in Glasgow corresponded to an annual rate of 9.9 per 1000, and included 5 from whooping-cough, 4 from measles, 3 from infantile diarrhoea, and 1 from diphtheria. The 69 deaths in Edinburgh were equal to a rate of 10.7 per 1000, and included 6 from measles, 2 from whooping-cough, and 1 from infantile diarrhoea.

*Irish Towns.*—The 99 deaths in Dublin corresponded to an annual rate of 12.7, or 1.1 per 1000 below that recorded in the previous week, and included 2 from infantile diarrhoea and 1 from diphtheria. The 87 deaths in Belfast were equal to a rate of 11.3 per 1000, and included 2 from scarlet fever and 1 from infantile diarrhoea.

## Obituary.

RICHARD DANCER PUREFOY, M.D.,  
LL.D. (HON. CAUSA) DUB.,

PAST PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS IN IRELAND;  
PAST PRESIDENT OF THE ROYAL ACADEMY OF MEDICINE IN  
IRELAND; PAST MASTER OF THE ROTUNDA HOSPITAL.

Dr. R. D. Purefoy died at his residence in Dublin on June 27th, in his seventy-second year, after a brief illness. His friends had noticed for some time that his health was failing, but it was not until a month or two ago that he admitted any loss of vigour. Early in June he went to Newcastle, co. Down, for a holiday, but he felt so ill that he came home in a few days. He was carried to his bed and gradually sank to rest.

Richard Purefoy came of a medical family, his father practising as a doctor at Lucan, a few miles from Dublin. His mother was a native of Tipperary, and it was in that county that he was born. Educated at Raphoe School, co. Donegal, and Trinity College, Dublin, Purefoy took his medical degrees in 1872. In 1879 he became a Fellow of the Royal College of Surgeons in Ireland. From the first he devoted himself to the obstetric art, and was successively assistant master at the Coombe and at the Rotunda hospitals. In the latter he worked under Lombe Atthill and George Johnston. He was for many years gynaecologist to the Adelaide Hospital, and in 1896 he returned to the Rotunda as Master. When his term of mastership was ended he was elected consulting gynaecologist to the hospital. He signalled the termination of his office by presenting to the hospital a fully equipped clinical laboratory. For many years he was very busy in practice, and for a generation he was one of the leading obstetricians and gynaecologists in Ireland. In 1912, after many years' service as a member of Council, he was unanimously elected President of the Royal College of Surgeons, being the first of his specialty to occupy the chair since 1880, when McClintock was President. It was during his tenure of office as President that Purefoy received the honorary degree of LL.D. from the University of Dublin at the Bicentenary celebrations in 1912. In 1915 he was elected President of the Royal Academy of Medicine.

By Purefoy none of the many posts of honour he held were regarded as sinecures. He fulfilled their duties in most exact manner. The Rotunda Hospital was, however, his chief interest in life. No governor in the history of that great charity ever held it in closer affection or devoted more time and energy to its welfare. Outside his professional work Dr. Purefoy was interested in music and art. Possessed of a baritone voice of good quality, in his younger days he sang in the choir of Trinity College Chapel, and all his life he was a member of many of the musical clubs in Dublin. At the time of his death he was President of a very ancient musical society—the Hibernian Catch Club, and he also collected pictures, glass, and furniture. In private a generous but keen student of life, few men of his age kept up so much interest in the advance of knowledge. Masterful in his individuality, he did not bear opposition easily, and while no one could be a better friend he was frank in his dislikes. His disappearance leaves a gap in the professional and social life of Dublin, where he was for so long a characteristic and prominent figure.

ALEXANDER SCOTT, M.D. GLASG.,

CERTIFYING FACTORY SURGEON, SOUTH-EAST GLASGOW AND TOLLICROSS.

THE death of Dr. A. Scott brings a strong sense of personal loss to medical men in the West of Scotland as well as to many employers and workers of industrial Glasgow. His original choice was the Ministry and his first work was teaching, but the very practical nature of his sympathy with workers attracted him to the practice of medicine. In 1875 he qualified M.B., C.M. in the University of Glasgow and took the M.D. degree 12 years later. Early in his medical career he focussed his attention on industrial disease, and his numerous contributions to the literature of this subject bear evidence alike to his medical acuteness and to his deep interest in the workers' welfare.

The recognition of this work by his colleagues and by the Home Office was to him not only a source of honest pride and satisfaction but also an inspiration and encouragement to



persevere. Many medical teachers and practitioners can recall valuable advice and help freely and generously given. As certifying factory surgeon he had many opportunities of investigating industrial conditions, and of these he made full use not only as a clinician but also as a sociologist, for his mind was too broad and his sympathy too deep to be fettered by the limits of his official duties. Employers and workers alike remember countless acts of unostentatious help for those handicapped in life by physical defect. A typical instance may be mentioned as an illustration. A medical friend showed Dr. Scott one of the early cases of cerebro-spinal fever in 1905—a boy who recovered but with total deafness. Six years later, when the boy was ready to leave the Deaf-Mute School, the parents were surprised to find that Dr. Scott had secured for him a situation in a drawing office, where he could learn a profession in which his deafness was no bar to progress. In spite of all his numerous and varied duties, he had never forgotten the wasted figure of the meningitic boy; and without any hint or application from outside, he had taken charge of the lad's future in his own quiet unobtrusive way.

To those who knew him this active practical sympathy explained much in his nature besides accounting for his reputation as a conscientious and safe medical referee, because it made him almost unduly sensitive to adverse or unsympathetic treatment. Actions that outsiders might attribute to personal pique were often only the natural expression of his resentment against a harshness of treatment entirely foreign to his own nature. A native of Ayrshire, he was at his best in Scottish song and story; and thousands have enjoyed the revelation of his strong personality in his popular lectures on these subjects. A sterling upright man in every relation of life, the city of Glasgow and the ranks of industrial medicine are consciously the poorer for his loss.

#### THE LATE DR. E. G. FEARNSIDES.

SUPPLEMENTING the biographical notices of Dr. E. G. Fearnside, which appeared in our last week's issue, Dr. Henry Head writes:—

"The death of Dr. Fearnside has left a gap in the ranks of the younger neurologists that cannot be filled. He possessed an unusually wide and accurate knowledge of the physiological aspects of medicine, especially neurology. His pride was to be familiar with every paper written by Gaskell and those who drew their inspiration from him; this made the review of the 'Innervation of the Bladder and Urethra' published by him in *Brain* (1917) so masterly an exposition of the work of the English school. He was the most devoted fellow-worker, and formed the coordinating member of the team working on syphilis of the nervous system at the London Hospital. No trouble was too great to perfect the records, for he had a genius for order and method, and every patient we examined was known to him personally and looked to him for help.

He showed the same self-sacrificing ardour in the service of the hospitals to which he was attached, and was always ready to take on his shoulders emergency duties without hope of reward. Out-patients have been known to weep when they heard that Dr. Fearnside was no longer in charge. He was beloved by his patients, for in each case he constantly exalted the importance of the individual rather than the disease. This was the secret of his success at the Home of Recovery, Golders Green, subsequently transferred to the Royal Air Force as a hospital for officers suffering from functional nervous disorders. He will always be remembered by those who worked with him as a physician of wide interests and unbounded kindness of heart."

PRESENTATION TO DR. MICHAEL GRABHAM.—Dr. Michael Grabham, F.R.C.P., of Madeira, has been the recipient of an illuminated address enclosed in a silver casket, from the British community, in acknowledgment of long and unwearying medical and general public service. Dr. Grabham, a most hospitable virtuoso, received on the occasion more than a hundred guests, to whom he displayed the interesting collection of scientific instruments, china, and silver, which have accumulated in his ancient Quinta; and in responding to the presentation gave a review of medical progress since his early days, and a recital on his magnificent organ, recalling to some of those present his past refined manipulation of the giant instrument in St. Paul's Cathedral. Dr. Grabham was an intimate friend of Thomas Wakley, the eldest, the Founder of this journal, whom he accompanied to Madeira on a search for health.

## Correspondence.

"Audi alteram partem."

### PORTRAIT OF SIR CLIFFORD ALLBUTT.

To the Editor of THE LANCET.

SIR,—The large number of subscribers to the Fund for presenting Sir Clifford Allbutt with his portrait has proved that the profession welcomes the opportunity of testifying to the esteem and affection with which he is regarded. Subscriptions have been received from nearly a thousand members of the profession. It had been intended to close the Fund at the end of June, but I have been asked to keep it open until July 31st. I would ask all those who wish to take part in the presentation, but have not yet notified their intention, to send their subscriptions, which must not exceed one guinea, without delay. Cheques and postal orders should be made payable to the "Sir Clifford Allbutt Presentation Fund," crossed London County, Westminster, and Parr's Bank, and addressed to the treasurer of the British Medical Association, 429, Strand, London, W.C. 2.

I may add that it is intended after the portrait in oils has been painted to commission a mezzotint engraving from it which subscribers to the Fund will be able to purchase for their own collections.—I am, Sir, yours faithfully,

G. E. HASLIP,

Treasurer.

July 7th, 1919.

### DETOXICATED VACCINES.

To the Editor of THE LANCET.

SIR,—Dr. D. Thomson's article on this subject in your issue of June 28th raises many interesting points for bacteriologist and clinician alike. The fact that the toxic portion of a bacterium can be removed by treatment with alkalies, alcohol, &c., was noted by Vaughan and his co-workers in America some years ago in their work on the cleavage products of bacterial protoplasm. These researches, which extend over a period of nearly 20 years, were brought together in book form under the title of "Protein Split Products" shortly before the war. The book contains an immense amount of practical biochemical detail which I need not enter into, but it also contains the basis of the work on which the detoxicated vaccine must rest. The authors regard the bacterium as composed of relatively complex proteins which closely resemble those of the cells of the higher animals. They found that the cellular substances of bacteria yield cleavage products identical with those obtained by the hydrolysis of vegetable and animal proteins. In animals the toxin produced from the typhoid bacillus, from egg albumin, and from the hemp-seed kill laboratory animals in much the same way, and, as Vaughan points out, there is "striking evidence of the similarity in the structure of the protein molecule, whether it be of bacterial, animal, or vegetable origin." Vaughan devised large copper tanks which were capable of containing as much as 20 litres of agar and by this means was able to produce enormous quantities of growth for his analyses. Elaborate precautions were taken to remove all traces of medium from the growth, and when this had been done some 60–80 g. of purified cellular substance remained from the growth in each tank. By acting upon the bacteria with a 2 per cent. alcoholic solution of caustic soda Vaughan was able to produce two distinct portions, a toxophor and a haptophor portion. Careful chemical analyses were made, and it was concluded from these that the toxophor element obtained from the different sources appeared to be the same, whereas the haptophor residue in each case differed from that obtained from other proteins. This haptophor residue when injected into guinea-pigs conferred immunity against the living organism (e.g., in the case of *B. coli*). Furthermore, this immunity was specific and could not be produced by other proteins such as egg albumin, whereas in the case of the toxophor group the was apparently no specificity. Vaughan believes that the splitting of bacterial protein into two portions is carried on in the human body by a proteolytic ferment produced by certain cells, and that this ferment is specific for the protein which calls it into existence. A large number of organisms were investigated in this way—*B. typhosus*, *B. anthracis*, *B. tuberculosis*, pneumococcus, and a number of saprophytic bacteria.



The results of this work are obviously of far-reaching importance. Not only are they, as has already been remarked, the basis of vaccine therapy, they are also intimately bound up with anaphylaxis, tubercular hypersensitiveness, pyrexia, and immunity problems generally. In tuberculosis especially there is a large field for research on these lines, and the authors appear to have utilised their opportunities to their full extent. They do not, however, record much in the way of clinical observation, and it is on these lines that the next step has to be taken. It seems possible that bacteria possess an external lipoidal substance soluble in fat solvents and that after this has been removed we have a protein base which can be divided, as Vaughan has shown, into two portions. At least three portions, therefore, may enter into the composition of the ordinary vaccine emulsion. It is far from unlikely there are others also, and the whole question affords a striking example—if such were needed—of how crude our methods have been in the past. The use of these newer methods in vaccine therapy on the one hand, and in the preparation of antigens for deviation of complement reactions on the other, warrants very careful clinical observation from independent observers. With such observations used as controls I believe that far-reaching results may be forthcoming.

I am, Sir, yours faithfully,  
July 7th, 1919. S. ROODHOUSE GLOYNE.

## EPIDEMIC PERINEPHRIC SUPPURATION.

To the Editor of THE LANCET.

SIR,—In connexion with the interesting correspondence upon this subject which has occupied a place in your recent numbers, it may be worth noting that during war service in the Mediterranean I saw an unusually large number of these cases as well as of perinephric inflammation which subsided without operation after rest in bed. These cases were very common in Malta in 1916 and the first half of 1917. There was, so far as I know, no influenza among the troops there, but boils and other cutaneous sores were extremely common. After the middle of 1917 I saw an unusually large number of such cases in France, but they were not, I think, in so great a proportion to the total sick as they were in Malta. The prognosis in both places was very good.

I am, Sir, yours faithfully,  
WILLIAM THORBURN,  
Late Consulting Surgeon, British Armies.

Manchester, July 6th, 1919.

## THE MAINTENANCE OF COTTAGE HOSPITALS.

To the Editor of THE LANCET.

SIR,—There has been considerable correspondence in the medical and lay press as to the need for increased hospital accommodation, especially of the cottage hospital type. The difficulty in establishing these institutions is not so much the cost of building and equipping as the fear that exists that they will be a continued and increasing drain upon the charitable public. For this reason it is important to consider the question of maintenance; there is apparently a general agreement that this should be as little as possible dependent on charity.

Take the case of an auxiliary hospital with 20 beds serving a population of 10,000. One ward of five beds would be set aside for maternity cases. The upkeep of these beds might, under the Maternity and Child Welfare Act of last year, be provided, for the greater part, by the local authority; in so far as it might not be, the cost would be met by the patients occupying them, so that this ward at any rate would in no way be dependent on charity. Another section of the hospital would consist of separate private beds for patients willing to pay such fees as would not only cover the actual cost of their maintenance, but would allow a certain profit for the institution. The number of these beds would vary with the character of the population, perhaps 5 out of 20. This would be no charge on charity. There would remain ten ordinary hospital beds. Some of the patients occupying these beds might be able and willing to pay the necessary fees, but the majority would probably not be willing, or, if willing, would not themselves be able to pay. As yet we cannot look for these payments from the National Insurance Commission, Approved Societies, or local authorities, although the latter,

under Section 131, Public Health Act, 1875, have the power to make them; but we may quite fairly point out to the public that the time cannot be very far distant when one or other of those authorities will be called upon to support these hospitals.

### Public Hospital Funds.

The most business-like system is to pay for each patient admitted the actual amount of their cost to the institution. To do this it would be much better if the public, different bodies of workers, and other groups of persons, instead of paying hospitals indefinite sums, for which they expect an indefinite amount of treatment, would each form their own hospital fund, out of which they would pay for any patient that they sent to hospital the whole of the sum required. This would be a more business-like arrangement, more fair and satisfactory for all concerned. Those using the hospital would feel a greater sense of independence. There would be no differentiation between the patients, each of whom would bear, directly or indirectly, his fair share of the expenses of the hospital. Contributors would feel a more direct interest in the management of the institution and would probably appreciate more fully the benefits that they received.

If each society or group of persons had, as suggested, its own hospital fund it would be able to pay for its own patients as occasion arose. It would not be bound to support any particular hospital. Payment would be made, not only for the in-patients, but for such out-patients as there might be. If these hospitals are used, as it is suggested they should be, for various public services, school clinics, maternity and child welfare centres, and so on, they would derive from these a certain income.

### Payment of the Medical Staff.

As to the payment of members of the medical staff, all insured persons and others for whose treatment they contract would be treated by them in hospital without any further fee. It must here be noted that there is a very real probability of the dependents of insured persons before long being granted medical and sickness benefit. For patients in the maternity ward, unless other arrangements are made, medical men, when called in by the midwife in charge, would receive the same fees as if the patients were in their own homes. For the patients of the public services the doctor would receive an agreed payment, but for all others they would make their own arrangements with each patient.

I am, Sir, yours faithfully,  
Bradford-on-Avon, July 4th, 1919. CHAS. E. S. FLEMING.

## FEES FOR SERVICE ON PENSION BOARDS.

To the Editor of THE LANCET.

SIR,—At a general meeting of the medical practitioners in the Cheltenham area, held at the General Hospital yesterday evening, at which 27 were present, 11 of whom were demobilised doctors, the following resolution was passed *nem. con.* :—

That they were willing to act on the pension boards at a rate of either (1) one guinea per session dealing with not more than five cases per session; or (2) two guineas per session lasting two and a half hours.

It was further resolved that this resolution should be sent to THE LANCET.

I am, Sir, yours faithfully,  
H. M. MEYRICK-JONES,  
July 8th, 1919. Honorary Secretary to the Committee of Medical Practitioners in the Cheltenham Area.

## HUTCHINSON'S TEETH.

To the Editor of THE LANCET.

SIR,—A recent experience has suggested to the writer that in the course of time the characteristic notch described by the late Sir Jonathan Hutchinson in the upper central incisors may disappear. Some six years ago a girl was under my treatment for multiple ulcerative adenitis of the submaxillary region and neck. She had a somewhat depressed bridge to the nose, and upper incisors which showed a slightly curving notch in the cutting edge. A diagram was made of these teeth in the case-book and a note added that they were probably Hutchinson's teeth. A Wassermann test of the blood yielded a positive result and the case was regarded as possibly one of mixed syphilitic and



tubercular infection. The girl was treated with X rays, scraping of ulcerated glands, general tonics, and several intravenous injections of neosalvarsan. Later, a course of tuberculin emulsion was administered. Considerable improvement followed and the patient discontinued attendance.

The war intervened, but soon after the Armistice, on resuming hospital attendance, the patient presented herself with active recurrence of the adenitis. On inspection the upper incisors no longer showed any characteristic notches. Presumably the free edges of the teeth had been ground flat in the interval. Certainly no one now looking at them would suspect any present or former connexion with Hutchinson's teeth. I do not know if this possible source of fallacy has been noted elsewhere, but think it of sufficient interest to warrant a brief note.—I am, Sir, yours faithfully,

Harley-street, W., July 7th, 1919. DAVID WALSH, M.D.

## THE MEDICAL DIRECTORY.

To the Editor of THE LANCET.

SIR,—The annual circular has been posted to each member of the medical profession. If it has not been received a duplicate will be forwarded on request. We shall be grateful if the recipients will return the form by an early post.

We are, Sir, yours faithfully,

J. & A. CHURCHILL.

7, Great Marlborough-street, London, W. 1, July 7th, 1919.

## Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—A meeting of Fellows was held on July 3rd for the election of two Fellows to the Council, Sir George Makins, the President, being in the chair. Three vacancies should occur annually, and the term of office of Sir George Makins would have come to an end this year, but as he was President at the time of the election he became entitled to retain the position of member of the Council for another year. The result of the election was as follows:—

Votes. Plumpers.		Votes. Plumpers.	
Sir B. G. A.	404	W. F. V. Bonney	130
Moynihan	274	A. H. Tubby	114
C. S. Wallace	274	J. F. Jennings	113
F. J. Steward	163		

The President declared Sir Berkeley Moynihan to be re-elected and Mr. Wallace to be elected members of the Council. There were 667 postal votes, and 6 Fellows voted in person. Five voting papers were wasted, owing to Fellows voting for more than two candidates. Mr. H. J. Price and Mr. Willmott Evans acted as scrutineers.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—As the result of the Second Professional Examination in Anatomy and Physiology, held on June 26th, 27th, and 30th, and July 1st, for which 99 candidates presented themselves, 68 were approved and 31 were rejected. The following are the names and medical schools of the successful candidates:—

S. Ackroyd, Leeds Univ.; M. T. Ahmed, Guy's Hosp.; J. V. D. Allin and G. W. Ballance, Birmingham Univ.; V. H. Barker, London Hosp.; H. C. Blackmore, Univ. Coll.; Dora Mahalah Catman, London Sch. of Med. for Women; N. L. Capeuer, St. Bart's Hosp.; Kathleen Frances Cawthorne, Univ. Coll.; S. B. Chambers, King's Coll.; Elizabeth Maude Chilton, London Sch. of Med. for Women; T. J. Clayton, King's Coll.; H. V. Croucher, Guy's Hosp.; W. Dabbs, Birmingham Univ.; Nancy Barbara Dautell, Univ. Coll.; Enid Marcella Dixon, London Sch. of Med. for Women; Alice Elizabeth Dove, Univ. Coll.; Beatrice Emily Ebdon, King's Coll.; H. O. Eksteen, Cape Town Univ. and Guy's Hosp.; W. E. Farnham, Birmingham Univ.; W. C. Faulk, St. Mary's Hosp.; Dora Janet Fox, London Hosp.; Lena Bella Gayer, London Sch. of Med. for Women; Nancy Kathleen Gibbs, Univ. Coll., Cardiff; Louisa Patricia Gordon, King's Coll.; F. Guiver, London Hosp.; A. W. Hall, Guy's Hosp.; B. J. Hallows, St. Bart's Hosp.; E. Hardy, Guy's Hosp.; T. H. J. Hargreaves, King's Coll.; H. W. Harvey, Guy's Hosp.; Florence Reed Hodges, London Sch. of Med. for Women; R. J. Hodgkinson, Guy's Hosp.; G. H. Hogben, King's Coll.; J. Holroyd and D. Hoole, Manchester Univ.; W. D. Jenkins, Middlesex Hosp.; H. B. Jones, Guy's Hosp.; R. G. Karn, Univ. Coll.; B. L. Laver, Guy's Hosp.; Alfred Q. Logan, St. Thomas's Hosp.; O. E. J. McOustra, Univ. Coll.; Elizabeth Maitland-Jones, Univ. Coll., Cardiff; C. A. Marais, Guy's Hosp.; Kathleen Mary Matterson, King's Coll.; J. B. G. Muir, Middlesex Hosp.; R. E. Overton, Univ. Coll.; Hilda Winifred Page, London Sch. of Med. for Women; A. Pain, Middlesex Hosp.; R. E. Richards, Melbourne Univ. and King's Coll.; Hilda Marjorie Stebbing Russell, London Sch. of Med. for Women; Z. Salama, Cairo and Birmingham Univs.; K. T. Saravammuttu, Madras Med. Coll.; L. Segal, Erlangen Univ.; C. M. Sherr, Guy's Hosp.; H. L.

Slaughter, St. Thomas's Hosp.; S. Somasundram, Ceylon Med. Coll. and Middlesex Hosp.; A. E. Strawbaun, Cape Town and Guy's Hosp.; B. H. Stribling, London Hosp.; H. A. Surial, Cairo and Birmingham Univs.; M. L. Sutcliffe, Univ. Coll.; R. O. Swaine, Middlesex Hosp.; M. Theiler, St. Thomas's Hosp.; Joyce Ellen Muriel White and Catherine Mabel Williams, London Sch. of Med. for Women; G. Wilson, King's Coll.; E. T. Wright, St. Mary's Hosp.; and B. Zeitoun, King's Coll.

UNIVERSITY OF MANCHESTER.—At examinations held recently the following candidates were successful in the subjects indicated:—

### DOCTOR OF MEDICINE.

J. W. Bride, T. H. Oliver, and C. E. Sandford.

### FINAL M.B. AND CH.B. EXAMINATION.

Kathleen Doyle, Olive M. Gimson, Archibald Harris, J. G. Nolan (distinction in Surgery), O'ga G. M. Payne, F. L. Pickett, Elaine Ratner, A. E. H. Sadek, Annie G. Thompson, Marie Warman, and Ruth A. Wilson (distinction in Medicine).

Medicine.—Elizabeth C. Davies and Doris M. R. Tompkin (distinction).

Obstetrics.—Doris M. R. Tompkin.

Forensic Medicine and Toxicology.—Samuel Adler, May Blakiston, Phyllis M. Congdon, J. W. Crawshaw (distinction), Kenneth Deakin, A. M. B. Aguirre, F. R. Ferguson (distinction), Percival Fildes, Evelyn A. Garnett, E. M. Greaves, Joshua Harris, G. E. Hayward, Sylvia K. Hickson, J. B. Higgins, F. S. Horrocks, Irma M. C. Jéhanart, F. C. Jones, Gertrude B. Leigh, H. A. Lomax, W. E. Mason (distinction), Doris B. Norman, Emily M. Peach, Harry Rosenthal, Annie Rothwell, Gerald Sheehan, Annie E. Somerford, G. L. Taylor, Henry Tomlinson, Mary I. Turner, F. A. Van Collier, Raymond Williamson, and J. B. Wright.

### THIRD M.B. AND CH.B. EXAMINATION.

Pharmacology, Therapeutics, and Hygiene.—Simon Almond, G. V. Ashcroft, Nancy B. Bleakley, T. E. Coope, Muriel Coope, Eugenia R. A. Cooper, S. W. Drinkwater, Dorothy M. L. Dyson, Winifred M. Edgehill, T. N. Fisher, E. S. Frishman, Elward Gleaves, W. H. Gratrix, Albert Haworth, Ruth Hill, C. D. Hough, Marguerite F. Johnstone, Ernest Jones, J. I. Kelly, R. R. Lane, James Leather, G. H. Lees, W. L. Martland, Alexander Maude, Eva le Messurier, P. B. Mumford, Cecil Nelson, Terence O'Brien, L. S. Potter, W. E. Powell, Margaret Pownall, J. S. Robinson, F. H. Scotson, H. L. Sheehan, Margaret Single, J. W. Smith, Constance Snowden, Harry Stafford, S. N. Taylor, Solomon Wand, Norsh M. Walker, Sidney Waterworth, Robert Williamson, and J. R. Wright.

Hygiene.—R. S. van Aalten, Margaret M. F. Corbitt, and Caroline M. Edwards-Evans.

### SECOND M.B. AND CH.B. EXAMINATION.

Vincent Chaitwick and N. S. Craig.

### DIPLOMA IN DENTISTRY.

Third Examination.—Harold Walmsley.

Final Examination.—Teresa Caudon, C. E. Cardwell, and B. L. Heelan.

### UNIVERSITY OF DURHAM: FACULTY OF MEDICINE.

—At the Convocation held on July 1st the following degrees were conferred:—

Doctor of Medicine (Essay).—Jessie Margaret Murray.

Doctor of Medicine for Practitioners of Fifteen Years' Standing.—Thomas Blanchard Sellers and Alfred Frank Tredegar (in absentia).

Master of Surgery.—William Robert Elstob Unthank.

Bachelor of Medicine and Bachelor of Surgery.—Dorothy Olga Sutherland Blair, Sujun Raj Chatterji, Ernest Dewar Charles, William Devereux Forrest, Alexander Thomas Harrison, James Richard Hughes, Leonard Wilfrid Hearn, Ram Mansoor, Hugh Ley Puxon Peregrine (in absentia), Thomas Norman Vickers Potts, William Reynolds (in absentia), Robert Sanderson, George Roebuck Woodhead, Harold Williamson, and Angus Hedley Whyte.

Bachelor of Surgery.—William Oxley Forster Sinclair.

Diploma in Public Health.—Edgar William Todd.

Licence in Dental Surgery.—Allan Maughan.

### METROPOLITAN HOSPITAL SUNDAY FUND.—The

following are among the amounts received at the Mansion

House up to July 3rd, the total amount being then £45,000:—

The Right Hon. the Lady Strathcona and Mount Royal, £3000;

St. Mark's, North Audley-street, £502; Messrs. Watts, Watts, and Co.,

Ltd., £315; Mr. John Latta, £262 10s.; Brompton Parish Church,

£230; Brixton Independent Church, £206; Mr. Alexander Miller, £200;

Lieutenant-Colonel More Nisbett, £200; St. Alphege, London Wall,

with St. Mary, Aldermanbury, £166; St. George's, Hanover-square,

£157; Wimbledon Churches, £154; Westminster Chapel, £141; All

Saints, Eustonmore-gardens, £116; Mr. A. R. Upjohn, K.C., £105;

United National Collieries, Ltd., £105; British Oil and Cake Mills, Ltd.,

£105; Messrs. W. Gardiner and Co., Ltd., £105; Messrs. Moxey, Savon,

and Co., and River Plate Coal Co., Ltd., £105; Messrs. Wilson, Sons,

and Co., £105; St. Jude's, Midway Park, £105; Mr. J. Alec Roberts,

£100; Messrs. Erlangers, £100; Mr. W. D. Graham-Menzies, £100;

Brunswick Hall, Whitechapel, £100.

### L.C.C. AMBULANCE SERVICE.—Reporting upon

the Ambulance Service, the L.C.C. Establishment Com-

mittee mentions that it has considered, in conjunction with

the Fire Brigade Committee, a letter from the British

Medical Association (Metropolitan Branch) urging that,

instead of appointing a principal administrative assistant

as proposed, the Council should appoint an officer possessing

medical qualifications. The two committees have jointly

received a deputation from the Association, but after going

carefully into the matter both committees are unanimously

of opinion that the position should be purely administrative,

and that a principal assistant should therefore be appointed.

Any medical advice required can, of course, be given by the

Council's medical officer of health.



**WEST LONDON MEDICO-CHIRURGICAL SOCIETY.**—The annual general meeting will be held at the West London Hospital on Friday, July 18th, at 5 P.M. A large attendance is desired, as the financial position of the society's journal will come up for discussion.

**HOSPITAL SUNDAY FUND AT BRISTOL.**—£4901 have been collected for the Hospital Sunday Fund at Bristol; it is hoped that £5000 will be eventually raised. This is a "record" sum and gratifying to Mr. J. H. Reed, the honorary secretary of the Fund, who is giving up the work in which he has taken a great interest for the past 21 years.

**LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY.**—The annual general meeting of the London and Counties Medical Protection Society, Ltd., was held on July 2nd at the offices of the society, 32, Craven-street, Strand, W.C., Sir John Rose Bradford presiding. Major C. M. Fegen, treasurer of the society, in proposing the adoption of the annual report and balance sheet, said that the society was never in a better financial position, the reserve fund amounting to nearly £25,000. But he gave it as his opinion that the reserve should be £100,000. The report having been adopted, Sir J. Rose Bradford was unanimously re-elected president of the society.

**ROYAL DEVON AND EXETER HOSPITAL.**—In response to the appeal for £20,000 for the funds of this hospital over £10,000 have been already received.

**HARROGATE MEDICAL SOCIETY.**—A complimentary dinner was given at the Grand Hotel, Harrogate, on July 1st, by the members of the society who had stayed at home to those who had served in His Majesty's Forces. About 60 sat down, 30 of whom were guests. The chair was taken by Dr. John Gordon Black, and Dr. D'Oyly Grange proposed the health of the guests. Surgeon-Lieutenant O'Beirne Ryan responded on behalf of the Naval Medical Service, and Lieutenant-Colonel R. J. Morris, Major Ernest Solly, Major M. B. Ray, D.S.O., and Captain Shepherd Boyd for the R.A.M.C.

**DEVON EDUCATION COMMITTEE AND MEDICAL CERTIFICATES.**—At a recent meeting of the Devon Education Committee it was stated that a country medical practitioner considered he had a grievance, as a statement had been made by the attendance subcommittee that he had given medical certificates without cause, and he said that as long as that statement was on the committee's book he would not give a certificate. The school medical officer for the county, who had examined the children referred to in the certificate, said that he agreed with the medical man that they were unfit to attend school. It evidently appears as if the medical man had a grievance.

**LONDON DERMATOLOGICAL SOCIETY.**—The annual meeting of this society was held at St. John's Hospital on June 17th, Dr. A. T. Bremner, the President, being in the chair. After the presentation of the annual report and the balance sheet the following officers were elected for the year:—President: Dr. Morgan Dockrell. Honorary secretary: Dr. William Griffith. Honorary treasurer: Dr. W. Knowles Sibley. A clinical meeting followed, after which Dr. Septimus Sunderland read a paper entitled "The Baths of Old London," the first part of which appears in this issue of THE LANCET.

**SOCIETY FOR RELIEF OF WIDOWS AND ORPHANS OF MEDICAL MEN.**—A meeting of the Court of Directors of this society was held on July 2nd, Sir Alfred Pearce Gould, the President, being in the chair. Twelve new members were elected, this being the largest number to be elected at any meeting since the centenary of the society in 1838. The death of an annuitant was announced who had come on the funds in 1890, her late husband having paid in subscriptions £38 17s; his widow and one child had received from the society the sum of £2900, the child being still in receipt of a grant of £50 per annum. It was pointed out that this case was a striking example of the benefits of joining, for relief is only granted to the widows and orphans of deceased members. The sum of £2036 5s. was voted for the payments of the half-yearly grants to the widows and orphans on the society's books—namely, 50 widows and 7 orphans. In addition, the sum of £285 was voted as a special Peace gift, each widow and orphan to receive £5. The invested capital of the society now stands at £140,000. This cannot by the bylaws be decreased, and only the income derived from it is used for the payment of grants and expenses. Membership is open to any medical practitioner who at the time of his election resides within a 20-mile radius of Charing Cross. The annual subscription varies with the age of the member at the time of his election, and starts at £2 2s.; there are special terms for life membership. Further particulars and application forms may be obtained from the secretary at the offices of the society, 11, Chandos-street, Cavendish-square, W. 1.

## The Services.

### R.A.M.C. TEMPORARY OFFICERS.

As there appears to be some misunderstanding as to certain points in connexion with the terms of the recent offer<sup>1</sup> by the War Office of engagement in the Royal Army Medical Corps for service with the Army of Occupation, the Director-General, Army Medical Service, makes the following explanation.

(1) Officers who are at present serving in the Royal Army Medical Corps under contracts for 12 or 6 months or other definite stated periods will be required to complete these engagements, with the option of entering into the new contract on termination.

(2) Officers who are serving under contracts "until the termination of the present emergency" will be eligible for demobilisation on the statutory date for the end of the war which will be published, and the gratuities payable under such contracts will be issuable on that date.

(3) All officers who are at present serving may offer themselves for service with the Army of Occupation (such service to commence on the day following the completion of their present contracts) under the terms of the recent offer—namely, for a period of 12 months or until their services are no longer required, whichever may happen first, at a salary of £550 per annum plus rations or the allowance in lieu. The sum mentioned is inclusive of both bonus and gratuity, and no additional emoluments of any kind are issuable.

(4) Officers holding the acting rank of Lieutenant-Colonel or Major will be required to sign a contract embodying the above terms, but will draw the pay and allowances of their acting rank whilst holding it, the contract terms as to emoluments remaining in abeyance during that period; they will revert to contract rates on ceasing to hold the acting rank.

(5) Field officers of the Territorial Force and Special Reserve will receive the pay and allowances of their substantive field or acting rank.

(6) Officers will continue to draw children's allowance for the present.

### ROYAL NAVAL MEDICAL SERVICE.

Surg.-Comdr. (acting Surg.-Capt.) P. W. Bassett-Smith specially promoted to the rank of Surgeon-Captain in recognition of services rendered.

To be temporary Surgeon-Lieutenant: D. H. Cameron.

### ARMY MEDICAL SERVICE.

Col. S. G. Allen retires on retired pay.

### ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. S. H. Fairrie retires on retired pay.

Temp. Maj. (acting Lieut.-Col.) W. Robertson (Captain, R.A.M.C., T.F.) relinquishes his temporary commission on re-posting.

Captains to be acting Majors: K. P. Mackenzie, E. A. Strachan.

To be Captains: Capt. (acting Major) H. A. Sandiford, from T.F.; Temp. Capt. C. B. Hogg, E. E. Holden, W. Moodie, A. Mearns, F. H. Woods, F. A. L'Estrange.

Temp. Capt. R. S. Miller to be acting Major.

Lieutenants (temporary Captains) to be Captains: G. D. Gripper, G. T. Baker, H. C. Watson (acting Major) (and retains his acting rank), G. T. Gimlette.

Capt. N. V. Lothian to be acting Major whilst specially employed.

Capt. C. J. O'Reilly resigns his commission.

Capt. L. G. Bourdillon is seconded for service with the Egyptian Army.

To be seconded for service under the Civil Administration of Mesopotamia: Capt. and Bt. Majors A. G. J. MacIlwaine, L. Dunbar; Capt. T. J. Hallinan, P. A. With, O. D. Jarvis.

Temp. Capt. H. F. Mullan relinquishes the acting rank of Major on re-posting.

Late Temp. Capt. to be Capt. R. Marshall, H. W. M. Kendall, S. B. Faulkner.

To be Lieutenants and to be temporary Captains: Capt. G. H. Barry and T. Stanton, from Special Reserve; Temp. Capt. H. J. Davidson and T. H. Twigg.

Officers relinquishing their commissions: Temp. Lieut.-Col. J. C. Muir, and retains the rank of Captain; Major W. C. Devereux, and retains the rank of Major. Temp. Major E. H. Cooper granted the rank of Lieutenant-Colonel. Temporary Majors retaining rank of Major: J. R. Bibby, C. V. N. Lyne (Major, retired, Indian Army), W. McDougall, A. Drury.

Temporary Hon. Majors retaining the honorary rank of Major: W. K. Carew, S. Bousfield. Temporary Captains: W. G. Cobb, B. Suggitt. Temporary Captain granted the rank of Lieutenant-Colonel: G. D. Hindley. Temporary Captain and Brevet Major retaining the rank of Brevet Major: F. H. Bahr. Temporary Captains granted the rank of Major: A. V. Poysse, W. F. Law, M. A. Power, C. M. Kennedy, H. G. Joyce, J. Clayton, K. G. Fraser, J. W. Linnell, N. G. W. Davidson, W. C. Horton, E. T. Williams, E. W. Nairn, M. P. Paton, G. T. Foster Smith, G. H. Darlington, A. W. Rowe, G. C. Chubb, R. E. F. Pearse, H. F. Warwick, L. F. Hemmans, A. C. Sturrock, G. W. Riddel, P. R. Woodhouse, J. W. Applegate.

Temporary Captains retaining the rank of Captain: A. H. Turner, J. W. A. Wilson, J. W. Tocher, F. J. Cutler, L. C. Dillon-Kelly, W. J. D.

<sup>1</sup> THE LANCET, June 28th, p. 1137.



Bromley, J. Lox, P. W. Moore, T. J. Lloyd, B. T. Lang, H. Bardsley, W. Browne, W. H. Parkinson, C. W. Forsyth, L. N. Lee, R. Parry, J. Brown, V. G. Maitland, J. Graham, F. Jubb, C. G. Lambie, J. D. Oliver, E. J. Clark, E. C. Malden, J. M. Hall, H. C. Quirke, C. D. Holdsworth, D. M. Baillie, L. D. Saunders, G. S. Brown, E. P. Scott, E. H. Udall, E. W. Smerdon, A. J. Beadel, A. N. Hodges, W. J. Henry, G. H. Steven, R. R. Armstrong, H. Farncombe, S. McMurray, F. H. Pickin, R. Nunn, K. D. Melville, J. R. Prytherch, H. F. Blood, J. C. McMillan, R. H. Calvert, E. A. Morgan, J. R. Cameron, J. Paton, A. Reynolds, A. N. Hooper, A. Rutherford, R. Duncan, T. C. Hynd, W. C. Innes, W. A. Easton, W. B. Gordon, C. E. Harrison, J. W. Fox, J. E. Finlay, D. J. Evans, S. G. Graham, J. B. Ball, W. L. Webb, M. L. Farmer, R. Cope, G. Davidson, J. G. Garson, W. R. G. Hamilton, F. W. Milne, M. J. Fraser, M. D. Mackenzie, G. E. Lloyd, R. E. Moves, J. F. Jennings, C. G. Mackay, A. F. Morcom, A. V. McMaster, A. E. Staffurth, W. J. Woodman, W. Duguid, S. C. Pritchard, W. S. Sheppard, A. H. Aldridge, J. S. Dunn, G. R. C. Wilson, T. B. Welch, S. G. Kean, F. J. Dunne, J. Watson, H. Stokes, H. W. Smith, R. M. Wishart, H. E. S. Stiven, A. R. Moore, R. Denham, C. C. Morrell, W. R. Wiseman, R. G. Abrahams, D. A. Hutcheson, W. Reid, W. O. Roberts, G. E. Stephenson, N. M. Cummins, J. C. Lorraine, H. F. Mullan, A. St. Johnston, W. K. Calwell, J. W. McLeod, C. Cameron, W. P. Morgan, L. E. Williams, D. S. Pracy, J. Wyper, O. L. V. de Wesselow, W. H. Thresher, D. Meek, F. H. Moran, C. T. W. Hirsch, J. B. Wall, W. D. Kirkwood, A. G. East, T. Winning, D. Waluwright, J. H. Johnston, J. Williamson, G. B. Richardson, J. M. Taylor, W. N. Montgomery, P. Cheal, L. Wayne-Morgan, G. Whittington, W. G. Bullock, F. H. Alexander, J. E. R. Orchard, D. P. Smith, W. E. Bullock, C. W. Somerville, A. K. S. Wyborn, A. M. Clark, S. Churchill, M. S. Baines, F. D. Cairns, M. J. Ahern, J. W. Cowie, W. V. Coffyn. Temporary Lieutenants retaining the rank of Lieutenant: A. D. Pringle, J. C. Bell, C. H. C. Casen.

#### Canadian Army Medical Corps.

Temporary Lieutenant-Colonels (acting Colonels) to be temporary Colonels: W. T. M. MacKinnon, F. Guest.

Temporary Majors (acting Lieutenant-Colonels) relinquishing the acting rank of Lieutenant-Colonel: J. L. Cock, G. W. Treleaven, A. H. Taylor.

Temporary Captains (acting Majors) relinquishing the acting rank of Major: C. K. Dowson, R. B. Mitchell.

Temporary Captains (acting Majors) to be temporary Majors: A. W. Bagnall, H. C. Mersereau, J. Seager, H. K. Bates, H. H. Argue, L. A. Richmond, J. McCulloch, F. T. Campbell, H. M. Barrett, F. H. Pratten, F. W. Lees, E. Douglas, L. C. Palmer, A. P. Chown, F. J. Tees, W. V. Lamb, D. P. Hanington, R. N. W. Shillington, W. J. MacKenzie, J. H. Moore, W. A. Wilson, S. R. Johnston, T. M. Creighton, F. F. Duhamel, A. G. MacLeod, D. A. Clark, C. E. Preston, F. W. Blakeman, V. N. MacKay, J. A. Murray, F. B. Bowman, A. B. Schinbein, M. H. Allen, W. Ross, W. G. Coshie, C. B. Anderson, C. R. Waldron, F. V. Woodbury, H. W. Wadge, T. R. Little, E. L. Pope, R. R. Barker, H. G. Wood, J. J. Thomson, H. O. Boyd, A. Blais.

Honorary Captains (acting Honorary Majors) to be Honorary Majors: A. E. Clifton, H. J. Tester, J. W. White.

Honorary Lieutenants (acting Honorary Captains) to be Honorary Captains: J. F. Christie, H. T. Cameron, A. P. Ross, W. R. Duff, H. G. Illife, F. White.

#### GENERAL RESERVE OF OFFICERS.

Major J. W. Jennings to be Lieutenant-Colonel.

#### SPECIAL RESERVE OF OFFICERS.

Capt. (acting Major) W. McN. Walker relinquishes the pay and allowances of his acting rank.

#### TERRITORIAL FORCE.

Majors (acting Lieutenant-Colonels) relinquishing their acting rank on ceasing to be specially employed: J. W. Bird, D. H. Weir, W. A. Thompson, H. T. Samuel, R. T. Turner.

Capt. (acting Lieut.-Col.) E. Knight relinquishes his acting rank on ceasing to be specially employed.

Major (acting Col.) H. Richardson relinquishes his acting rank on vacating the appointment of Assistant Director of Medical Services.

Capt. (acting Majors) relinquishing their rank on ceasing to be specially employed: T. B. Layton, R. Phillips, W. F. B. Bensted-Smith, J. H. Jordan, P. S. Martin, F. H. Robbins, W. T. Gardner, A. W. Hayward, H. B. Cunningham, J. C. S. Dunn.

Capt. (acting Major) L. P. Harris relinquishes his acting rank on vacating the appointment of Deputy Assistant Director of Medical Services, and is restored to the establishment.

Capt. (acting Major) S. F. St. J. Steadman relinquishes his acting rank on vacating the appointment of Deputy Assistant Director of Medical Services.

Capt. (acting Major) P. C. P. Ingram relinquishes his commission and is granted the rank of Major.

1st Eastern General Hospital: Capt. C. H. Budd is restored to the establishment.

Sanitary Service: Capt. W. Robertson is restored to the establishment on ceasing to hold a temporary commission in the R.A.M.C.

2nd London Sanitary Company: Lieut. C. J. Regan to be Captain.

#### TERRITORIAL FORCE RESERVE.

Capt. E. S. Taylor, from 2nd London Casualty Clearing Station to be Captain.

#### ROYAL AIR FORCE.

Medical Branch.—Capt. H. T. H. Butt, W. F. Walker, R. H. Dixon, and Lieut. G. M. Mellor are transferred to unemployed list.

Dental Branch.—Lieut. H. Wardill is transferred to unemployed list.

#### INDIAN MEDICAL SERVICE.

Majors to be Lieutenant-Colonels: G. P. T. Groube, E. D. W. Greig, W. E. McKechnie, F. F. Harvey, W. C. H. Forster, J. J. Urwin, D. McCay, A. B. Fry, E. C. G. Maddock, W. H. Dickinson, A. W. Tuke, G. H. Stewart.

At the last meeting of the Launceston (Cornwall) board of guardians Dr. W. F. Thompson resigned the post of medical officer for the No. 3 district after 35 years' service.

## Parliamentary Intelligence.

### HOUSE OF COMMONS.

WEDNESDAY, JULY 2ND.

#### Treatment of Tuberculous Pensioners.

Sir J. D. REES asked the Pensions Minister what steps he proposed to take to provide for concurrent treatment and training on the colony system of pensioners suffering from tuberculosis; and whether he had under consideration the proposals on this behalf of the East Midlands Joint (Disability) Committee. — Major ASTOR (Parliamentary Secretary to the Ministry of Health) replied: The Inter-Departmental Committee on Tuberculosis have under consideration the question of the provision of colonies for the concurrent treatment and training of discharged men suffering from tuberculosis, and I understand that the report of the Committee is expected very shortly. My right honourable friend has been informed of the proposals for the acquisition of an estate in Derbyshire for the concurrent treatment and training of discharged men suffering from tuberculosis, and I will instruct one of the medical inspectors to visit the estate and report upon the scheme.

THURSDAY, JULY 3RD.

#### Welsh Board of Health.

Brigadier-General Sir OWEN THOMAS asked the Minister of Health whether it was proposed to give representation on the Welsh Board of Health to the executive committee of the Welsh National Memorial Association, to the North and South Wales nursing associations, and to the executives of North and South Wales soldiers' and sailors' disablement committees. — Major ASTOR replied: As I stated in reply to a question by the honourable and gallant Member on June 30th, the Board is not yet complete; but I may point out that Section 5 of the Ministry of Health Act requires the persons constituting the Boards to be officers of the Ministry, and that this requirement excludes the possibility of adopting the principles suggested in the question as determining the nature of future appointments to the Board. The important bodies referred to in the question will probably be asked to suggest suitable names of persons for membership of the Consultative Council of the Ministry of Health in Wales.

Brigadier-General Sir OWEN THOMAS asked the Minister of Health if he would state what was the amount of the total remuneration paid to those Commissioners of the Welsh Insurance Commission, now transferred to the Welsh Board of Health, during the period of war; what time was devoted by them to the specific duties of the Commission during that period; what was the salary to be paid to the chairman, members, and officers of the Welsh Board of Health already constituted; and what further salaries, if any, were to be paid to the members of the Board yet to be appointed. — Major ASTOR replied: The remuneration of the three members of the Welsh Insurance Commission who have now been appointed members of the Welsh Board of Health was at the rate of £1000, £1200, and £1000 per annum respectively, and no change has been made in these rates on their transference. The whole time of the Commissioners was very fully occupied with Health Insurance work, except in so far as they undertook various forms of temporary war work from time to time. The point in the last paragraph of the question has not yet come up for decision and no decision has been taken on it.

#### National Health Insurance Bill.

Major ASTOR (Parliamentary Secretary to the Ministry of Health) moved the second reading of the National Health Insurance Bill. He said it was not in any way an attempt to amend the Insurance Act, 1911. The whole object of the Bill was to maintain as far as possible the status quo. Because of the change in money values a large number of people who in 1911 were earning round about £100 were now earning something like £250. The original Act, which made insurance compulsory for non-manual workers with a low income, would, unless this amendment were made, drive out of insurance nearly 1,000,000 insured persons. In selecting the figure of £250 instead of £160 they had been guided by the award of the Conciliation and Arbitration Board for Government employees. It would be a real hardship if, having contributed over a considerable period towards insurance, anything up to a million persons were to lose the benefit of their contributions, and that would happen as from June 30th last unless this small Bill were passed. If this Bill were not passed a large number of medical men who dealt with insured persons would lose their patients. He had received deputations from medical men. There was one point which was raised, and that was the bringing into insurance of that very limited class—some 20,000 or 30,000 people so far as



they were able to estimate—who would for the first time he brought into insurance. He told the deputation that they did not want to bring these people into insurance, but that they found it administratively impossible to exclude them. They tried to frame a clause which would exempt them, but were unable to do so. He asked his honourable friends to do the same, and if in Committee they were able to put down an amendment which carried out their intention, and what the Government would like to include in the Bill, they would be pleased to accept it.

#### *Criticism of the Bill.*

Major FARQUHARSON said that he quite agreed that there existed a necessity for some such Bill, and he was quite sure that the whole community, with the medical profession as well, would agree that people who were now insured persons, and had been for some time insured persons, should not lapse their insurance benefits because of the altered values of money. But he had to find fault with the text, and with the effect of the Bill. The text was so framed that the annual income was taken as a basis for determining that certain people should now be in insurance who had not been in insurance before. The new limit of £250 meant that a large number of entrants into insurance benefits were legalised by statute. He had not the slightest objection to everybody and anybody obtaining insurance benefits, but let them remember that the position they were now in was standardised and fixed by statute. The medical men made certain definite binding contracts that they would attend people whose incomes did not exceed £160. Those contracts were now in existence and were passed in review at the end of each year. The medical profession had a right to stand upon the sanctity of a contract, and to demand that they should not be penalised for the benefit of any section of the community. He would take this question from the point of view of the panel practitioner. The Government had contracted with him at the present time to do certain definite things under certain definite rules. This had been departed from. Take the case of the non-panel practitioner—the middle-class non-panel practitioner attending people for small fees. By this Bill all these non-manual workers, such as clerks, would be compelled to be insured. Major Astor's estimate was the merest conjecture. The number might be very large or very small, but on the one hand the Government was destroying a contract of service with the panel practitioners, and on the other destroying a great many practices of men working hard for a livelihood. At this time, when great schemes of medical service were coming before the country, he thought this was a most inopportune moment to tamper with a contract of service. He appealed to the Government to accept some modification of the Bill which would enable at least a postponement of new entrants into insurance and for the whole scheme of medical insurance to be considered.

#### *An Amendment.*

Captain ORMSBY-GORE moved:—

"That this House declines to proceed with a measure which increases the number of persons compelled to make contributions towards the funds administered by the National Health Insurance Commissioners without guaranteeing acceptable medical service to all insured persons and without establishing the principle of free choice both by patient and medical practitioner."

He said that he did think that it was fair to say that sufficient attention had not been paid to the point of view of panel doctors and also non-panel doctors. The intention of Parliament in the original Act, Clause 15, Subsection (3), had not been carried out. The National Health Insurance Commissioners and the Committees set up under that Act had not provided acceptable medical service to insured persons where those insured persons were either unwilling or unable to make use of the services of the panel doctors. The result was that in the town of Stafford a few panel doctors had far more patients than they could pay attention to, and the remainder of the doctors got nothing from the Insurance Committee or the Insurance Fund. Still, they were dealing with over 700 insured persons, and these had to pay twice over. That was a grievance which had to be redressed. If the insured persons were to be considered with respect to wages, the doctors ought to be considered too.

Captain ELLIOT seconded the amendment. The main point he wished to make was that the Insurance services just now from a medical point of view were not satisfactory. Great services under the Insurance Act were still being given for charity as they were before. The services of consultants, surgeons, and so on were being given just the same as before. He did not think that was a fitting way for service to the sick of this country to be rendered.

Lieutenant-Commander KENWORTHY hoped that the amendment would not be pressed. In most parts of the country, though possibly not in Stafford, the Insurance Act was giving satisfaction to the insured. He was interested in the indignation of Major Farquharson when he told the

Government of the hardships of the medical practitioner at the present time and threatened that the doctors would form a trade-union. They were in a trade-union.

Honourable Members: No!

Commander KENWORTHY: Yes, they are in the most exclusive union in the country.

Honourable Members: No! No!

Captain ELLIOT: But they do not strike.

Commander KENWORTHY: They have threatened to strike in the past. Continuing, the honourable Member said he was sure that Members on that side of the House would be only too glad to support any motion made by the Minister of Health to increase the fees chargeable by panel doctors, for he thought it was recognised that they had a hard case and that it should be done. But let them get this Bill through first.

Sir P. MAGNUS said that while he was prepared to support the second reading of the Bill he thought that very important and drastic changes should be made in it.

After further discussion, Major ASTOR appealed to the mover of the amendment not to press it. The point he made he thought was already met, as the persons brought in would have the right of claiming a certificate of exemption. As regarded what Captain Ormsby-Gore had said about the insured persons in his constituency, that was not a matter of legislation but of administration. He could assure him that the Minister of Health and himself would go into the matter and see if anything could be done. He welcomed this opportunity of paying a tribute to the splendid services which the medical profession had rendered to the wounded in France and England during the war. They all realised that, and also the extent to which they could count upon the profession in the future in the administration of the Ministry of Health.

Captain ORMSBY-GORE withdrew his amendment and the Bill was read a second time and referred to a Standing Committee.

FRIDAY, JULY 4TH.

#### *Nurses' Registration Bill.*

The adjourned debate on the Report Stage of the Nurses' Registration Bill was resumed.

Major NALL said that he had received a letter from the College of Nurses intimating that on the Government undertaking to introduce a registration Bill for nurses they were ready to withdraw their Bill in the House of Lords. The promoters of the Bill now before the House had refused a week ago to withdraw it, and as there was now very little time to consider the amendments on the paper he moved that the further consideration of the Bill should be adjourned in order that it might be allowed to lapse.

Captain BARNETT protested against the organised opposition to this Bill, and said that but for this there would have been ample time to get it through its various stages and send it up to the House of Lords, where some agreement might have arrived at. He hoped the Ministry of Health would nevertheless have the courage to bring forward a measure on behalf of the Government.

Major ASTOR nodded assent.

The motion to adjourn the further consideration of the Bill was agreed to.

#### *Syphilis Treatment.*

Mr. WATERSON asked the Minister of Health whether his Department was taking any action in regard to the recent death of a girl in St. George's Hospital while undergoing treatment for congenital syphilis; what drug was used in this case, and whether it had received the approval of his Department; whether he proposed to continue to approve of the use of such drugs; whether it was a fact, as stated by a medical witness at the inquest, that there had been a crop of such cases at Cambridge and Dublin during the war; how many deaths of this description had occurred in England and Wales since the beginning of the war; and whether he would make arrangements for the immediate report to his Department of all such deaths, both among soldiers and ex-soldiers and in the general population, in order that careful records might be available for reference?—Major ASTOR (Parliamentary Secretary to the Ministry of Health) replied: The answer to the first part of the question is in the affirmative. The case referred to is under inquiry by the Special Committee appointed by the Medical Research Committee to investigate the results of the treatment of syphilis by salvarsan and its substitutes. I understand that the drug used in this case was novarsenobillon, which is one of the drugs approved by my Department for the treatment of syphilis and tested under arrangements made by the Medical Research Committee. I am not aware of any sufficient reason for discontinuing the approval of the use of this and similar drugs. In this connexion I may add that I understand the coroner's finding at the inquest on this case was that this drug was properly administered and in proper amount. I understand that there have been several fatal cases following, though not necessarily caused by, the adminis-



tration of these drugs in military hospitals at Cambridge and Dublin during the war, and these cases also are under investigation by the Special Committee. No precise information is at present available as to the number of deaths of this description which have occurred in England and Wales since the beginning of the war, but the total number is, of course, very small, especially in proportion to the very large number of injections of such drugs taking place daily. The suggestion in the last part of the question will be considered with the report of the Special Committee when it is received. Already my Department have been considering the desirability of requiring special reports direct to the Ministry of all exceptional results following the administration of these drugs.

TUESDAY, JULY 8TH.

#### Medical Demobilisation.

Mr. MACQUISTEN asked the Secretary for War if he would state what was the general policy of medical demobilisation; why the promise given by the Ministry of National Service in November, 1918, that the demobilisation of medical men with long service or with practices to return to would be effected rapidly by replacing them with newly qualified graduates had not been given effect to; and how many, if any, temporary commissions in the Royal Army Medical Corps had been granted since the Armistice.—Mr. CHURCHILL replied: The demobilisation of an individual medical officer is left in the hands of the General Officer Commanding-in-Charge concerned, and the policy is to release first those who, on account of age, length of service, personal hardship, public expediency, &c., are considered most deserving of consideration. It will readily be understood that even then it is impossible to meet every claim, as it is still found necessary to retain certain officers possessed of special qualifications and for whom it is found impossible to find substitutes. Any applications received by the War Office are given every consideration, and when the claims of either an individual medical officer or the application of any public body for the services of a particular officer come under any of the above categories every effort is made to obtain his release, but his claim has to be considered in conjunction with the claims of other officers serving in the same Command at home or Expeditionary Force overseas. No temporary commissions have been granted in the Royal Army Medical Corps since the Armistice, but a new contract has now been approved whereby it is hoped that a large number of recently qualified medical men will volunteer for service overseas, and thus enable those who have served longest to be released.

#### BOOKS, ETC., RECEIVED.

- BAILLIÈRE, TINDALL, AND COX, London.  
Care of the Nose and Throat. By W. Stuart-Low, F.R.C.S. Eng. Pp. 63. 3s. 6d.
- CASSELL AND CO., LTD., London.  
Food and Public Health. By W. G. Savage, M.D. Pp. 156. 5s.  
Infant and Child Welfare. By H. Scurfield. Pp. 166. 5s.  
The Story of English Public Health. By Sir Malcolm Morris, K.C.V.O. Pp. 166. 5s.
- CHURCHILL, J. AND A., London.  
Vicious Circles in Disease. By J. B. Hurry, M.D. 3rd ed. Pp. 377. 15s.  
A Short Practice of Medicine. By Robert A. Fleming, M.D. 3rd ed. Pp. 676. 21s.  
The Ophthalmoscope. By G. Hartridge, F.R.C.S. 6th ed. Pp. 152. 6s. 6d.
- FROWDE, H., AND HODDER & STOUGHTON, London.  
The Nervous Heart. By R. M. Wilson, Captain, R.A.M.C., and J. H. Carroll, Major, M.C., U.S.A. Pp. 136. 6s.  
Constipation and Allied Intestinal Disorders. By A. F. Hurst, M.D. 2nd ed. Pp. 440. 16s.  
Psychoses of the War. By H. C. Marr, Lieutenant Colonel, R.A.M.C. (Temp.). 16s.
- Trench Fever, a Louse-borne Disease. By Major W. Byam, R.A.M.C., and others. With Introduction by Lieutenant-General Sir T. H. Goodwin, a Foreword by Major-General Sir David Bruce, and a Summary of the report of the American Trench Fever Commission by Lieutenant R. H. Vercoe, R.A.M.C. Pp. 196. 10s. 6d.
- GRIFFIN, CHARLES, AND CO., London.  
Handbook of Medical Jurisprudence and Toxicology. By W. A. Brend, M.D. 3rd ed. Pp. 317. 10s. 6d.  
Medical and Surgical Help for Shipmasters and Officers in the Merchant Navy. By W. J. Smith, F.R.C.S. Revised by A. Chaplin, M.D. 5th ed. Pp. 355. 6s.  
Surgical Handbook. By F. M. Caird, M.B., and C. W. Cathcart, M.B. 18th ed. Pp. 364. 8s. 6d.
- LEWIS, H. K., AND CO., LTD., London.  
The Diagnosis and Treatment of Heart Disease. By E. M. Brockbank, M.D. 4th ed. Pp. 153. 5s.  
Practical Vaccine Treatment for the General Practitioner. By R. W. Allen, M.D., late Captain, N.Z.M.C. Pp. 308. 7s. 6d.  
Massage and the Swedish Movements. By Kurre W. Ostrom (Upsala). 8th ed. Pp. 196. 5s.
- WRIGHT, JOHN, AND SONS, LTD., Bristol.  
On Gunshot Injuries to the Blood-Vessels. By G. H. Makins, G.C.M.G., C.B. Pp. 252. 21s.
- YEAR BOOK PUBLISHERS, Chicago.  
Practical Medicine Series. 1919. Vol. I. Edited by F. Billings, M.D. Pp. 622. 37.50.

## Appointments.

- GAMGEE, LEONARD P., F.R.C.S., has been appointed Professor of Surgery in the University of Birmingham.
- GOODBODY, F. W., M.D. Dub., M.R.C.P. Lond., Lecturer in Medical Chemistry in University College, London.
- GRAY, H. T., F.R.C.S. Eng., Honorary Surgeon to the Infants Hospital, Vincent-square, Westminster.
- JUPP, EDGAR NORMAN, M.D. Brux., L.R.C.P., M.R.C.S., Medical Officer and Public Vaccinator for the North Chardstock District of the Axminster (Devon) Union.
- LISTER, A. B. J., Major, I.M.S., M.B., B.S. Lond., F.R.C.S. Eng., an Honorary Surgeon to H.E. the Viceroy and Governor General of India.
- LUMSDEN, THOMAS, Medical Referee to the Ministry of Pensions for Westminster.
- SANDILAND, E. L., M.B., B.S. Lond., D.P.H., Resident Medical Officer to the Croydon Borough Sanatorium.
- SHATTOCK, CLEMENT E., M.D., M.S., F.R.C.S., Surgeon to Out-patients, Paddington Green Children's Hospital.
- WALKER, C. D., M.B., Ch.B. Edin., one of the Medical Referees under the Workmen's Compensation Act, 1906, for the County Court Circuits Nos. 13 and 18.
- WOODRUFF, D., Medical Officer and Public Vaccinator for the No. 9 District of the Bodmin (Cornwall) Union.
- University of St. Andrews.—PRICE, L. T., M.B., Ch.B. Edin., Professor of Surgery; CHARTERIS, F. J., M.B., Ch.B. Glasg., Professor of Materia Medica.

## Vacancies.

For further information refer to the advertisement columns.

- Bath, Royal Mineral Water Hospital.—Two S's.
- Birmingham General Hospital.—Res. M.O. £155. Hon. S. Hon. Aural S. and Laryngologist. Asst. P. £50. Surgical Registrar. £200.
- Botolph Claydon Hospital, Wandsworth Common, S.W.—H.S. £150.
- Bristol, Cosham Memorial Hospital, Kingswood.—Res. M.O. £200.
- Bury County Borough.—Asst. M.O.H., Asst. Sch. M.O., and Asst. Tuberc. O. £500.
- Bury, St. Edmund's, West Suffolk General Hospital.—Res. H.S. £175.
- Canterbury, Kent and Canterbury Hospital.—Jun. Res. M.O. £150.
- Cheam, Surrey, St. Anthony's Hospital.—Res. M.O.
- Chelmsford Borough.—M.O.H. and Sch. M.O. £600.
- Chelsea Hospital for Women, Athurst ed, S.W.—H.S. £120. Also Registrar. £50.
- Chorley Borough Education Committee.—Asst. Sch. M.O. £400.
- Darlington General Hospital.—H.S. £225.
- Devonport, Royal Albert Hospital.—Res. H.S. £200.
- Didworthy, Devon and Cornwall Sanatorium.—Locum Tenens. 6 gs. a week.
- Edinburgh City.—Clin. M.O. under Venereal Diseases Scheme. £750.
- Ezeler, Royal Devon and Exeter Hospital.—Sen. H.S. £250.
- Gravesend Hospital.—H.S. £200.
- Great Northern Central Hospital, Holloway, London.—Oph. S.
- Grosvenor Hospital for Women, Vincent-square, Westminster.—Surgical Registrar.
- Hospital for Consumption and Diseases of the Chest, Brompton.—H.P. Hospital for Sick Children, Great Ormond-street, London, W.C.—P. and S. Also Surgical Registrar. £200. Also H.S. £50.
- Isleworth Infirmary.—Sec. Asst. to Med. Supt. £300.
- Khartoum, Wellcome Tropical Research Laboratories.—Assistant Bacteriologist. £E.600.
- Leeds Education Committee.—School M.O.'s. £400.
- Leeds University.—Lect. in Experi. Phys. £500. Demonstr. in Phys. £250. Demonstr. in Hist. £250.
- Liverpool, Forest Hill District.—M.O. £185.
- Liverpool, Fazakerley Sanatorium for Tuberculosis.—Asst. Res. M.O. £250.
- Liverpool School of Tropical Medicine.—Asst. Lect. in Parasitology. £250.
- L.C.C. Hackney Institute, Dalston-lane.—Lecturer of Sanitary Science. 30s. an attendance.
- London Hospital, E.—Surgical Registrar. Also First Asst.
- London Lock Hospital, 233, Harrow-road, W.; 91, Dean-street, Soho, W.—Registrar.
- London (Royal Free Hospital) School of Medicine for Women.—Two Demos. of Anat. £250. Also Female Pharm. £250.
- London Temperance Hospital, Hampstead-road, N.W.—Asst. Res. M.O. £120. Also Casualty Officer. £120.
- Midstone, West Kent General Hospital.—H.S. and Asst. H.S. £250 and £125.
- Manchester, Croxley Sanatorium.—Asst. M.O. £100.
- Manchester Ear Hospital, Grosvenor-square, All S. Ints.—H.S.
- Manchester Hospital for Consumption and Diseases of the Throat and Chest.—Hon. Asst. P.
- Manchester Royal Eye Hospital.—Jun. H.S. £120.
- Manchester, St. Mary's Hospitals for Women and Children.—Three H.S.'s £100.
- Merthyr Tydfil County Borough.—Female M.O. for Maternity and Infant Welfare Work. £500.
- Metropolitan Borough of Deptford.—Asst. M.O. H. £400.
- Otago University, New Zealand.—Prof. of Syst. Med., Prof. of Clin. Med. and Therap., and Lect. on Clin. Med. £600, £500, and £400 respectively.
- Prince of Wales's General Hospital, Tottenham, N.—Hon. Asst. P., Hon. Med. Regist., and Hon. Anesth. Also Clin. Assts.
- Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—Phys. to Out-patients.
- Queen Mary's Hospital for the East End, Stratford, E.—Hon. Ophth. S's. Also H.S.
- Rossall School, Fleetwood.—Res. M.O. £250.
- St. Helens County Borough.—Asst. M.O. H. £500.
- St. John's Hospital for Diseases of the Skin, 43, Leicester-square.—Electro-Therapeutist. £100.



St. Marylebone General Dispensary, 77, Welbeck-street, Cavendish-square, W.—Res. M.O. £150.  
 St. Peter's Hospital, Henrietta-street, Covent Garden, W.C.—Anaesth. £25.  
 Sheffield Royal Infirmary.—Asst. H.P. £150. Oph. H.S. £150.  
 Southampton County Borough Isolation Hospital.—Res. M.O. £400.  
 Stockport County Borough Education Committee.—Sch. Doctor. £400.  
 Tingwall, Whiteness, and Weisdale Parish.—M.O. and Pub. Vac. £45.  
 Tottenham Maternity and Child Welfare Committee, Amlenatate Clinic.—Female M.O. £1 11s. 6d. per session.  
 University College Hospital, Gower-street, W.C.—Res. M.O. £150.  
 Victoria Hospital, Tile-street, Chelsea, S.W.—H.P. and H.S. £100.  
 Wolverhampton and Staffordshire General Hospital.—Path. & Bac. £350. Also Res. M.O. £200.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Basingstoke (Hants) and Newport (Pembroke).

## Births, Marriages, and Deaths.

### BIRTHS.

DICK.—On July 3rd, at Walton Lodge, Walton-on-the-Hill, the wife of F. A. Dick, M.B., of a daughter.  
 SELLS.—On July 2nd, at Westcliff-on-Sea, the wife of Roland Sells, M.R.C.S., L.R.C.P., of a son.  
 STOWELL.—On July 6th, at "Fir Grove," Northwloh, Cheshire, the wife of Thomas E. A. Stowell, F.R.C.S. Eng., of a son.

### MARRIAGES.

JONES—DUGDALE.—On July 1st, at St. Pallip's Church, Blackburn, William Edmund Jones, M.R.C.S., L.R.C.P., of Blackburn, to Edith Muriel, youngest daughter of the late Adam Dugdale and of Mrs. Dugdale, of Griffin Lodge, Blackburn.  
 LYNCH—DOUGHTY.—On July 1st, at St. Peter-upon-Cornhill, B.C., Arthur Louis Lynch, M.D., C.M., F.R.C.S., Capt. R.A.M.C., to Janet Hunter Elizabeth (Jean) Doughty, daughter of the Rev. George Bell Doughty and Mrs. Janet Hunter Doughty, Westbourne-gardens, W.  
 McMASTER—STEWART.—On July 2nd, at All Saints, Kenley, Surrey, Archibald Coterill McMaster, M.B., F.R.C.S.E., to Netta, daughter of the late James Henry Fowler Stewart, Ardross, Ross-shire.

### DEATHS.

COLLINS.—On July 9th, at Sproxtton, New Wanstead, Frank Collins, M.R.C.S., L.R.C.P., suddenly, after many months of ill-health.  
 DODD.—On July 3rd, at Drummond-road, Bournemouth, Henry Allnutt Dodd, M.R.C.S., L.S.A., aged 90.  
 SELLS.—On July 4th, at the R.A.F. Hospital, Swanage, Captain Clement Peronet Sells, M.C., R.A.M.C. (T.), aged 23.  
 N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

## Communications, Letters, &c., to the Editor have been received from—

B.—Dr. I. Bram, Philadelphia; British Temperance League, Lond.; Sec. of; Mrs. E. J. Brice, Taunton; Board of Agriculture and Fisheries, Lond.; Dr. J. Brown, Blackpool; Messrs. Burroughs Wellcome and Co., Lond.; Mr. J. B. Burke, Lond.  
 C.—Mr. J. Cabburn, Lond.; Crystal Press, Ltd., Lond.; Sec. of; Dr. T. F. Cotton, Lond.; Dr. H. P. Cholmeley, Forest Row; Dr. A. G. Clark, Bedford; Dr. J. P. Cammidge, Lond.; Canadian Medical Directory, Montreal.  
 D.—Dr. J. A. Delmege, Lond.; Surg.-Lieut.-Comm. S. F. Dudley, R.N.; Mr. L. I. Dublin, New York.  
 F.—Dr. C. E. S. Flemming, Bradford-on-Avon; Mr. H. Frankling, Harrogate.  
 G.—Mr. S. G. Gould, Lond.; Great Northern Central Hospital, Sec. of; Dr. A. K. Gordon, Lond.; Major W. E. Gallie, C.A.M.C.; Dr. A. G. Gibson, Oxford; Mr. G. E. Gask, Lond.; Dr. R. G. Gordon, Bath.  
 H.—Dr. E. Holland, Lond.; Dr. J. E. Hett, Kitchener; Prof. A. Hopewell-Smith, Philadelphia; Fleet-Surg. W. E. Home, R.N.; Dr. H. Head, Lond.; Dr. E. C. Hort, Lond.  
 I.—Ilford, Medical Officer of Health of; Imperial Travel Bureau, Lond.  
 K.—Mr. U. S. K. wshik, Bombay.  
 L.—London County Council, Medical Officer of; Lebanon Hospital for Mental Diseases, Lond.; Gen. Sec. of; London and Counties Medical Protection Society, Gen.  
 Sec. of; London Dermatological Society, Hon. Sec. of; Mr. S. S. Lindsay, Lond.; Major J. H. Lloyd, R.A.M.C.  
 M.—Dr. C. A. Mercier, Bourne mouth; Mr. T. Macquaker, Lond.; Medico-Psychological Association of Great Britain and Ireland; Ministry of Heal h, Lond.; Dr. A. S. MacNalty, Lond.; Dr. H. M. Meyrick-Jones, Cheltenham.  
 N.—National Dental Association, Lond.; Gen. Sec. of.  
 O.—Dr. C. M. O'Brien, Dublin.  
 P.—Dr. S. V. Pearson, Mundesley; Panel Committee for the County of London; Dr. H. R. Prentice, Lond.  
 R.—Royal Institute of Public Health, Acting Sec. of; Dr. J. D. Rolleston, Lond.; Dr. J. N. Robins, St. Peter's-in-Thames; Royal Society of Medicine, Lond.; Sec. of; Mr. W. H. C. Romanis, Lond.  
 S.—Dr. A. G. Shera, Eastbourne; Society for Relief of Widows and Orphans of Medical Men, Lond.; Sec. of; Mr. S. L. Sharma, Meerut; Dr. S. F. Sunderland, Lond.; South London Hospital for Women, S.W.; Standard Motor Co., Lond.; Prof. W. Stirling, Manchester; Mr. R. E. Smith, Barry.  
 T.—Dr. A. H. Thompson, Lond.; Dr. H. H. Tooth, C.B., C.M.G., Lond.; Dr. W. W. C. Topley, Lond.; Mr. G. Tyrrell, Lond.  
 W.—Dr. G. War, Lond.; Dr. V. G. Ward, West Byfleet; Dr. D. Walsh, Lond.; Mr. R. L. M. Wallis, Lond.; Mr. F. T. Whetley, Sheffield.

Communications relating to editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C.2.

## Notes, Short Comments, and Answers to Correspondents.

### THE BATHS OF OLD LONDON.<sup>1</sup>

By SEPTIMUS SUNDERLAND, M.D. BRUX.,

CONSULTING PHYSICIAN, ROYAL WATERLOO HOSPITAL FOR CHILDREN AND WOMEN; OBSTETRIC PHYSICIAN TO THE FRENCH HOSPITAL.

#### PART I.

#### "The City of the Waters."

I LIKE to believe that the meaning of the word London is "The City of the Waters," after the derivation put forward by Mr. W. Owen, F.S.A., editor of "Welsh Archaeology"—namely, Llyn, meaning a lake or broad expanse of water, and Dyn, meaning a town. Another derivation is Lhong, a ship, and Dun, a town—"the town of ships." On considering the situation of London on the Thames, with its numerous tributaries taking their origin on the hills both north and south of the Thames valley, one can understand that the lands around the town were in former years dotted with springs and pools.

I may remind you of a quaint quotation taken from a translation of the "History of London," written in 1180 by William Fitzstephen, a Canterbury monk and the friend of Beckett:—

"Round the city again, and towards the North arise certain excellent springs at a small distance, whose waters are sweet, salubrious, and clear, and whose rannels murmur o'er the shining stones; amongst these Holywell (Shoreditch), Clerkenwell, an 1st Clement's Well may be esteemed the principal, as being much most frequented, both by the scholars from the school (Westmin'ster) and the youths from the city, when in a summer's evening they are disposed to take an airing."

And another quotation from the "Survey of London," by John Stowe, the English antiquary and historical writer of the sixteenth century, who, referring to the thirteenth century, says:—

"They had in every street and lane of the city divers fair wells and springs; and after this manner was this city then served with sweet and fresh waters which being since decayed, other means have been started to supply the want."

These quotations bring vividly to the imagination the existence in the early days of streams, ponds, pools, wells, and springs, not only on the north side, but on the south side in Southwark, Lambeth, and contiguous neighbourhoods. Most of the pools have been filled in and the springs and streams diverted into sewers.

Thus one knows that in very early days before Fitzstephen's and after Stowe's time there must have been no lack of facilities for bathing in the open.

The names of many streets will indicate to what extent the existence of water affected the nomenclature of the districts—e.g.: Bath-street (Newgate-street), Bayswater-road, W., Brook-green, Hammersmith.

#### Olden Baths of London.

One of the most interesting amongst the olden baths of London is the Old Roman Spring Bath (or Plunge Bath), situated near King's College, Strand, because this bath still remains as one of the few relics of Roman London. It was probably built about 2000 years ago, in the time of Titus or Vespasian. It is supplied with clear water coming from springs at Hampstead, and was considered to be the overflow from St. Clement's Holy Well in the vicinity. The bath, rounded at one end and square at the other, is in the centre of a fair-sized, solidly built, vaulted chamber, and lit by a little semicircular window. Its length is 13 ft., breadth 6 ft., and depth 4 ft. 6 in. Charles Dickens refers to this bath in "David Copperfield."

The Templars' Bath or Lord Essex's Bath. Adjoining the Roman Bath and deriving its water-supply from it was another bath, of octagonal shape, the Templars' Bath, used for three centuries by residents in the Temple and closed in 1893. It was built in 1583 by the Earl of Essex, whose house was near. The site is now covered by the larder of the Norfolk Hotel.

St. Agnes-le-Clair Bath was situated on the site now named St. Agnes-terrace, near St. Luke's Hospital, Old-street, and is considered to have been first used in 1502, being supplied by the St. Agnes-le-Clair spring (one of the holy wells of London), although a Roman origin was at one time claimed for it; for in the eighteenth century many ancient copper coins, Roman relics, and other antiquities were discovered in the bath, as well as Roman tiles. Some writers consider these were brought thither and cast into the spring as votive offerings. The spring was dedicated to St. Agnes and called "le Clair" on account of the transparency of its waters. Stowe speaks of them

<sup>1</sup> A paper read before the London Dermatological Society in an abridged form.



as "Dame Anne's the clear." An advertisement in 1758 speaks of the bath as being "much applauded by the learned physicians of old" "in rheumatic and nervous cases and headache, and for cutaneous eruptions and inflamed eyes." In 1854 the Bath House was damaged by fire and the bath came into disuse.

The Peerless Pool, Baldwin-street, City-road, behind St. Luke's Hospital, was referred to by Stowe as "one other clear water, called Perilons Pond, because divers youths by swimming therein have been drowned." It was enclosed in 1743 by Wm. Kemp, a London jeweller, who changed its name to Peerless Pool and used it as a bathing place. Fed by springs, this open-air pool measured 170 ft. in length, 108 ft. in breadth, and from 3 to 5 ft. in depth. It was nearly surrounded by trees and marble steps led to a gravel bottom, through which springs percolated. It became a favourite resort of anglers and swimmers. Peerless Pool was used as a bath until about 1850, when it was drained and built over, and its name is commemorated by Bath Buildings, Peerless-street, and Bath-street, to the north and west of St. Luke's Hospital.

The Cold Bath in the New (Euston) Road was situated near the old Adam and Eve Tea Gardens at the north-west end of Tottenham Court-road. The bath was in a pleasant garden and was supplied by a spring. The water was described as being "beneficial to persons suffering from nervous disorders and dejected spirits." It was in existence in 1785, and was then advertised as being "in fine order for the reception of ladies and gentlemen."

The Cold Bath, Clerkenwell, situated near the River Fleet, or, as it was then called, Turnmill Brook, not far from the spot where the Clerks' Well existed (near the present 18, Farringdon-street), was a cold spring which, in 1697, was converted into a bath by the owner of the surrounding property, Walter Baynes, and was described as the "most noted and first about London." The charge for bathing was 2s. or 2s. 6d. if use were made of the chair suspended from the ceiling for lowering the patient into the water. The water of the spring used for drinking and bathing was chalybeate, and was considered efficacious in the cure of "scorbutic complaints, rheumatism, chronic disorders, &c." It was also considered to "prevent and cure cold, create appetite, help digestion, and make hardy the tenderest constitutions." The bath was at the height of its reputation in 1700. The bath was enclosed in a building known as Coldbath House, surrounded by a garden with four turret summer-houses. The spring supplied 20,000 gallons daily. In 1815 most of the exterior of the bath-house was removed to make way for buildings, but the bath itself remained as late as 1870 (Macpherson). I believe there is now no trace of its existence. The neighbourhood was formerly known as Coldbath Fields.

Sun Tavern Gap, at Shadwell, marks the spot where a spring was discovered in 1745, which was puffed by D. W. Linden, M.D., in 1749, "for scorbutic and cutaneous disorders by drinking or bathing." It was used medicinally only for a short period, and was known as "Shadwell Spa"; the water was sold at the Spa House in Sun Tavern.

Queen Anne's Bath was situated at the back of the present No. 35, Endell-street, Long Acre. The waters were supplied from a copious spring containing iron, and were used for rheumatism and other disorders. It is said that Queen Anne used to bathe there; small rooms at the side used to be shown as her toilette and dressing-rooms. The bath-chamber was about 14 ft. square, with a lofty groined dome roof, and its walls inlaid with white and blue Dutch tiles of the sixteenth century.

The New Spa, Hampstead, was first mentioned in 1804 by a local practitioner, Thomas Goodwin, in a pamphlet entitled "An Account of the Neutral Saline Waters Lately Discovered at Hampstead." The water contained magnesium sulphate and a bath-house existed for the immersion of patients in the water from the spring. This "New Spa" had very little success. The site was near the present railway station of the L. & N.W. Railway.

(To be continued.)

#### COLONIAL HEALTH REPORTS.

*Uganda.*—According to the Blue-book for the year 1917-18, the population of this Protectorate is estimated at 3,360,439, including 570 Europeans and 3467 Asiatics. In 1917 the cases treated in Government hospitals and dispensaries numbered 70,236, with 967 deaths, these figures not including cases treated at the military hospitals at Entebbe, Bombo, and Gulu. The number of European officials resident was 378, among whom there occurred 359 cases of illness and 2 deaths. Of the total admissions to hospital 112 were due to malaria and 11 to dysentery; 8 European officials were invalided, bringing the total number during the last seven years to 30; the causes of invaliding were general debility, neurasthenia, tuberculosis, and neuritis. The number of cases treated at European and native Government hospitals decreased from 5679, with 20 deaths in 1916, to 4414 cases with 6 deaths in 1917. Forty-nine cases of blackwater fever were treated, of which 8 were fatal, com-

pared with 46 cases and 10 deaths in the previous year. The diseases which call for special attention in connexion with the native population are cerebro-spinal meningitis, sleeping sickness, plague, small-pox, and venereal diseases. Cases of cerebro-spinal meningitis treated in Government hospitals have risen from 4 cases with 3 deaths in 1915 to 71 cases with 42 deaths in 1916, and 469 cases with 347 deaths in 1917. Besides these numerous deaths have taken place all over the country, cases having been reported in every district except Masaka. The disease has been particularly severe in the northern and north-eastern parts of the Protectorate. It is estimated that not fewer than 5000 deaths took place from this disease in the districts of Gulu and Kitgum, whilst in the Arua District of the West Nile it is considered that 3000 natives have died from the same cause. The rapid spreading of this disease and the great number of deaths are due, first, to the abnormal collection and movements of natives for military purposes, and, secondly, to the shortage of the medical staff. Epidemics of small-pox occurred throughout the Protectorate, the Nile Districts and Lango being specially affected, and towards the end of the year the mortality was severe. Admissions of cases of plague to hospital show a decrease from 321 cases with 283 deaths in 1916 to 171 with 143 deaths in 1917, and the native returns show a slight decrease in the number of deaths compared with the previous year. The local sanitary boards are working in the various townships with good results, and anti-malarial measures improve the conditions of the more important stations.

#### THE KENSINGTON WAR HOSPITAL SUPPLY DEPOT.

THE DEPOT was registered in 1916 under the War Charities Act, and during the war has turned out over 6,000,000 articles, valued at £300,000, which have been sent to 1400 different hospitals at home and abroad. In a List of Surgical Appliances and Hospital Requisites issued (at 2s.) by the depot, among the many useful appliances may be noticed: a finger flexion glove, consisting of a leather wristlet with splint and glove attached—from each finger of the glove extends a strap which can be fastened to a button on the wristlet; a Hey Groves humerus extension splint which can also be used as a stump tractor; a simple type of wood splint for extension of the forearm; a Bowlby's slung leg splint for dressing wounds of the calf without disturbing a fractured limb. Many forms of pilons are illustrated; they can be obtained either with belts for cases of thigh amputation or with gauntlets above the knee for amputations lower down. The work of the depot is now being reconstructed to deal with civil hospitals and patients.

#### A PSYCHOLOGICAL STUDY OF THE PRISONER OF WAR.

Dr. A. L. Vischer, a citizen of a neutral country with a command of three European languages, has had a unique opportunity of visiting the great European internment camps and of investigating the mental changes—we should like to call them the metapsychoses—for which the conditions of internment are responsible. It will be realised when reading his book on Barbed Wire Disease<sup>1</sup> that he has made full use of his opportunities, and in addition has read widely in the literature produced by interned authors. If he has paid less attention to English writers than to French and German authors the deficiency has been realised and amply redeemed in the very able introductory chapter by Dr. Kinnier Wilson. There is far more than the loss of liberty to prey upon the minds of the internés. Uncertainty of the future, the loss of privacy, and nostalgia, aggravated by the restrictions in correspondence, all play their part, but above all, the authors lay emphasis on the constant menacing mockery of the barbed wire entanglements. As one of the men in Knockaloe Camp has written, "Physically the prisoner is powerless, but in spirit he gnaws incessantly at the roots of the thorny hedge."

What are the consequences which are observed to follow upon these changes in the prisoners' mental life? Their dreams, their irritabilities, their depression, the exaggeration of rumour, and the gradual starvation of libido have all been noted and recorded by Dr. Vischer, who has also inquired into the origins of these phenomena, their development, and the prospects of their elimination when the causative factors have been removed. The mental syndrome of the interné is then usefully compared with the experiences of others who in time of peace have found themselves "closely confined for an indefinite period." This is often the case with the crews of sailing vessels on long voyages, with polar and other explorers, and those who have chosen to live the monastic life. The book is suggestive rather than dogmatic and will be read with interest by all who are concerned themselves with the development of the science of abnormal psychology.

<sup>1</sup> Barbed Wire Disease: A Psychological Study of the Prisoner of War. By A. L. Vischer, M.D. Basle, M.P.C.S. Eng. With an Introductory Chapter, by S. A. Kinnier Wilson, M.A., B.Sc., M.D. Edin., F.R.C.P. Lond. London: John Bale, Sons and Danielsson, Ltd. 1919. Pp. 84. Price 3s. 6d.



## The Goulstonian Lectures

ON

## THE SPREAD OF BACTERIAL INFECTION.

*Delivered before the Royal College of Physicians of London*By W. W. C. TOPLEY, M.A., M.D. CANTAB., F.R.C.P.,  
DIRECTOR OF INSTITUTE OF PATHOLOGY, CHARING CROSS HOSPITAL.LECTURE III.<sup>1</sup>

MR. PRESIDENT, LADIES, AND GENTLEMEN,—In the experiments recorded in my last lecture a culture of *B. Danysz* was fed to a certain number of mice, and from one of these, killed 24 hours after feeding, a second strain of the bacillus was isolated. This was fed to a further series of mice, and from the tissues of certain of the animals which died, or were killed when dying, during the course of this experiment further strains were isolated. These in their turn were fed to other batches of mice, and the process was repeated many times. The whole series of experiments lasted over about nine months.

Consideration of the results showed that two strains at least possessed, when first isolated, a greatly increased tendency to produce a fatal illness in mice when administered with food. Retesting of these strains at later periods confirmed their high pathogenicity, but indicated a gradual return to the original conditions under artificial cultivation. In many cases, however, the strain isolated from a mouse of a given experiment proved less pathogenic on being fed to other mice than the strain on which the mouse itself had been fed, and this was particularly true of those strains which were isolated from mice which were found dead. Each of the two strains which possessed especially high pathogenicity rapidly lost this characteristic on further passage carried out in this way.

In view of the interesting results which have been obtained by close serological study of different races of the same bacterial species, it seemed desirable to investigate the most divergent strains along these lines. High-titre agglutinating sera were obtained for six of these, and 48 strains of *B. Danysz* isolated during the course of these experiments were tested as regards their relative agglutinability and by cross-absorption tests. In every case the exact limit of agglutination was determined. The results failed to distinguish in any way between the strains examined.

## EXPERIMENTS WITH A VIEW OF REPRODUCING NATURAL CONDITIONS.

It is difficult to decide how far the conditions in these experiments reproduce those met with in nature. In so far as natural infection occurs by normal mice devouring their companions who have succumbed to the disease, they must be very similar. If, however, the main source of infection under natural circumstances is the consumption by normal animals of food soiled with the excreta of those which are infected, there will be additional factors which are absent in the experiments we have considered. There seems little doubt that the latter mode of infection is by far the more important, and we are therefore not justified in assuming that such results as have been obtained represent what happens when passage occurs under natural conditions. They form, however, a valuable guide in interpreting the results obtained in other experiments, in which the conditions were arranged to reproduce, as closely as possible, the sequence of events which must actually occur in the epidemic spread of disease.

In these experiments a certain number of mice were fed on a strain of *B. Danysz*. Next day they were transferred to a clean cage, and at varying periods thereafter normal mice were added to the cage. These were identified in some way, sometimes by merely noting the colour markings, sometimes by marking them with some distinctive dye. The deaths were noted as they occurred, and where possible post-mortem examinations were carried out. In some experiments several of the mice were found partially eaten. In one of them only were a certain number of dead mice left in the cage for their companions to devour. The results yielded no evidence that this factor modified the course of events in any way.

The charts in which the results of some of these experiments are shown are constructed as follows. On the upper base-line are recorded the deaths as they occurred in time. On the lower base-line are recorded the number of mice fed, the number of normal mice added, and the time at which the addition was made. The figures below the base-lines indicate days. Each square, representing a death or the addition of a normal mouse, is numbered, and the numbers correspond; so that the death of each mouse added can be traced as regards the time of its occurrence. The mice which died are represented by hatched squares in each case, so that the plain squares on the lower base-line correspond to normal mice which were added to the cage but survived.

*Results of Experiments.*

The results of one such experiment are recorded in Chart IV. Six mice were fed on a culture of *B. Danysz*. Five days later six normal mice were added to the cage. Three days later one of these was found dead. On the fourth day from this the first death occurred among the mice ordinarily fed, and one of these mice was found dead on each of the next three days. One of the mice added on the 6th day of the experiment succumbed on the 14th day and three on the 15th. On this day four more normal mice were added. One of these died three days later; the other three survived. Thus of six mice fed on this strain of the bacillus four died. Of six mice added between the date of feeding and the first death which occurred among the mice fed five died and one survived. Of four mice added on the 15th day of the experiment one died and three survived.

Chart V. shows the results of another experiment with a culture of the same strain of *B. Danysz*. It will be seen that of the eight mice fed on this culture five died. Of six normal mice added on the 7th day of the experiment, three died and three survived. Two mice were added on the 10th day, and three on the 14th. All of these survived.

Chart VI. shows a similar experiment with the original strain of *B. Danysz*. Of the eight mice originally fed four died. Three mice were added to the cage on the 14th day of the experiment. One of these died and the other two survived. Two mice were added on the 18th day, and both survived.

Thus in each of these three experiments when normal mice were added to the cage during the early stages a large proportion of them became infected and died of the disease. Mice added during the later stages, however, showed an increasing tendency to escape infection, and in some cases all the mice added at these later periods survived.

Chart VII. shows a similar experiment on a larger scale. It will be seen that it is referred to on the chart as an epidemic due to an unknown cause. The exact facts are as follows. The experiment was an attempt to ascertain whether strains of *B. Danysz*, possessing heightened pathogenicity, would be evolved as the result of natural passage, a possibility strongly suggested by the variation in this direction which had been observed in the passage experiments carried out in the manner indicated in my last lecture.

It had already been noted that mice exhibited a very definite age-susceptibility as regards infection with this organism. The experiments already considered were carried out with adult mice. When young mice were fed on the same culture an entirely different result was obtained. Thus in one experiment six young mice were fed on a 24-hour broth culture of this original strain. One was found dead next day, four on the day following, and the remaining mouse died on the 14th day.

An attempt was made to utilise this special susceptibility of young mice in the experiment under consideration. Four such mice were fed with a 24-hour broth culture of the original strain, and were transferred next day to the large cage in which this experiment was carried out. This was a long cage originally divided into 15 compartments, each of which would accommodate from two to four mice. A communication was made between each compartment, and the food was placed in a large centre compartment made by removing the two central partitions. At the time these four young mice were transferred to this cage one was obviously ill. It was found dying later the same day and was then killed and examined post mortem. Two more of these four mice were found dead on the 9th day after feeding. One was examined after death, the other was

<sup>1</sup> Lectures I. and II. were published in THE LANCET of July 5th (p. 1) and 12th (p. 45), 1919.  
No. 5003.



left in the cage to be eaten by its companions. The fourth mouse was found dead three days later, but was too decomposed for examination. Thus, two of the four original mice were examined post mortem. The cultures from one remained sterile; those from the other yielded only lactose-fermenting bacilli.

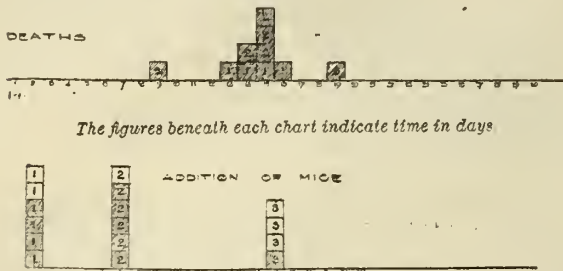


CHART IV.—Showing deaths in a cage in which were placed six mice (1) fed on a 24-hour broth culture of a strain of *B. danyasz* (3 D, 21; 9, 5), and to which two further batches of normal mice were added (2, 3).

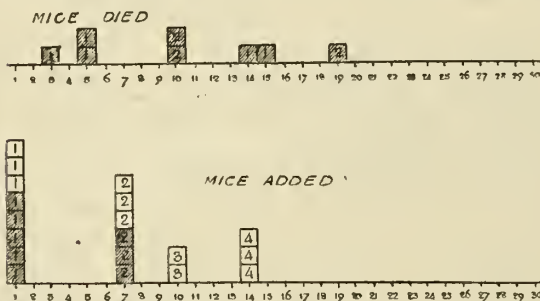


CHART V.—Showing results of feeding eight mice (1) on culture of same strain as in previous experiment, and adding normal mice to the cage at various intervals (2, 3, 4).

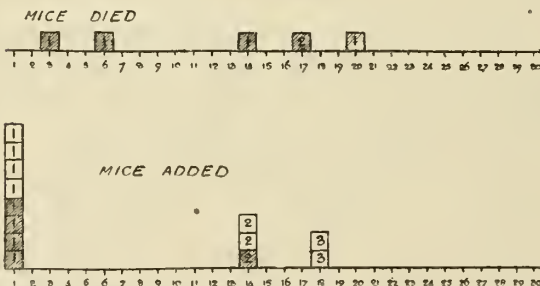


CHART VI.—Showing results of feeding eight mice on a culture of *B. danyasz* (original strain) and adding normal mice.

#### Consideration of Results Shown in Chart VII.

The addition of normal mice and the deaths which occurred are sufficiently indicated in the chart. Of the 44 mice which died after being introduced to the cage 13 only were examined post mortem; most of the remaining dead mice were found almost entirely eaten, a difficulty which is particularly liable to be met with when large numbers of mice are allowed to live together. Of the 13 mice examined, seven yielded cultures of lactose-fermenting bacilli only, while the cultures from the remaining six mice remained sterile. Thus, during the course of the whole experiment *B. Danyasz* was never isolated from any of the mice examined. In five of these 13 mice, however, the spleen was considerably enlarged, in five it was slightly enlarged, while in the other three it appeared normal. The post-mortem appearances were, in fact, entirely compatible with death from a *B. Danyasz* infection, but in the entire absence of bacteriological confirmation it seems wiser to regard the cause of the epidemic as non-proven.

A point of some interest may, however, be noted. In all experiments of this kind it has been found that a most marked disproportion exists between the percentage of

recoveries of *B. Danyasz* from mice fed on cultures of this organism and from mice naturally infected through contact. Thus, while the bacillus has almost always been isolated from a considerable proportion of mice fed on cultures, other mice, dying in the same cage and during the same time interval, may yield entirely negative results. A high proportion of cultures from these mice remain sterile, while others yield lactose-fermenting organisms only. The number of mice examined so far has not been sufficient to exclude a mere chance coincidence, but the distribution of positive and negative results has been striking, and the matter is being investigated further.

Whatever the explanation may be, it does not directly concern us here. Regarding the course of events in the cage merely as a chance epidemic, the points already noted are evident again. The mice added in the early stages died. As the epidemic progressed a proportion of the newcomers survived. At a later stage, when deaths were still occurring in the cage, the risk of infection seemed to fall to a minimum, for almost all mice added at this stage survived.

#### EXPERIMENTAL EVIDENCE OF LOSS OF INFECTIVITY.

If we consider the results of these experiments one conclusion seems inevitable. Whatever part other factors may play, the cessation of the epidemic is actually due to the loss, on the part of the parasite, of the power to infect fresh individuals. It is impossible to conceive that in every experiment chance should have intervened by selecting especially resistant mice as the individuals to be added during the later stages.

Direct evidence on this point has been obtained in the following way. In the experiment recorded in Chart IV, there remained, at the time of the last death, six survivors. Twenty-three days later all these mice were alive and apparently in perfect health. On this day three normal mice were fed on a culture of the same strain of *B. Danyasz* as that employed in the original feeding and were transferred to the cage later in the day. Fifteen days later a fresh outbreak of infection occurred, which lasted for five days and led to the death of two of the three mice which had been fed and added to the cage and of three of the six survivors from the original epidemic. It seems clear, therefore, that the surviving mice were not immune against the risk of naturally occurring infection.

#### Cross-infection in regard to Epidemic Period.

The evidence of the loss of infectivity on the part of the parasite, during the later stages of the spread of a *B. Danyasz* infection among mice, finds support in certain observations on naturally occurring epidemics in man. In the paper already quoted Brownlee gives some striking figures regarding cross-infection in hospital wards from cases which were admitted for some other disease, but which were subsequently found to have been incubating measles. He has tabulated the number of such cases which did or did not lead to the infection of other patients in the ward, according as the incubating cases were admitted during the rise or decline of a measles epidemic or during an inter-epidemic period. Twenty-eight such cases were admitted during the ascent of the wave. In 24 of them cross-infection occurred. Four cases were admitted during the descent of the wave, and cross-infection occurred in two of the four. Nine cases were admitted during an inter-epidemic period, and six of these failed to give rise to cross-infection. The figures are small but highly suggestive.

It is clear that where it is possible to compare the curves of morbidity and mortality during a given epidemic the relation of these to each other will afford information bearing on this point. In certain cases where this has been done the crest of the morbidity curve has preceded, by a varying time-interval, the crest of the curve of mortality, and this is what we should expect from the considerations outlined above.

#### Virulence of Organisms.

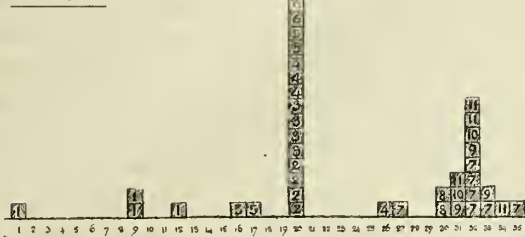
If we inquire the cause of this loss of infectivity on the part of the virus one factor may be at once eliminated. The parasite does not cease to be infective because it is no longer virulent.

Those strains of *B. Danyasz* isolated during the course of the earlier experiments, which showed the greatest divergence as regards their ability to infect via the alimentary canal,

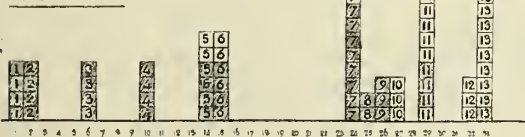


have been repeatedly tested as regards their virulence on intraperitoneal injection. The results have been remarkably uniform with the five strains tested. Intraperitoneal injection of 0.5 c.cm. and 0.25 c.cm. of a 24-hour broth culture has always been followed by death, usually within 24 hours. The majority of mice receiving 0.025 c.cm. have died within

MICE DIED.



MICE ADDED.



MICE SURVIVED.

MICE DIED.

CHART VII.—Showing course of epidemic, of unknown cause, occurring in a large cage to which normal mice were added at irregular intervals.

48 hours. Mice receiving 0.0025 c.cm. or 0.00025 c.cm. have usually succumbed after a more prolonged interval (4-10 days). Mice injected with 0.000025 c.cm. and 0.0000025 c.cm. have never shown any ill-effects.

Thus a strain which failed to cause the death of a single mouse within 25 days of being administered with the food, and finally led to the death of one of six mice fed, always caused death in four days when 0.00025 c.cm. of a 24-hour broth culture was inoculated intraperitoneally.

Control tests, made with killed broth cultures to allow for the element of toxicity, sometimes produced late death (5-10 days) when 0.5 c.cm. of a killed culture was injected. Smaller quantities produced no apparent effect.

The question as to whether the especially infective strains were also more than usually virulent cannot be answered satisfactorily from the results of these tests. In some cases the virulence tests were not carried out for some time after the isolation of the strain. Although there was still a definite difference in the effects produced by feeding at the time when the virulence of the strains was tested, yet it was not so marked as at the time of isolation. The fact which emerges clearly is that an almost completely non-infective strain—that is, one which produces no illness when taken with the food—may be fully virulent when inoculated into the peritoneal cavity.

#### Cause of Loss of Infectivity.

To what, then, are we to ascribe the loss of infectivity on the part of the parasite? It must clearly be due to some deficiency which hinders it in its passage from host to host. Its power for multiplication in the tissues in general is not lessened. It seems at least possible that it is the power for multiplication elsewhere that is at fault.

Danysz, as noted above, has suggested that increased virulence for the tissues resulting from passage by subcutaneous injection or in some other way results in a loss of virulence in the alimentary canal. It is probable that in the spread of bacterial infection the parasite actually passes through successive phases of biological activity. It must live and multiply under very varying conditions. In an infected host it is living as a true tissue-parasite. If it be transferred to the naso-pharynx or to the alimentary canal of a fresh individual of the host species, it must be able to accommodate itself to the new conditions. For in the absence of active multiplication it is highly unlikely that successful tissue invasion will be brought about. If the parasite is to be conveyed from host to host by a biting insect, then it must face the change in environment from the tissues and blood stream of the host to the alimentary canal of the insect carrier.

Indeed, it is probably the fact that during the spread of infection the parasite is subjected to a regular succession of environmental changes. Failure of accommodation at any stage may clearly prevent the infection of a fresh host. Now there is abundant evidence that adaptation to a new environment may be associated with a lessened ability to thrive under the old conditions. If the origin and rise of an epidemic wave do indeed depend on the factors which have been considered in the earlier part of these lectures, there seems to be an adequate reason for believing that continued variation of the parasite in the same direction would lead to the decline of the wave.

#### The Possible Course of the Process.

It was suggested that a saprophytic spread of the micro-organism concerned, associated with an increasing ability to multiply rapidly under the conditions locally existing, might form the earlier stages of the process. Reasons were given for believing that this increase in the rate of multiplication would itself tend to increase the probability of successful tissue-invasion and that successful transference to new hosts might lead to the natural selection of strains or varieties possessing increased powers of multiplication within the tissues—that is, increased virulence.

It would consort well with all our knowledge on such matters if a gradual increase in virulence were associated with a gradual loss of the ability to live under the earlier saprophytic conditions. We should thus have a loss of infectivity, unassociated with a loss of general virulence. The combination of biological attributes which the experimental results seem to require.

Whether or no bacterial parasites pass through developmental cycles, similar to those known to occur in other living organisms, is a question which has still to be answered. It would seem, however, that the essential phenomenon of an epidemic may be the progress of the virus through a cycle of selective variations which must be retraversed in each successive wave.

The accompanying diagram indicates roughly the possible course of such a process. The line indicating the variation in the rate of multiplication as a saprophyte must be taken to represent the degree of adaptation for life in the naso-pharynx or in the alimentary canal of the host or in the body of some insect carrier. It should almost certainly be represented not as one line but as a whole series of curves, corresponding to successive environmental changes. In the

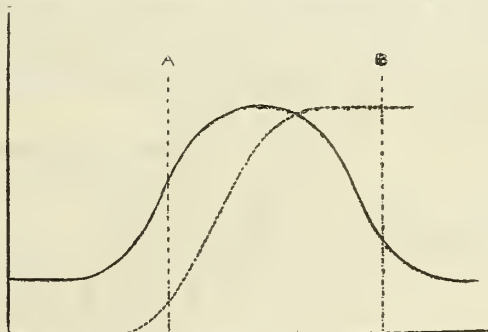


Diagram indicating possible explanation of the acquirement and loss by a bacterial virus of the property of infectivity during the course of an epidemic. The continuous line in the rate of growth as saprophyte and the broken line rate of growth as "tissue-parasite" (virulence). A-B, period of "infectivity" and duration of epidemic.

same way the curve indicating variation in the rate of multiplication in the tissues represents the degree of adaptation for life under these very different conditions.

The increase in the rate of saprophytic growth is followed after a time by a gradual increase in the rate of parasitic growth in the strains successively evolved; but at some point in the rise of the latter curve, the curve of true virulence, there commences an associated fall in the curve representing the potentiality of saprophytic existence. It is during the period in which both these curves are at an abnormally high level that the parasite possesses infectivity, and it is during this same period that the epidemic occurs.



It has already been noted that, in an outbreak of cerebrospinal fever, the carrier-rate begins to fall while the epidemic is at its height. Here, again, we have an indication of a loss of capacity for saprophytic growth in an increasingly virulent parasite preceding the decline of a wave of disease.

#### *Capacity of Bacterial Parasites for Variation.*

It might, perhaps, be supposed that the acceptance of such a view as this would involve the belief that any bacterial parasite, given the requisite environmental conditions, might give rise to epidemic disease. Neither clinical nor bacteriological experience would, however, lend any support to such a view. The constancy of the characteristic features of a given epidemic disease, when viewed as a whole, strongly indicates a uniform and specific virus. The results of countless attempts to increase the virulence of different bacteria have shown conclusively that while with some species this may be done with certainty, with others the most prolonged efforts in this direction have proved entirely fruitless.

It would seem that we are dealing with a more or less specific capacity for variation, analogous to the acquired capacity for bringing about certain fermentations, which has been studied by Penfold and others. As the result of certain environmental changes the bacterial parasite will vary in a particular direction, but the ability to react in this way must be regarded as something inherent in the organism itself.

#### THE SELECTIVE LOCALISATION OF BACTERIA.

Recent work on the selective localisation of bacterial parasites, and especially of members of the streptococcal group, has afforded evidence which has an important bearing on the point at issue.

Rosenow, in several communications, has dealt in detail with this matter. He has found that strains of streptococci, isolated from particular lesions in man, have tended to produce a high percentage of lesions in the same tissues or organs when inoculated intravenously into rabbits.

One example, which is of particular interest from the point of view of progressive adaptation to life in different tissues, may be referred to in more detail. Rosenow found that strains of streptococci isolated from cases of appendicitis, gastric ulcer, and cholecystitis resembled one another very closely in cultural and other ways. He found also that the general virulence was greater in strains isolated from gastric ulcer than in those isolated from appendicitis, and greater still in strains isolated from cholecystitis. The table shows the results he obtained by the intravenous inoculation of such strains at the time of isolation, after prolonged cultivation, and after passage.

Table showing Elective Localisation of Streptococci Obtained from Various Sources when First Isolated after Cultivation on Artificial Media and After Passage.

Nature of case from which streptococci were isolated.	No of strains examined.	No. of animals inoculated.	Percentage of animals showing lesions of—				
			Appendix.	Stomach and duodenum.		Gall-bladder.	Pancreas.
				Hæmorrhage.	Ulcer.		
Appendicitis—							
When isolated ...	14	63	63	7	1	1	0
Later ...	8	26	15	19	15	4	0
After passage ...	7	22	45	45	30	40	0
Ulcer of stomach—							
When isolated ...	13	103	3	60	60	20	3
Later ...	8	22	5	5	0	5	0
After passage ...	7	39	0	23	33	30	15
Cholecystitis—							
When isolated ...	12	41	0	39	15	80	5
Later ...	5	14	14	28	14	7	0
After passage ...	4	16	0	31	13	56	19

The above table is taken from the data given by Rosenow in a paper on "The Elective Localisation of Streptococci."

#### *Some Significant Facts.*

Several most significant facts can be observed. At the time of isolation the appendix strains seldom gave rise to lesions of the stomach or gall-bladder in the rabbits inocu-

lated with them. After passage they caused a considerable percentage of lesions of these organs among the rabbits inoculated, while there was a slight decrease in the percentage of appendicular lesions produced.

The strains obtained from cases of ulcer of the stomach or duodenum, when first isolated, produced a high percentage of lesions of these organs, but very few lesions of the appendix. The relative number of gall-bladder lesions produced was considerably higher than with recently isolated strains from appendicitis. After artificial cultivation, when some loss of general virulence might be expected to have occurred, the proportion of appendicular lesions produced by the gastric and duodenal strains was slightly raised, but the proportion of lesions of the stomach, duodenum, and gall-bladder was considerably lowered. After passage the percentage of lesions in the appendix, stomach, and duodenum was less than at the time of isolation, but the proportion of rabbits showing gall-bladder lesions was raised.

Similarly the strains isolated from cases of cholecystitis caused no appendicular lesions, but a considerable proportion of lesions of the stomach and duodenum and a very high percentage of lesions of the gall-bladder. Artificial cultivation resulted in a loss of the power of affecting the gall-bladder, but an increase in the tendency to localisation in the appendix. Passage resulted in little change so far as these three organs were concerned.

The production of lesions of the pancreas by these strains is particularly interesting. No appendicular strain affected this organ. Three per cent. of the rabbits inoculated with strains from the stomach and duodenum showed pancreatic lesions. After artificial cultivation none did so. After passage 15 per cent. of rabbits showed lesions in this organ. With the gall-bladder strains lesions of the pancreas were produced in 5 per cent. of the rabbits inoculated with the cultures when first isolated. After artificial cultivation this property seemed to be entirely lost. After passage the proportion of pancreatic lesions was raised to 19 per cent.

Clinical observation, indeed, yields abundant evidence of the tendency for certain organisms to produce lesions in definite tissues. Moreover, the changes in type of a given disease during the course of an epidemic, and in successive epidemic waves, strongly suggests progressive adaptation on the part of the parasite to life in different tissues.

#### RESISTANCE OF THE HOST.

Though reasons have been given for believing that the outstanding feature in the subsidence of an epidemic is a loss of infectivity by the bacterial virus, yet the resistance of the host cannot be a negligible factor. It will operate by decreasing the concentration of susceptible individuals, and hence the chances of successful transference. It may clearly play an important part in contributing as an environmental factor to the progressive variation of the parasite.

There is no sufficient evidence as yet to enable us to form an opinion as to the exact way in which this factor of immunity, or the opposite condition of sensitisation, may affect the whole process. Probably they play a most important part, but the fact remains that the virus itself is ultimately altered in such a way that it can no longer infect normal individuals of the host-species, and this must be regarded as the essential point.

Similarly, the factor of bacterial symbiosis is probably of the highest importance, but here, again, we must wait for more exact knowledge.

#### VARIATION OF PARASITE DURING AN INDIVIDUAL ATTACK AND DURING COURSE OF EPIDEMIC.

It is of considerable interest to compare the changes in the biological characteristics of the parasite during a single attack of disease with the variations which occur during the whole course of an epidemic. The results recorded by Danysz, and the confirmatory evidence obtained in the present experiments, make it clear that strains of the bacillus isolated during the earlier stages of the disease, or before death, are far more likely to be infective to other mice than strains isolated after death—a fact which may probably be interpreted in the same way as the loss of infectivity during the decline of an epidemic.

There is a very general consensus of opinion that many infectious diseases exhibit their maximum infectivity during the earlier stages of an attack. Conradi has attempted to trace the period of infection, as regards the stage of disease in the infecting case, in 85 contact cases of typhoid fever.



According to the figures he obtained it appeared that 49 of these 85 secondary cases were infected during the first week of the primary case, 16 during the second week, and 10 during the third.

Klinger analysed 812 contact cases in a similar manner. He arrived at the conclusion that 33 of these cases were infected during the first week of the incubation period of the primary case, which was taken to be 14 days, while 150 were infected during the second week of this period. Thus, 183 secondary cases were the result of infection during a period when the patients forming the primary cases were not obviously ill, but when they must have been excreting the specific organism. The figures for contact cases traceable to infection during the first four weeks of the infecting case were 187, 158, 116, and 59 respectively. Klinger's figures thus corroborate those given by Conradi, with the additional suggestion of the importance of the incubation period from this point of view.

A very recent communication by Thomson, relating to cross-infection in a hospital ward in the case of chicken-pox, records observations which suggest that the contact infectivity of this disease undergoes a marked decrease about the end of the first week of the eruption.

Here again, then, clinical and epidemiological evidence supports, and is supported by, that obtained along bacteriological lines. It would seem that the cycle of variation passed through by the parasite during an isolated attack of disease is very similar to that traversed by the same bacterial virus during an epidemic wave.

#### THE INTER-EPIDEMIC PERIOD.

If this conception of the epidemic spread of bacterial infection be the true one, it may be inquired whether it throws any light on the long epidemic-free intervals in some cases, and the periodicity of the outbreaks in others. The subject is far too large and too complex to be considered here in any but the briefest and most tentative way; but certain consequences would arise from such a process which seem to offer a possible explanation of some of the phenomena observed.

The process, viewed from the standpoint of the bacterium, has been conceived as a progressive variation in the direction of adaptation to increasingly parasitic conditions of life. But the virulent variety evolved, so well adapted for its parasitic rôle, will have become so ill suited to life outside the body, and especially to life under those special conditions which have to be faced on the way to successful infection of a new host, that it will gradually die out from mere inability to secure for itself those environmental conditions which are necessary for its continued propagation.

Thus, at the end of such a cycle we should be left with scattered centres in which the virus was still existing in some earlier phase, but in order to produce a fresh wave of disease the whole of the latter part of the cycle must be passed through afresh. Now it has been seen already that the essential condition for such a process is a sufficient concentration of susceptible individuals, a factor whose importance in initiating epidemics has been emphasised by many epidemiologists, such as Farr, Davidson, and Hamer. This condition will clearly not exist if the epidemic has been a large one, for a considerable proportion of the population will have had conferred upon them an increased degree of resistance.

The length of the inter-epidemic period will depend on many factors: the extent of the epidemic, and hence the relative number of the population possessing heightened resistance; the natural persistence of such acquired immunity, which we know to vary with different diseases; and such factors as age susceptibility, which may involve long periods of time before a sufficient concentration of susceptibles is obtained for the start of another cycle of variation.

One fact must be emphasised. A degree of immunity quite insufficient to protect against a highly infective virus—that is to say, against an attack of the disease during an epidemic period—may well be sufficient to hinder or prevent those earlier transferences which form an essential part of the process.

If the inter-epidemic period be a long one the centres of increased prevalence of the specific virus will certainly have diminished in number and extent, and it may need special environmental conditions, such as the increased over-

crowding and increased migration which war involves, to start the cycle again.

#### SECONDARY EPIDEMIC WAVES.

In a completely stationary population it would be difficult to fit the occurrence of secondary epidemic waves into such a conception as that here outlined. Under modern conditions, however, such stationary populations do not occur in big cities. If there be a steady influx of new individuals secondary waves are less difficult to account for. Fresh susceptibles arriving at the epidemic centre during the rise and crest of the wave will probably fall ready victims. As the wave subsides, however, these fresh arrivals will tend to escape, and they will be so diluted by the immune population that they will not form a soil suitably distributed for the start of a fresh cycle.

We may suppose that there will be a gradual reaccumulation of a susceptible population; but although this may reach a sufficient density to allow of the propagation of a second wave of disease, yet it will probably never equal that initially existing. Hence the rise of the wave will probably be less steep and sudden, and the crest flatter, than in the primary wave. These features actually occur, as has been pointed out by Greenwood and others, in the case of influenza.

#### *Influenza.*

In the case of this disease, at least, there is a definite increase in mortality during the secondary wave. It is possible that one factor contributing to this is the presence, scattered among the community, of strains of the virus which already possess in some degree those attributes which go to make up infectivity. If the new cycle of variation were to progress from this relatively advanced phase, and the spread of infection were to radiate from many scattered centres, it would seem probable that an unusually large proportion of highly virulent strains would make their appearance before the final phase was reached and before the loss of infectivity caused the subsidence of the wave.

The interval between the primary and secondary waves, and, indeed, the very occurrence of the latter, will depend on the rate of the influx of the fresh population—that is, largely on the ease of transit and the circumstances which may render migration abnormally great or small. There seems here a possible explanation of the variation observed in successive epidemics of influenza.

The solitary epidemic of 1847-48, the period 1889-94, with its four waves separated by relatively long intervals of time, and the present visitation, with the rapid sequence of primary and secondary waves, followed after another short interval by a third, correspond with the increase in the ease and rapidity of transit which has occurred during the same period, and hence with the rapidity with which a relatively susceptible population will tend to reaccumulate in an affected district. During the past months there have been many additional factors tending to an enormous increase in migration, leading to the same result.

#### THE CARRIER PROBLEM.

Assuming that the epidemic spread of bacterial infection follows the lines indicated above, we may inquire how far it may affect our conception of the rôle of the human carrier.

#### *Temporary Carriers.*

Carriers, as we have seen, may be divided into two fairly well-defined classes, according as they carry the specific organism concerned over short or prolonged periods. The latter type of carrier is in a very small minority and often exhibits peculiarities which appear to predispose to the carrier state.

The temporary carriers may again be subdivided according as they have or have not recently passed through an attack of the disease in question. Of these two varieties of temporary carriers we should seem to be justified in paying relatively slight regard to those individuals who have recently recovered from an attack, so far at least as they may be supposed to constitute important sources of immediate infection. Experimental and clinical evidence indicates that in such late stages of the disease the infectivity of the virus is at a minimum. The danger of these temporary carriers lies rather in the possibility that they may develop into the chronic variety.

Temporary carriers who have not passed through a recent attack would have to be regarded as manifestations of a general biological process leading up to an outbreak of disease.



Experience does not support any expectation that it would be possible to eliminate such carriers from the general population during the pre-epidemic stage by any method which would be practicable from an administrative point of view, save, perhaps, under special local conditions. The discovery of a rise in the carrier-rate of such an organism as the Meningococcus may, however, constitute a most useful warning of the imminence of an epidemic, and lead to the putting into force of those preventive measures whose efficacy has been proved.

#### *Chronic Carriers.*

The chronic carrier is a far more difficult problem. His importance as a possible centre for the spread of fresh infection has been abundantly demonstrated, in the case of typhoid fever at least. Whatever attempt may be made to minimise the part played by certain notorious carriers, it is difficult to believe that impartial judgment can give any other verdict on the whole facts. The case of "Typhoid Mary," of American fame, may leave room for doubt; but there are so many classical instances, including such convincing cases as that of the Folkestone milker, that the potential infectivity of carriers of this kind would seem to be clearly demonstrated.

There are two ways in which we might hope to prevent the harmful activities of such individuals. By rigorous bacteriological examination it might be possible to detect those persons who continue to carry the specific organism from the actual attack onwards. Such a scheme, however, presents difficulties so formidable as to exclude its actual enforcement. The control which it would be necessary to exercise over the movements of convalescent patients would hardly be submitted to. The possibilities of evasion by presenting false specimens for examination would be infinite in many cases. Moreover, the marked intermittency of the excretion of the specific organism suggests that no measure of control, short of repeated bacteriological examination lasting over many years, would avail to eliminate all these unfortunate individuals.

Our knowledge of the infectivity of the chronic carrier may, however, be utilised in another way, which offers far greater hope of useful results. If the possibility of this source of infection be constantly kept in mind in investigating epidemics of disease, then we may sometimes trace the trouble to its source, and by controlling the movements of the carrier prevent further infections occurring. The possibility of the control of the movements and activities of a proved chronic carrier is, of course, a purely legislative and administrative problem.

Consideration of the famous typhoid carriers strongly suggests that their occupation is a matter of primary importance. Nearly all have been in some way directly concerned in the handling of food and drink. Limitation in the direction of preventing them engaging in work of this kind would probably reduce their potential infectivity to a minimum.

Another fact seems worthy of notice. The chronic typhoid carrier does not seem, in most cases, to form the starting point of an epidemic spread of infection in the sense considered above. He seems rather to pass on to his victims, through the medium of food or drink, fully infective bacilli. Moreover, his activities in this direction are strikingly intermittent. It seems possible that the bacilli which he is harbouring in his alimentary canal or elsewhere are of a low degree of infectivity, but that at intervals some environmental change leads to variation in the direction of an increase of this attribute, and that it is under these circumstances that infection of other individuals occurs.

The experimental and the clinical results recorded, and especially those obtained by Rosenow, would suggest that it is not only in the spread of infection from case to case, but in the progressive involvement of different tissues in the same patient that variation in the biological activities of the parasite may form an essential factor. The progressive involvement of tissues in such a disease as tuberculosis might be largely explained on such a view.

#### THE POSSIBLE PREVENTION OF EPIDEMIC SPREAD OF INFECTION.

If only we had the requisite knowledge as regards the causative organisms of the more important infective diseases, and could establish a systematic survey of the bacterial flora of representative samples of the population, it would seem

that we might obtain warning of the approach of an epidemic during the early stages of the process and before the actual commencement of the wave of disease. If this were possible there seems some ground for hope that something could be done to check the process in its earlier stages. In normal times, when considerations of public health are not overruled by still more urgent necessities, it should not be impossible so to alter the environmental conditions that serious obstacles would be placed in the way of the continued variation of the virus.

Information is needed on many points. The normal bacteriology of such an important locality as the nasopharynx is not known with any exactitude. Modern serological methods have placed at our disposal an instrument for the more exact differentiation of bacterial types which should prove of the greatest service in any such inquiry. If any work along such lines as these is to bear fruitful results, uniformity of technique among the observers engaged upon it is an essential factor. The work already carried out by the Medical Research Committee gives good ground for the belief that much that has proved impossible in the past will be attainable in the future.

The factors which tend to render the host-species more susceptible to attack, and especially the effect of such relatively simple matters as differences in temperature, atmospheric moisture, &c., are still very imperfectly understood. The observations of Leonard Hill offer an example of the valuable information which may be obtained by work along these lines.

The success of prophylactic inoculation in preventing the spread of epidemic infection has been amply demonstrated in certain diseases. Experience would suggest that it is in the prevention rather than in the treatment of disease that bacterial vaccines will find their permanent place. It seems possible that they may act largely by decreasing that concentration of susceptible individuals which is an essential factor during the earlier stages of the spread of infection. As pointed out above, a degree of resistance quite ineffective against a highly infective parasite might be of decisive importance at this stage.

Although the facts recorded above, when considered as a whole, would appear to be most satisfactorily explained along the lines indicated, the problem must be finally solved in the light of further evidence accumulated from all possible sources. It is only by the combined efforts of all workers in this field of biology that we are likely to acquire that knowledge which is so important for the prevention of disease.

The inquiry can clearly be extended on the experimental side. Further work along these and similar lines is being carried out in my own laboratory. There seems no reason why many of the conclusions arrived at through biometrical investigations should not be tested by experiments of this kind.

I should wish to record my indebtedness to Dr. Arkwright for supplying me with cultures and sera; and to Dr. Leiper and Professor Blackman for the benefit of their opinion on certain points. I am also indebted to Dr. S. G. Platts for much assistance during the earlier part of these investigations, and very especially to Mrs. Phyllis Worthington and to Dr. M. A. Omar for their constant help during many months.

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**CORNWALL MEDICAL CHARITIES.**—At the recent meeting of the Committee of the King Edward VII. Memorial Fund (Cornwall), which was held at Truro, the sum of £170 was allocated to various Cornish medical institutions.

**SOMERSET COUNTY COUNCIL AND TUBERCULOSIS.**—The Tuberculosis Subcommittee of the Somerset County Council recommended the purchase of 135 acres of land at Lincombe Hill, near Weston-super-Mare, for the provision of a permanent tuberculosis sanatorium, and this has been adopted by the council. The price of the land was £3250.



## CEREBRO-SPINAL FEVER.

REMARKS ON ITS EPIDEMIOLOGY, PREVENTION, AND CLINICAL FEATURES.

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LIEUTENANT COLONEL, R.A.M.C.

THIS article is written to bring forward for criticism and inquiry a somewhat new aspect of the epidemiology and prevention and clinical features of cerebro-spinal fever. It is based on the investigation, by the writer and other officers, of an epidemic at a large X Garrison in March, 1916. A full report was submitted at the time to Surgeon-Colonel R. J. Reece, C.B., who with Lieutenant-Colonel M. H. Gordon, C.M.G., has controlled the investigation and preventive measures regarding this disease in the United Kingdom for the past four years. Further confirmatory facts have since been brought to the notice of these officers in official reports, letters, and verbal discussions.

The revised system of prophylaxis for 1918<sup>1</sup> has recently reached the writer in Mesopotamia. It is noted that the principal recommendations embody, without comment, the lines of prevention which were urged in the report of 1916, and which had been repeatedly pleaded for during the intervening two years.

*Circumstances in which the Investigation was Carried Out.*

The writer was employed in March, 1916, in coördinating the investigation and prevention of a large epidemic at X Garrison, having been detailed by the War Office, on the request of Colonel Reece for the services of a regular R.A.M.C. officer with special military sanitary experience. Further investigation was afterwards carried out at certain other stations, and in April, 1917, the writer had the advantage of further study at the Central Cerebro-spinal Fever Laboratory, whilst doing duty there for a short time.

The following officers were associated with the writer at X Garrison, Professor C. Samut, Temporary Captain, R.A.M.C., assisted by Captain Walter Scott, was responsible for the bacteriological investigation of the patients. His report at the time contained much that was original and interesting, and much of it has since been confirmed by other workers. Captains R. R. Armstrong and Napier were detached from the Central Cerebro-spinal Fever Laboratory. Their work was in connexion with the search for carriers. At the end of the epidemic Captain W. J. Tulloch continued their work on the carriers then in isolation. He was also detailed by Colonel Gordon from the Central Laboratory staff. Captains S. Trevor Davies and E. G. Pringle were specially selected to undertake the clinical charge of patients, and in their reports had given full details of the clinical aspects of the disease, with particular reference to atypical and irregular cases.

The report presented by the writer at the close of the epidemic included reports on the special subjects dealt with by the other officers. It is regretted that it was not possible to publish the full report at that time or later. Permission was obtained to publish an article in June, 1917, written on the same lines, but a hurried departure on active service left the arrangements incomplete. This is now written in mid-summer in Mesopotamia, under the disadvantage that the deductions of the 1918 season are unknown to the writer. Yet it is confidently believed that the views expressed in 1916 as a result of well-considered evidence, will be confirmed, rather than refuted, by the experience of yet another year.

The conclusions of the 1916 report were as follows:— I. The prevalence of atypical and unrecognised forms of cerebro-spinal fever. II. The prime importance of these atypical forms in the spread of the disease. III. There is no evidence at X Garrison to show that carriers convey active infection. The statistics as to carriers are conflicting and inconclusive, and their isolation is impracticable, irrational, and unjustifiable. IV. The infection in cerebro-spinal fever is not to be feared under good conditions of housing and ventilation. The early isolation of mild and severe cases, and the provision of free ventilation, compulsorily, and with sufficient warmth, during the time of seasonal prevalence, constitute the most effective means of prevention.

<sup>1</sup> R.A.M.C. Journal, January, 1918.*I. The Prevalence of Atypical and Usually Unrecognised Forms of Cerebro-spinal Fever.*

At an early stage of the epidemic attention became directed to the close relationship between patients definitely diagnosed cerebro-spinal fever and certain other patients suffering from indefinite febrile symptoms. The difference between the two forms of illness is in the degree and intensity rather than in the fundamental characters of the symptoms. As a rule, the symptoms of the indefinite illness were comparatively mild and commonplace, and such as, to an ordinary observer when taken individually and in the absence of an epidemic, would not necessarily suggest meningitis. Intense headache, more or less pain and stiffness of back and neck, vomiting, and insomnia were always complained of. The patient was apathetic and drowsy; he answered questions, but rarely enlarged on his symptoms, and evidently preferred to be left quiet and alone. On closer examination Kernig's sign was more or less positive; attempts to move the neck caused distinct pain, the pulse was slow, and other signs were often to be found denoting cerebral irritation. After a few days' fever the symptoms usually subsided, the patient was left prostrate, and convalescence was slow. Relapses were liable to occur, which sometimes assumed the characteristic form of cerebro-spinal fever.

At times an acute and fatal illness was associated with the proved cases, the symptoms of which were more or less obscure when critically examined. Such patients were often brought to hospital in a drowsy or delirious condition. A very acute and oedematous form of bronchitis or bronchopneumonia often quickly supervened, and death occurred rapidly with signs of septic intoxication. Various symptomatic diagnoses were made of such cases, and the cause of death was variously given—influenza, bronchitis, bronchopneumonia, asthma, pneumonia, being the most common diseases registered.

It was decided, therefore, to test such obscure cases found in association with the genuine disease. Meningococci were found in the spinal fluids of many patients whose symptoms would not have ordinarily suggested meningitis. We had reasons, moreover, for believing that many of our negative results were due to the failure of modern technique to demonstrate the meningococcus.

Suspicion was at first aroused as to a relationship between the above types of illness, not only by the similarity of the symptoms, but also by the manner in which they were found associated in billets, tents, barrack rooms, and regiments. It is impossible to give details of the numerous instances investigated by the writer where the evidence definitely pointed to the conclusion that both conditions were but variations of a single disease.

Convenient illustrations of atypical and unrecognised cases are, however, given on p. 58 of the Medical Research Committee's Report, Series 3. Captain M. Flack, of the Central Cerebro-spinal Fever Laboratory, has, however, mentioned them here as his examples of infection by carriers. This point will be discussed later.

*Some Circumstantial Evidence.*

In the first family the father, a soldier, was definitely ill, with headache and pain in the back, on his arrival home on leave. Two days afterwards one of his children was taken to a general hospital with symptoms of cerebro-spinal fever. Next day another child was taken to an isolation hospital and died of cerebro-spinal fever. The first child was discharged from the general hospital in a few days, the symptoms having aborted, being brought home by an elder sister on a Thursday. The latter died of fulminating cerebro-spinal fever which developed on the Sunday following, she having evidently been infected by the unrecognised disease in the younger member of the family.

In the second family a child was taken ill and died next day of cerebro-spinal fever. Three other children were taken ill with fever. One of them who had no marked meningitic symptoms, and in whom the blood and spinal fluid were apparently sterile, yet was subsequently accidentally found to have suffered from cerebro-spinal fever by the finding of the meningococcus in the fluid of a swollen knee-joint. The diagnosis of the other two children is, however, not given. All three are known to have been treated in the isolation hospital.

The following story was told to the writer by a soldier who came to be swabbed at the Central Cerebro-spinal Fever



Laboratory. He recently had suffered from a severe attack of so-called influenza whilst with his regiment. He was, however, only detained in hospital for three days and then got week-end leave home. He described his illness as being very severe and as "absolutely flattening him out." He suffered from headache, backache, and vomiting. Three days after his arrival home, his child developed cerebro-spinal fever, and on the following day his wife took very ill with influenza. He believed he caused her illness, her symptoms being very much the same as his own, although she was confined to bed for 14 days, attended by a doctor. His unit was infected with cerebro-spinal fever; there were no others in the family and they had little outside communication with other persons, and he proved not to be a carrier.

#### Statistical Data.

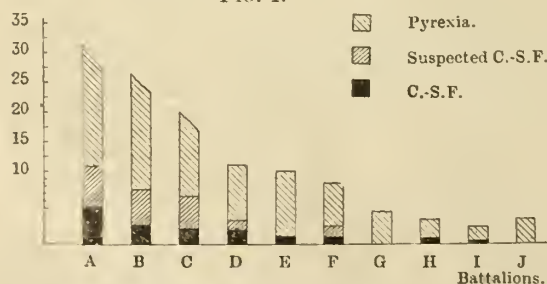
Instead of further repetition of suchlike circumstantial evidence, which came to our notice at X and other garrisons, it is proposed to argue the relationship, from statistics and facts showing the proportionate incidence of cerebro-spinal fever and possibly unrecognised forms of the same disease, in various units and stations. These statistics show that in connexion with each outbreak there is a coincident and proportionate outburst of cases of pyrexia of uncertain origin, the symptoms of which are compatible with those found in cerebro-spinal fever.

In O Block barrack building at X Garrison there were nine diagnosed cases of cerebro-spinal fever (three fatal) in March, 1916. About 120 men occupied the six rooms and comprised a half company. In addition, there were 18 other men admitted to hospital during the month suffering from febrile symptoms. Three of these also died, four others were punctured, having definite meningitic symptoms. Three others were mentioned as having been swabbed as a preliminary to puncture, and in fact, in the light of after knowledge, they all might have been cases of cerebro-spinal fever. There were 13 cases of cerebro-spinal fever in this battalion as compared with nine in this half company, and the latter's admissions for indefinite pyrexias were likewise disproportionate to the admissions for such illness for the rest of the battalion.

The writer had an opportunity of studying an outbreak which had just concluded at H Garrison in 1916. Twenty cases had been recorded. The question whether there had been unrecognised cases was the special subject of inquiry at this station. The medical officers reported a very severe outbreak of influenzal illness, chiefly localised in certain units. Many obscure deaths had occurred. The nursing sisters' report books at the Central Hospital were examined by the writer, and in this way a fairly accurate clinical picture was obtained of the symptoms of the patients. Case-sheets were available in certain cases. The names of 40 persons were thus selected as being possibly cases of cerebro-spinal fever, the symptoms being more or less suggestive.

When the names were afterwards allocated to their units the result was remarkable, and is given below in graphic form. (Fig. 1.) It shows that the units chiefly infected

FIG. 1.



with cerebro-spinal fever were infected proportionately with an illness, the symptoms of which were in close accord with the symptoms of the definite disease. Certain units were free from both forms of illness. The 40 names were selected as most suspicious from amongst the names of some hundreds of admissions during the same period. The chief symptoms which influenced the selection of these names were—severity of headache, backache, rigidity, vomiting, and delirium.

The rapid death of an otherwise healthy soldier, without definite cause, was in itself a sufficient reason for suspicion in certain fatal cases. In others, the prolongation and irregularity of the fever, with relapses and slow convalescence, seemed more in accordance with the signs of meningococcal infection than with any other definite known disease. In many of these the possibility of cerebro-spinal fever was mentioned, and sometimes lumbar puncture was performed with negative results.

From the proportionate incidence of proved cases of cerebro-spinal fever and probable and possible cases, the inference is justified that at this station the disease was more widespread than indicated by the reported cases.

At D Garrison there were 21 cases with 10 deaths. Twelve of the cases occurred in one battalion, the strength of which was one-ninth part of the strength of the whole garrison. All the cases occurred between March 15th and April 6th. The infection was imported by a draft which arrived on March 10th. In addition to the 12 cases of cerebro-spinal fever in this unit, there were 12 other persons who died from various febrile conditions amongst patients admitted during the above infective period, the symptoms again being compatible with cerebro-spinal fever. The remaining eight-ninths of the garrison had only four such deaths from febrile diseases. This extraordinarily high death rate in this battalion during the infective period is most remarkable, especially as the unit was at other times healthy, and for the periods of six weeks before and after this period it had only 1 febrile death out of 24 for the rest of the garrison. Again, there were 18 patients punctured at this station with negative results; of these, 12 belonged to the highly infected battalion, and 4 of these 12 died.

It seems undoubted, therefore, that in this battalion many persons died of cerebro-spinal fever in addition to those returned as such, and that many of those suspected cases which were punctured but which failed to receive bacteriological confirmation were in reality suffering from the disease.

At X Depot there were 20 cases, variously distributed amongst four out of the five regiments stationed there. The medical officer in charge informed the writer that there were large numbers suffering from a severe type of influenzal disease in the hospital about the same time, many of which had symptoms which approximated to those of cerebro-spinal fever. He kindly collected for me the numbers of such patients admitted per 1000 of strength. This, with the case-incidence, is given below for each regiment, and it is noticed that they are in correspondence. (The carrier percentage is, however, in the reverse ratio of the cases.)

Units	A	B	C	D	E
Cases C.S.F.	7	7	4	2	0
Uncertain pyrexia per 1000	117	92	42	28	20
Carrier percentage	22	30	24	42	35

#### Causes of Non-recognition of Cases.

Many cases of cerebro-spinal fever escape recognition because: (a) they are not suspected clinically; (b) they fail to be tested by lumbar puncture; (c) modern bacteriological methods frequently fail to demonstrate meningococci, particularly in early and irregular cases.

(a) Many cases are not suspected clinically, as mentioned, when taken individually, and in the absence of an epidemic. The laboratory at X Garrison dealt with a large area of country, in addition to the garrison, which was under our immediate observation. All the patients whom we investigated were either of the acute fulminating type or else had been ill for several days or weeks before the possibility of cerebro-spinal fever arose. Whilst working at the Central Laboratory in May, 1917, the writer visited with Captain Glover seven definitely proved cases of cerebro-spinal fever. Four of these had been for long periods under observation in well-known London hospitals before an appeal was made to the Central Laboratory. Two of them had been invalided from France as unrecognised cases.

(b) Many suspected cases fail to be tested by lumbar puncture. Often facilities for puncture are not immediately available. Lumbar puncture is regarded by many as a serious operation, and as such is only performed when the symptoms are most definite and persistent. It often happens that symptoms, which are at first characteristic, subside rapidly, and before time has been found to perform lumbar puncture the whole clinical picture has altered and puncture is not performed.



Numerous instances occurred at the stations investigated by the writer, where it was mentioned in the notes of the irregular type of patients that the question of performing lumbar puncture was considered, but for one reason or another it was not performed. The failure to puncture must occur much more frequently in civil practice and in sporadic cases, where each patient is not under particular observation.

It may be here mentioned that at X Garrison in 1916 and 1917 there were 1000 lumbar punctures performed by Captains Trevor Davies, Pringle, and Scott. There were no untoward results. The benefit to the patient from lumbar puncture alone is undoubted. No definite opinion was formed as to the benefit or otherwise of serum. A group of patients, to whom no serum was given, did equally well with those to whom it had been given. There appeared to be no definite and regular reactionary improvement, such as one should expect after a specific serum. All varieties, as supplied by Colonel Gordon, were tried. The more the existence of mild and abortive types of the disease is recognised the less will be the tendency necessarily to attribute beneficial results to the serum administered.

#### *Bacteriological Diagnosis.*

(c) *Many cases fail to receive a true diagnosis owing to the frequent failure of modern bacteriological technique.* In all the diagnosed cases (150) at X Garrison in 1916 a Gram-negative intracellular diplococcus was seen in the spinal fluid. In more than half of the cases it was grown in culture and agglutinated. Twenty-one cultures were submitted to Colonel Gordon at the Central Laboratory and he agglutinated 18 of these to his types, 3 others being contaminated. The following table gives the numbers of examinations made of spinal fluids throughout the epidemic at X Garrison and also the results:—

—	No. examined.	No. negative.	Per-centage negative.	—	No. examined.	No. negative.	Per-centage negative.
Week ending—				Week ending—			
March 11 ...	19	1	5	April 15 ...	26	9	34
„ 18 ...	25	2	8	„ 22 ...	13	9	69
„ 25 ...	11	1	9	„ 29 ...	23	12	52
April 1 ...	23	3	13	May 6 ...	8	4	50
„ 8 ...	24	7	29	Total ...	172	48	27%

The special study of atypical cases began early in April. It caused an increase in the negative results. During the last three weeks the percentage of negative returns increased greatly. During this last period a positive bacteriological result was only recorded when the organism was grown on culture. This was in accordance with instructions received from Colonel Gordon. There was no doubt that during this period many of these cases, returned as negative, were actually suffering from cerebro-spinal fever. The symptoms in many cases were open to no doubt, and one intracellular organism, identical with the meningococcus, was seen in the spinal fluid.

Captain Samut, in his report of 1916, had shown the increasing difficulty of demonstrating meningococci in the fluid from early and milder cases where the fluid is clear. The difficulty of obtaining a culture increases under like conditions. Sometimes, however, an abundant growth was obtained on culture of fluids in which the meningococcus could not be seen, and, on the other hand, a purulent fluid, in which meningococci could be seen in abundance, sometimes failed to give a growth.

At X Garrison at this time we were making a study of irregular types at the earliest possible moment after the onset of symptoms, and a large number of negative results were to be expected, and were it not for Captain Samut's painstaking researches it is believed our negative results would have been still higher.

It was sometimes found that patients suffering from meningitic symptoms gave an apparently sterile fluid on first puncture, yet on repeating the operation at a later date meningococci were abundantly present. Captain Scott in 1917 showed the writer a patient at X Garrison; clinically, the symptoms left the diagnosis in no doubt, yet it was not until the fourth puncture that meningococci could be found.

It would appear, therefore, that neither the failure to find organisms on direct examination, nor a negative cultural result, can be relied upon to exclude a diagnosis of cerebro-spinal fever. In the second family mentioned above a child whose blood and spinal fluid were both (apparently) sterile was afterwards diagnosed by finding the meningococcus in a synovial fluid.

Other writers have noticed the weak points of bacteriology in the diagnosis of this disease. Worster-Drought<sup>2</sup> said that "bacteriological results are apt to be misleading, if relied upon, as clinical symptoms are often well advanced before organisms can be either seen or grown." Gaskell found fluids sterile at one puncture and positive at the next, and 6 out of 25 clinically definite cases failed to show the meningococcus. In the R.N. Reports of 1915-16, it is stated that "at Shotley, there were 11 cases bacteriologically diagnosed, and there were 11 others in which lumbar puncture was performed with negative results. Some of the latter suffered from severe and persistent headache at the time, and in some, paralysis and mental derangement followed."

#### *II. The Prime Importance of Unrecognised Cases in the Spread of the Infection.*

It would appear that indefinite cases, which often pass unrecognised, are in reality the more numerous, and that comparatively few progress to the stage where the symptoms are unmistakable. The indefinite cases are usually found associated with others of the usually accepted types, and between the two extremes are intermediates of all stages of severity.

The apparently sporadic occurrence of the majority of cases of this disease has often been commented upon. Two or more adult patients are not often found, associated in infection, and possessing all the classical signs of cerebro-spinal fever. Yet in our experience at X and other stations, it has nearly always been possible to trace a connexion between such definite cases, and others who have suffered from a form of pyrexia of uncertain origin. This connexion is chiefly noticed where the conditions as to housing and ventilation are unsatisfactory. In children, however, it is far from uncommon to find one or more unequivocal cases amongst the other children exposed to the infection. This frequency of multiple infection in children may be explained by the intense susceptibility of those of tender age to reflex irritation of the central nervous system, so that even a slight disturbance more often provokes in them characteristic cerebral phenomena, and cerebro-spinal fever is generally recognised as a disease of childhood. The meningeal scream and convulsion of a child cannot but suggest meningitis, whereas the headache, backache, fever, and vomiting of an adult may frequently fail to do so.

The diagnosis of cerebro-spinal fever is therefore probably more frequently and accurately made in children, and this largely serves to explain the greater infectivity and the higher incidence of the disease as reported amongst them. In adults, on the other hand, the variability of the symptoms frequently tends to the non-recognition of many cases and to the consequent failure in tracing the infective connexion between different forms of the same disease.

#### *Variation in Resulting Infection.*

The effects produced by a given dose of meningococci depends on the susceptibility of the patient rather than on the virulence of the organism, because the infection received from an acutely severe case may result only in a mild and indefinite illness in the person next infected, and, on the other hand, a patient with a mild illness may reproduce a most virulent infection in another.

This mutation in the type of resulting infection is well illustrated in the two families already mentioned. In the first family the first child, whose symptoms were so mild that the disease was unrecognised, infected its eldest sister with fulminating cerebro-spinal fever. In the second family an acutely fatal disease resulted in three other children being variously attacked, one of whom was proved to be suffering from cerebro-spinal fever, although it had no marked meningitic symptoms, and the cerebro-spinal fluid was apparently sterile and uninvolved.

Though as a rule the onset of cerebro-spinal fever is sudden and definite, yet a considerable number of patients develop the disease insidiously. A close study was made of the

<sup>2</sup> Brit. Med. Jour., Nov. 18th, 1916.



interval between onset of symptoms and admission to hospital in 45 consecutive cases at X Garrison; it was found to average 50 hours. During this time they were treated as extern patients, and must have constituted a virulent focus of infection to their comrades in barracks. The fact that unrecognised and irregular types tend to be more insidious in their onset than the definite and fulminating forms causes the former to be a much greater danger than the latter in the spread of the disease.

As already stated, the possibility of irregular and unrecognised forms of cerebro-spinal fever was first suspected by the writer by the undoubted association between proved cases and certain other febrile conditions, which differed in the intensity rather than in the essential characters of the symptoms. Very many individual instances could be given of a similar nature to the three families mentioned above. The evidence in these cases, though circumstantial, yet was so often repeated, and of such a conclusive nature when investigated on the spot, that it perforce led to no other conclusion than that such variation of symptoms as existed were due to the susceptibility of the patient and not to any difference in the common infecting organism.

Again, the simultaneous outbreaks of vague febrile diseases occurring in constant connexion with epidemics of cerebro-spinal fever, and the exactly proportionate incidence of both illnesses in various units and garrisons, as pointed out above, cannot be due to the chance incidence of two separate outbreaks in all of the units concerned, and the inference is again more than justified that a single organism is responsible for both types of illnesses.

The occurrence of these indefinite febrile outbreaks has been constantly noted by all observers. Dr. W. H. Hamer, medical officer of health of the London County Council, has given most interesting evidence of the association between them and epidemics of cerebro-spinal fever. In the Royal Naval Reports for 1914-16 the frequency with which unrecognised or aborted cases occurred amongst contacts of actual cases is discussed. Dr. Bruce Low, commenting on an outbreak at Northampton several years ago, wrote as follows:—

"There were also in this instance, coincidently with the 30 unequivocal cases, several others of an anomalous sort, mostly amongst persons who had been in contact with one or other of the patients who had been seriously ill; these cases resembled influenza and all recovered. .... This is the more interesting from the fact that the serious cases and those with only influenza-like symptoms occurred side by side."

### III. Carriers.

*There is no evidence at X Garrison to show that carriers convey active infection. The statistics as to carriers are conflicting and inconclusive. Their isolation is impracticable and unjustifiable.*

At X Garrison 520 carriers were isolated for varying periods up to four months. 187 carriers had been detected amongst the contacts of cases and 333 from the general body of troops examined when leaving the station on active service or otherwise. Captains Armstrong and Napier had isolated most of these on the result of morphological appearances because time did not permit of serological tests of the greater number of swabs. At the close of the epidemic Captain W. J. Tulloch was deputed by Colonel Gordon to complete the examination of the 324 men then remaining in isolation. This officer found that 103 of these were not infected with an agglutinable organism, consequently, as Colonel Gordon mentions, "persons harbouring such non-agglutinable meningococci should not be regarded as, or treated as, carriers of the organism."

Of the original 520 persons in isolation there were therefore at least 150 men who were not carriers at all. If carriers are capable of carrying infection it seems extra-

ordinary that each of these soldiers escaped infection when surrounded by 400 virulent carriers. They lived together for weeks and months in the hospital enclosure under somewhat unsatisfactory conditions.

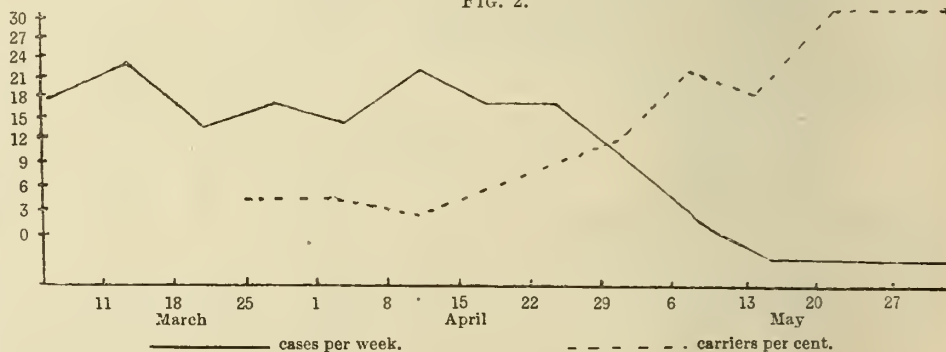
Neither did any of the 400 active carriers develop the disease, nor any of the 504 known carriers isolated by the Central Cerebro-spinal Fever Laboratory as a result of the swabbing at X Dépôt in the following year. Colonel Gordon says, "Only occasionally does the meningococcus succeed in passing the barrier of the mucous membrane of the naso-pharynx and penetrating to the meninges." Surely it ought to have succeeded in some of these 1000 men.

It is well known that carriers practically never develop the disease. So much so that it has been suggested that they acquire an immunity. This is negated at X Garrison, because one known carrier contracted the disease whilst employed as a nurse in the cerebro-spinal wards. He lived apart, and evidently got infected from his patients. Another ex-carrier got the disease three weeks after his discharge from the isolation camp, after three negative swabs. Of course, immunity does not explain why none of the 150 false carriers failed to become infected.

### The Carrier Hypothesis.

At X Garrison 14,000 men were examined to find the carriers as above. About 200 per day were tested. These numbers constitute a record for an epidemic, and they are

FIG. 2.



sufficiently large to give a fair index of the daily carrier-rate throughout the course of the epidemic. As seen from the chart (Fig. 2), the carrier-rate at the period of maximum incidence was low, but as the cases ceased to occur the percentage rose to a high figure (33 per cent.). These figures show that a low carrier index may coincide with a high case incidence, and vice versa, and might be taken to indicate that cases produce carriers, but not carriers cases.

The principal argument in favour of the carrier hypothesis has been the frequent discovery of a carrier amongst the contacts after the diagnosis of a case. The above-mentioned two families are the two instances of "evidence" of infection of cases by carriers as brought forward by Captain Flack. In the first family the father had been definitely ill on arrival home, and his children took ill two and three days after his arrival, and in the other family the father had been 10 days at home before his four children took ill, which would seem to indicate that the latter was in no way concerned with the infection of his children. Both of the fathers were found to be carriers after the illness. In the third family mentioned by the writer the father apparently infected his child with cerebro-spinal fever and wife with "influenza," but in his case he was not a carrier.

Carriers are found in all communities in larger or smaller numbers. In order to establish a case in favour of the carrier having caused the case, it is necessary to prove that the carrier, found as a contact, is actively pathogenic and different from the numerous other carriers universally present, or, that the proportion of carriers found amongst non-contacts is comparatively small compared with the numbers found amongst actual contacts of the patients. No one has, however, attempted to show a difference between pathogenic and non-pathogenic carriers. Neither have any statistics been produced to show a difference in the percentage of carriers among contacts and non-contact carrier groups.



*Some Statistics in regard to Carriers.*

At X Dépôt, which has been the test station for the officers of the Central Cerebro-spinal Fever Laboratory, it was shown that no more carriers are to be expected amongst contacts than amongst those persons in no way connected with the patients—there being 34 per cent. in each case at this station. At X Garrison our own experience was the same, there being the same number of carriers amongst the population generally as there were amongst those persons in close contact with the patient.

Whilst working at the Central Laboratory in 1917 Captain Tulloch kindly allowed the writer to examine his series of results of examination of type in the naso-pharynx of carriers found in connexion with definite cases of cerebro-spinal fever. He agreed that there was no undue prevalence of the type as found on spinal puncture and that found in the naso-pharynx of the carriers. Such a prevalence would be expected if a relationship existed as regards infection between case and carrier.

At X Garrison there were no carriers found in connexion with 45 of the 150 cases in this epidemic, 250 persons having been examined as contacts of these cases. They were well chosen, being chiefly those occupying the same tent, billet, or barrack room as the patient. This is rather remarkable, as the carrier-rate generally, as shown above, was high.

Three soldiers at X Garrison were negative in their naso-pharynx within 24 hours of the onset of the acute symptoms of cerebro-spinal fever; two others were negative 48 hours and two 72 hours before the onset (and two more were likewise negative within 72 hours of being taken ill). These men happened to be swabbed as contacts immediately after the diagnosis of a previous case.

Captains Armstrong and Napier examined, at the writer's request, the throats of 41 cerebro-spinal fever patients on admission to hospital. In 19 only was the meningococcus shown to be present. Captain Glover repeated the same test in the following year, also at the writer's request, in 4 proved cases we visited together, and in only one of these was the meningococcus found in the naso-pharynx. The swabs were taken and the cultures examined with especial care.

*Route of Infection.*

Many patients consequently who develop cerebro-spinal fever are apparently not infected by the meningococcus in their naso-pharynx either at the onset of the symptoms or within the period immediately preceding the onset. It would seem, therefore, that such patients have not received, nor are they likely to convey, infection via the naso-pharynx.

Colonel Gordon, with whom the writer has discussed the above findings, makes no comment on this work of officers from his own laboratory when he says that "the meningococcus is invariably to be found in the naso-pharyngeal secretion at the onset of the disease. . . . Only occasionally does the meningococcus succeed in passing the barrier of the mucous membrane of the naso-pharynx and penetrating to the meninges."

The opinions of many other observers are directly contradictory to these views. Surgeon-General Rolleston, in his account of Cerebro-spinal Fever in the Navy,<sup>3</sup> says that "During the acute stage of cerebro-spinal fever swabs from the naso-pharynx are often negative. Out of 33 cases, bacteriologically proved, meningococci were found in 7, or 21 per cent. only." These results are in agreement with von Lingsheim's figures of 635 cases of cerebro-spinal fever with 146, or 22 per cent. of positive cultivations, from the naso-pharynx, and with those of Gaskell and Foster, who likewise found that only 25 per cent. of their cases were infected in their naso-pharynx. Netter's results show that only 60 per cent. are infected. In the Special Advisory Committee's report it is mentioned that "the meningococcus has been much less commonly found in the naso-pharynx of actual sufferers than might have been expected."

Recent work has thrown considerable doubt on the long-established belief that meningococci pass direct through the nasal mucous to the meninges. In many cases, certainly, the blood is infected prior to the cerebro-spinal fluid, which apparently often remains free of infection throughout, as in the case of the child already mentioned. It is more in accordance with modern ideas that the transmission should be via the blood.

*Types of Organism.*

The chief argument in support of the carrier theory given by Colonel Gordon is that he invariably finds the naso-pharynx infected by the same type of organism as is found in the spinal fluid. This evidence is already disproved, as above, by his own staff and others, who more often than not failed to find the meningococcus in the naso-pharynx. He believes that four types of meningococci exist, which are specifically distinct "and not transient and unstable variants of a single micro-organism." Again, other workers are unable to agree with him in this. Walker Hall and others find that the types are subject to mutation on culture. Bassett-Smith found that of 107 carriers who had more than one positive examination, more than half of them showed a variation of the Gordon type on subsequent swabbings. Eastwood, Griffiths, and Scott believe that the distinction between types is arbitrary and depends on the chance selection of strains.

Colonel Gordon has recently<sup>4</sup> replied to the contradictory observations (by other workers) with regard to his classification of meningococci. He explains their results as follows:—

"The research is of a distinctly arduous character—demanding a very high degree of dexterity that can only be acquired by continuous and persevering effort—even minute errors may mar or upset the result. In our experience at the Central Laboratory it requires at least six weeks' hard work before even a trained bacteriologist, with considerable serological experience, can sufficiently master the technique to obtain consistently satisfactory results. Similarly, when he goes on a holiday, even for a week, it requires at least another week's work before the necessary unconscious manipulative dexterity returns. After that degree of dexterity is reached irregular results are far less frequent than before."

It would seem as if the technique is so far above the ordinary well-trained bacteriologist that it loses much of its practical value.

Two, three, or four of these specifically distinct organisms are present in most epidemics. This seems very incredible from an epidemiological point of view. It is comparable to finding para. A and B and typhosus bacilli, irregularly, in the investigation of a definitely localised epidemic of typhoid fever. It would mean that each outburst of cerebro-spinal fever is due to two, three, or four distinct organisms being simultaneously let loose to produce infection. This seems so unlikely that it causes us again to hesitate before accepting the view that four specifically distinct organisms are concerned in epidemics of cerebro-spinal fever.

*The Isolation of Carriers.*

The prophylaxis for 1918, as approved by Colonel Gordon, is given.<sup>5</sup> The sixth and last recommendation is "that large sample swabbings (100 men) be taken weekly as a guide to the current carrier-rate." It is understood that case-contacts were to be swabbed as before, and that carriers from both sources were isolated. Such a proposal appears unsound and unjustifiable if it has involved the loss of man-power by isolation of carriers, as in former years. It can only be hoped to discover a small proportion of carriers by this procedure, for as, ordinarily, samples represent but a small fraction of the whole population so therefore the carriers found in sample groups represent the same fraction of the total number of persons carrying.

The practical effect of such a scheme was illustrated at X Garrison in 1916. At the close of the epidemic there the writer reported as follows:—

"It was decided to stop the further swabbing of drafts and to discharge the carriers then in isolation, further cases having ceased to occur. It seemed no longer logical to detain in strict isolation 400 men when recent swabbing results indicated that there were at least 5000 carriers living at large amongst the troops."

The discharge of the carriers was, however, countermanded by Colonel Reece and the further history is given by Captain Tulloch in the Medical Research Committee's Report, Series 3, but 60 of them had actually been discharged without ill-effects.

Again, at X Dépôt, which had been under the continual observation of the officers of the Central Laboratory for two years, it was known that during the epidemic half of the population (5500) were carrying, yet at the same time about 200 healthy men were detained as carriers in hospital.

<sup>3</sup> THE LANCET, Jan. 13th, 1917.<sup>4</sup> R.A.M.C. Journal, January, 1918.<sup>5</sup> Ibid., p. 35.



At X Garrison and at X Dépôt the samples were taken on a record scale, 17,500 men having been swabbed and over a thousand carriers isolated, yet at no one time did the carriers amount to one-twelfth part of the total number of carriers available. The population in both was largely a floating one.

There is no reason why case carriers should be isolated any more than carriers from sample. At the above dépôt the carrier-rate amongst the two groups was exactly the same (34 per cent.), and, as previously stated, no one has ever suggested that the carrier found in connexion with a case differs in any way as regards infection.

The possibility of failure in detecting a carrier would appear to be at least 20 per cent., judging by the writer's examination of the results of repeated swabbings of chronic carriers, where intermittent negative results were followed by positive findings. Fildes and Wallis' report:—

"If two consecutive negative swabs (the Navy require six) are taken as the index of cure, no less than 36 per cent. of men will, in fact, not be cured and will be returned to the community in the same condition as they were before they were isolated." And they concluded as follows: "One-third of the men recover spontaneously. None of the methods of treatment tested has any conspicuous merit, nor has any one obvious advantage over another."

It seems most irrational, therefore, to elaborate an extensive system of control which fails in detecting infection in nearly a quarter of the cases examined and which permits more than a third of the infected persons to be discharged uncured, and which detains healthy men for a treatment which possesses no obvious merit. Moreover, the isolation of case and sample carriers can never hope to deal with more than one-twelfth of the total numbers of carriers in a community.

#### *Methods of Treatment of Carriers.*

The impracticability of former methods of preventive control by isolation of carriers has now evidently become apparent (vide Colonels Reece and Gordon). It is recently admitted that "when the carrier-rate is high this procedure loses its value," and consequently a new procedure has been adopted—"inhaling-room treatment, which offers valuable help at any point where isolation breaks down." This treatment is still in an experimental stage, and up to the commencement of 1918 no tangible evidence was produced of its value. It would seem to be a tactical measure, which serves to focus the attention on a healthy carrier, and covers the retirement from the former position which had become untenable.

Various types of inhalers have been already tried—the Lingner-Gordon, Falmouth, and Levick. The last type, which was issued in large numbers in 1917, appears to have been replaced by the Hine pattern in 1918, the advantage of which is that "the atmosphere is not vitiated by the fumes of the burning spirit, as with the Levick spray." Many disinfectants have likewise been tried. The results from chloramine appeared to have been considered the best:—

"Though still somewhat few in number, they are more than encouraging, chloramine having given better results than any other antiseptic yet tried in this way." Yet the next year at the X Dépôt it was mentioned that "as the treatment was new it was considered advisable in this instance to begin with zinc sulphate, because it is less irritating than chloramine." Yet the previous year Colonel Gordon reported that "the results with zinc salts were disappointing, but they served to emphasise the success of those obtained with chloramine. Only one known carrier could be subjected to the zinc spray—this carrier required no less than 70 inhalations before he could be discharged."

The above extracts from published reports of Colonel Gordon and the officers of the Central Cerebro-spinal Fever Laboratory are given to show on what little evidence these officers have submitted to the public this new form of treatment.

Fildes and Wallis included chloramine in their tests as to the value of local antiseptic in the treatment of carriers, and their opinion has been given above of the value of this and other forms of nasal disinfection.

The writer has not had much definite personal knowledge of the value of the treatment. The published results are few and without statistical value. It has been claimed that it is equally effective in reducing the incidence of measles, sore-throats, &c. The writer noted, however, that at

D Garrison the battalion which had been severely infected by cerebro-spinal fever and which underwent elaborate spraying afterwards suffered abnormally from such complaints as compared with other units who were not being sprayed, there being 72 cases of measles and an excessive amount of bronchial catarrh in the sprayed battalion during April, 1917. The spraying arrangements were under the personal supervision of Major Hine and other officers from the Central Laboratory. The local opinion was unfavourable to the spray.

#### *IV. Prophylaxis.*

*The infection of cerebro-spinal fever is not to be feared under good conditions of housing and ventilation. The early isolation of mild and severe cases and the provision of free ventilation compulsorily, and with sufficient warmth during the time of seasonal prevalence, constitutes the most effective means of prevention.*

The proposed prophylaxis of the disease in 1918 is given by Captain Glover.<sup>7</sup> The measures indicate a considerable change from the policy of former years, and as they are stated to have been submitted to the advice and criticism of Colonel Gordon it may be taken that they embody the general aspect of control of the disease in the immediate future. They are as follows:—

(i.) Spacing out of the beds with a minimum interval—reduction of numbers from the mobilisation to the peace scale of accommodation; the provision of increased warmth and extra fuel; the overcrowding of Y.M.C.A. and other institutes, and medical inspection rooms to be limited.

(ii.) Special ventilation to be arranged, the windows to be fixed open, and new ventilating apertures to be provided.

(iii.) Inoculation to be postponed until the second month of service.

(iv.-vi.) The remaining measures deal with the spraying of all troops for six days each month, and the sample swabbing of 100 men weekly to afford a guide to the carrier index. The expediency of the two latter proposals has already been fully discussed.

For the first time it is noted that primary importance is attached to ventilation and overcrowding. Formerly such factors were not regarded as of importance by the officers of the Central Laboratory, judging by the conditions described as prevailing at X Dépôt at the commencement of the epidemic, a station which was under the personal observation of these officers for over a year before, as a test in preventive measures, and, in fact, it was stated that "it cannot be said that there were many cases to be attributed to overcrowding."

#### *Overcrowding and Defective Ventilation.*

The influence of overcrowding and defective ventilation as factors in the spread of cerebro-spinal fever was very definitely laid down in the writer's report of the epidemic at X Garrison in 1916. The following extracts are given:—

"The infection of cerebro-spinal fever is not to be feared under good conditions as to housing and ventilation. Accommodation was supplied on war scale, nominally at 40 square feet per man, but it was found that this space was not always available. The weather was abnormally cold and wet, and natural ventilation was reduced to a minimum, all doors and windows being closed. Orders were found insufficient to prevent this. The shape of the barrack rooms did not permit of a sufficient interspace between the beds. Unless sufficient fresh air is provided compulsorily and scientifically—i.e., out of reach of the soldier and with regulated draught—it will not be of practical benefit, as it will be put out of action. It is at night that ventilation is essential. Extra blankets should be provided to lessen the discomfort of cold air. Kinemas and crowded institutes are to blame for many cases of cerebro-spinal fever, the Y.M.C.A. huts being the worst offenders. I have inspected such places at night, and from these visits I am convinced that they are a most potent cause of spread of the infection."

On April 2nd, 1916, the minimum floor space was increased to 60 square feet. The doors and top sashes of all windows were fixed in an open position or else removed. The barrack rooms were inspected nightly by company and medical officers to ensure that ventilation was maintained. It is believed that the absence of further cases amongst the troops remaining in barracks was due more to the compulsory fresh air than to the smaller proportionate increase of floor space which it had been possible to obtain. (The troops had again been temporarily on the reduced scale owing to unavoidable reasons).



The lesson would appear to be that ventilation should be compulsorily given, and on a large scale. If absolutely necessary, moderate overcrowding on mobilisation scale may be permitted if the fullest use is made of fresh air. The incidence of cerebro-spinal fever is dependent on the thermometer. When the weather is cold ventilation is decreased automatically. Sunshine has no effect in preventing infection, unless accompanied by heat, as infection takes place in barracks and other places after sundown. Rainfall has no effect, neither has the barometer."

The proposal to defer inoculations until the second month of service will not, it is believed, reduce the well-known increased incidence of the disease amongst recruits. It is based on the known fact that about 40 per cent. of patients have been inoculated within a week of the onset of their illness, but, under present conditions, it is usual for such a proportion of men to have received a dose of inoculation or vaccination during each week of their early service.

*Practical Measures Advocated in Original Report.*

In conclusion, the following paragraphs may be repeated as concluding the original report:—

"The occurrence of a definite case is heralded as a rule by indefinite cases, and such should be an indication for all concerned to take such steps as the ætiology of the disease suggests. It is not sufficient to issue orders regarding open windows and overcrowding. The rooms should be visited by company and medical officers to ensure that instructions are carried out. Windows and doors will need to be screwed permanently open or removed. Dark blinds over the windows will need to be removed at 'Lights out,' but blankets and fires should be provided to lessen the discomfort of cold air. The ventilation and crowding of institutes requires most careful watching and personal inspection at the busy period of the evening.

On the occurrence of a case in the barrack room extra precautions will be taken on the lines mentioned, and a watch kept for febrile illnesses amongst the remainder. Any men suffering from severe headache, backache, and vomiting should be early admitted to hospital under observation. The contacts of a case do not require to be isolated or swabbed. They can continue their outdoor work as usual and sleep in the infected room for a week at least. During this quarantine period free ventilation should be insisted upon. All febrile cases amongst the troops generally should be at once detained in hospital.

These remarks are written in the hope that they may cause others to consider the possibility and importance of atypical and unrecognised forms of this disease, from the point of view of diagnosis, treatment, prognosis, and prevention. The early isolation of mild and severe cases, rather than of carriers, together with the provision of free ventilation, is suggested as the basis of preventive measures.

We claim to have established a case in favour of the prevalence of mild and atypical cases of cerebro-spinal fever. The influence of such cases in determining the spread of this disease is shown by the proportionate incidence of definite and indefinite illnesses, in units and garrisons, as well as by the many individual instances of mutual infection between them both. If the existence of these cases be admitted, it seems necessary in these circumstances to believe that mild and severe forms are equally potent and important factors as regards the spread of infection if it is considered that mild breeds severe and the severe mild, the resultant disease being dependent only on the susceptibility of the patient receiving the infection. Such considerations necessarily involve a review of the previous methods of the prevention of cerebro-spinal fever." (1916 Report.)

*Postscript.*

The following extract from the Medical Supplement (July, 1918), compiled by the Medical Research Committee, has just reached the writer—after writing the above. It is given here as it completely confirms the main contentions in the article.

"The significance of meningococcal carriers in the spread of the disease, as reflected in German medical opinion, is summarised by Galambos, who says that though sporadic cases of cerebro-spinal fever were observed in the various theatres of war there were never any epidemic outbreaks. G. B. Gruber regards the search for meningococcal carriers and their isolation and disinfection as unnecessary, and states that as regards importance they are on a par with pneumococcal carriers. Feser is of the same opinion and has never seen a proved case of infection by contact. The search for carriers is considered by Klinger and Fourmann to be both unnecessary and impracticable. Meningococci were never isolated from the naso-pharynx of 18 cases of cerebro-spinal fever under Galambos's observation, and no carriers were found among the contacts of the patients; he is convinced that isolation of healthy carriers has no influence in preventing the incidence of the disease."

## TRAUMATIC RUPTURE OF THE INTESTINE.

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DURING the past five years many accounts of the modern treatment of gunshot wounds of the abdomen have been published, and the results have fully confirmed the opinion held by most surgeons as to the importance of interference as early as possible, given fairly satisfactory surroundings. This conviction led those in charge of the medical arrangements with the British armies to make special provision for dealing with this class of case as soon as possible, thus enabling a large proportion to be treated successfully. These results have never been equalled in previous wars, and will probably never be surpassed.

*Traumatic Rupture of Intestine without External Lesion.*

In civil life the same need of prompt action arises in cases where reason exists to suspect a perforation or laceration of some part of the gastro-intestinal tract, whether there be a lesion of the overlying structures or not. If no lesion of the skin is evident (and in many cases of abdominal injury where the intestine has been ruptured it has not been possible to find any) it requires firmness to induce the patient to submit to operation before peritonitis has made the need for operation obvious to the patient's friends. Waiting imperils success and often ensures failure. It is not always remembered by those in charge that septic peritonitis will be commencing within six hours and quickly spreads when it has begun.

Traumatic rupture of the intestine without an external wound is one of the catastrophes of civil life against which it is not possible to guard. There are many ways of causation, but practically no remedy without operation, and early operation. Peritonitis of the worst type inevitably supervenes. Although a few cases have been saved by surgical interference when peritonitis has been advanced, the loss of every hour makes the odds against recovery more formidable. It is far better to operate in a doubtful case and find contusion or slight laceration of some internal organ than to allow a valuable life to be sacrificed through a mistaken trust in the possibilities of treatment mis-called conservative.

In some of the more serious cases the shock is so intense that although the surroundings may be favourable the surgeon is compelled to wait. Still, there is a great responsibility on him to take the measures best calculated to enable the essential operation to be done as soon as possible.

*Record of Case.*

The following is the record of a case of rupture of the jejunum with laceration of the mesentery and intraperitoneal hæmorrhage.

A boy, aged 15, was admitted to St. Thomas's Hospital on August 29th, 1916. At mid-day he was riding a tradesman's bicycle, when a van ran into it and knocked him off. He was unable to give a clear account of the accident. He was suffering from shock and complained of severe abdominal pain. Normal urine was withdrawn by catheter. He was put to bed and warm blankets and hot-water bottles applied. At 2 P.M. the shock was still very severe and he complained much of the severity of the abdominal pain. He was white, with blanched lips, a subnormal temperature, and pulse of 118. He was lying on his left side with limbs and trunk flexed. Respiration almost entirely thoracic, the abdomen not moving. The muscles of the abdominal wall were rigid, but not board-like, and he was generally tender in this region. Pain was referred to a point about 3 inches above the umbilicus under the left rectus muscle. No evident injury to the skin. Dullness on percussion extended from the left flank to the level of the umbilicus when he was examined in the position assumed as the most comfortable. During the afternoon, whilst we were waiting for him to revive somewhat from his collapsed state, he vomited and became restless; there was also increasing dullness in the abdomen and continuing pain.

*Operation.*—At 4 P.M. a general anæsthetic was administered and the abdomen opened by a vertical incision about 6 inches long to the left of the middle line. The rectus sheath was opened and the muscle drawn outwards. The peritoneum had a bluish colour from underlying blood, which escaped in considerable quantity when the incision was extended. There was so much more than is usual in these cases of traumatic rupture of intestine that the spleen and liver were at once examined; they were without trace of injury. When the



omentum had been displaced to the left a large transverse rupture of the jejunum presented. This was situated about 6 inches from the duodeno-jejunal junction and extended over five-sixths of the circumference of the gut, there being only a strip of the mucous membrane on the mesenteric aspect, which appeared normal. This was wrapped in gauze to prevent further escape of faeculent fluid until the source of the bleeding had been discovered. This proved to be a tear in the mesentery behind the lacerated gut; in this a vessel of some considerable size had been torn. Other small lacerations were found near it, whilst an irregular laceration of the parietal peritoneum to the right of the spine, about the level of the umbilicus, required one or two sutures. The tear in the jejunum was also bleeding and the edges were bruised, so after the application of clamps excision of this part was performed, for a distance of 3 inches above and 3 inches below the rupture, and an end-to-end union made. The mesenteric lacerations were sutured. No. 1 silk was used for the anastomosis, an inner continuous uniting all the coats, and an outer Lembert, also continuous, covering in the line of union. The abdomen was cleansed, but owing to the evident contamination from intestinal contents a tube was left in. The small intestine was nowhere inflamed, but near the tear were some brownish patches, which did not come away on sponging. During the operation saline was infused intravenously. The pulse rose to 160, falling later to 120.

On the following day the pulse was improving though still rapid, and the boy was better. On the 31st he complained of pain and tenderness in the abdomen, and vomited. The lungs appeared clogged with mucus, there being moist sounds all over. Respiration 48, pulse 130. Dr. G. Hoffmann, who saw him for me, advised adrenalin and a mixture containing potassium iodide. Atropine and morphia injections were required to relieve his pain. There was little discharge from the tube, which was removed on the fifth day.

On Sept. 2nd the bowels acted freely, but his chest complication did not recover until Sept. 5th, when the pulse had come down to 96 and the temperature returned to normal. He left the hospital for a convalescent home on Sept. 27th.

A few months later he had a somewhat severe attack of pain in the abdomen which alarmed him, but this was traced to over-indulgence in raw chestnuts, and soon passed off after appropriate treatment.

#### Diagnosis.

After an injury which may have caused a rupture of some part of the intestinal tract there may be a group of symptoms making diagnosis certain and enabling decision at once, but there is no one symptom always present. Certain cases do not show leading symptoms until some hours have passed, and then a rapid change takes place.

It is not necessary here to repeat a list of symptoms which are very well illustrated by the above case, and which are found, luckily, in a majority. There is an agreement about this group and the indications to be generally expected, which I have dealt with elsewhere.<sup>1</sup> I should like to draw attention to two points: (1) the occasional rise of temperature; (2) the state of the abdomen.

A rise of temperature to 103° F. and over may be found when other symptoms are not well marked, and should be regarded as indicating a definite lesion of the wall of the gut, and one which requires repair. There may not be a lesion which has opened the lumen of the bowel; it may only involve the external layers, but it may become complete secondarily; therefore it requires repair. Incipient inflammation of the lungs secondary to an accompanying traumatism of the chest must be excluded by examination.

The usual state of the abdomen is one of immobility due to rigidity of the muscles, and, although there may be great tenderness, there is seldom dullness in the flanks. There may be dullness directly over the lesion, but this is usually quite restricted in amount and due to collapsed gut with slight hæmorrhage and some escape of contents. If there is abnormal dullness in the flanks, it may be the result of hæmorrhage from laceration of the mesentery, spleen, or liver. But the instances in which the state of the abdomen is recorded with reference to this point are not so numerous as we could desire.

The presence of free gas in the peritoneum, even in small quantity, appears to be somewhat rare if we consider the number of cases in which it was found when the peritoneum was opened. Mention is made of it in 5 only of the series of 132 brought together by Berry and Giuseppi; of these, 4 were ruptures of the jejunum, the opening in one instance being the size of a threepenny-bit; in 1 it was present on the twelfth day after a secondary perforation an inch below

the sutured one. Others appear in records to which we have access at the present time, but in only one successful case, an operation 20 hours after the injury, was there distension with loss of liver dullness. Loss of liver dullness after subcutaneous rupture of the intestines usually indicates a late stage, and is of bad prognosis, being caused by overlapping of the hepatic border by distended and paralysed intestine. Berry and Giuseppi say:—

"In several cases in which operation was not undertaken until absence of liver dullness had been noted, not one of these recovered."

In traumatic rupture there is collapse of the gut near the laceration, and the contents of the intestinal canal are therefore less likely to escape than they are when a pathological perforation is present. Free gas, and in large quantity, is common after perforation of an anterior gastric ulcer, but if the ulcer is small there may be none. It is seldom capable of demonstration after duodenal or jejunal perforations, although some may be found when the peritoneum is opened. Emphysema of the abdominal wall without accompanying fracture of ribs indicates a lesion of the duodenum or large bowel.

#### Operation.

The special points to be remembered in the operation for suspected rupture of the intestine are the following:—

1. The incision should be a long one, extending well above the umbilicus, as this gives best access to the root of the mesentery, and permits of most rapid examination of the abdominal contents. If the rectus muscle is temporarily displaced outwards and the posterior layer of the sheath divided well to the left of the mid-line (and it is best to place the whole incision to the left) there will be no danger of subsequent hernia.

2. Blood or fluid which has accumulated should be washed away with moist sponges and a search made for the source of the bleeding. When hæmorrhage has been arrested the damaged section of gut is looked for; this will usually be found in a line between the point struck and the spine. Before this is treated search should be made for a second point of rupture, for there is more than one in some 20 per cent. Apparently lesions of the upper jejunum have proved difficult to find, for those in this position have been overlooked in several instances, only to be revealed post mortem. Ruptures of the duodenum give the most anxiety, because there is usually excessive shock causing delay in the operation, great difficulty in localising the lesion, and when it is found more manipulation is needed to remedy the damage, the time thus required further imperiling the success of the operation.

3. Treatment of the lesion found will depend upon the extent of damage to bowel wall and to mesentery. A large laceration may be clean edged and as safely secured with a double suture of silk or other material as those of smaller size, but if the damage to the wall of the bowel is severe or there is another opening close to the one which was first discovered it may be necessary to resect and perform an anastomosis. The sutures will thus be placed in healthy tissue and valuable time saved. It is quite impossible to lay down hard-and-fast lines as to whether the laceration should be sutured, resected, &c., or not. Most recoveries, as would be expected, were after rapid suture. The use of Murphy's button did not prove very satisfactory, partly because it was used by operators who were hurried by the critical state of their case. Temporary artificial anus in the small gut is only to be tried when there is no time for anything beyond. Still, it must be recollected that John Croft's first case lived one month, only dying then (after secondary resection) from exhaustion.

4. Closure of the abdominal incision may be effected in the majority without drainage of the peritoneum; if drainage is required a suprapubic "stab-incision" will suffice, the tube being passed deeply into the pelvis. The course followed should depend on the presence or absence of peritonitis and the possibility of cleansing the infected peritoneum. When in doubt drain and place the patient in the Fowler position. When drainage is established much benefit may be derived from the use of continuous administration of saline by rectum during several hours.

#### Statistical Data.

In compiling statistics of a series of cases such as these it is somewhat difficult to avoid overlapping, and therefore a

<sup>1</sup> THE LANCET, 1916, i., 587.



want of accuracy, unless great care is exercised. The available records extend for useful purposes from the first case operated on by John Croft in 1888 to the end of last year, 1918. In the oration on Internal Abdominal Injuries given before the Medical Society of London<sup>2</sup> (1910), a list was given adding to that by Berry and Giuseppi.<sup>3</sup> Another useful addition was made by Raymond Johnson<sup>4</sup> in 1914, whilst St. Thomas's Hospital Reports and the medical journals have supplied others, completing, I believe, the list of those available from Great Britain. This gives a total of 221, comprising 200 males and 21 females.

Of these, 43 are derived from the records of St. Thomas's Hospital, of which number 33 were submitted to operation and 11 recovered. In 10 no operation was performed, chiefly because the condition was too bad from shock, general peritonitis, or the complication of some severe injury. One refused operation. Of these, life was prolonged in four for six days, eight days, four weeks, and four weeks respectively. Of the general series, 124 operations were performed with 48 recoveries and 76 deaths.

The hospital cases (St. Thomas's) are all given and include every case admitted, whether moribund or not, whereas the other statistics are from many sources and put the results in too favourable a light. Many fatal cases have not been published.

#### *Cause and Site of Rupture.*

The cause of the rupture is shown in the accompanying table, which also gives the part of the bowel injured. I have not included two cases of traumatic rupture produced by gunshot of the wall of the abdomen without wound of the peritoneum, although from a surgical point of view they are unusually interesting.<sup>5</sup> No case is included from any of the hospitals since those published in the list given by Raymond Johnson, unless published separately in the Journals. This statement does not include St. Thomas's Hospital.

—	Duo- denum.	Jejunum.	Ileum.	Small gut.	Large gut.	Totals
Run over in street ...	16	41	13	1	3	74
Kick on abdomen... ..	1	17	10	—	—	28
Crushed ... ..	8	6	8	—	3	25
Struck by moving body	4	18	11	—	2	35
Fall of weight on body...	—	6	6	—	—	12
Fall ... ..	2	12	11	—	2	27
Other causes ... ..	1	11	—	1	1	14
—	32	111	59	2	11	215

Position and cause not given in 6. Of the 21 females 15 were run over in the street.

#### *Summary of Other Cases.*

Other cases which have been under my care are the following:—

Male, aged 24. Jejunum, ruptured in two places: (1) Resection of 13 inches, and lateral anastomosis; (2) end-to-end with plates. Six hours after kick from horse. Lived 6 days; peritonitis from giving way of suture in end-to-end anastomosis.

Male, aged 27. Ileum; rupture  $\frac{3}{4}$  inch; sutured; drainage. Fifteen hours after run over drunk; 10 days later abdominal wound gave; re-sutured. Albuminuria and pulmonary symptoms. Lived 26 days.

Male, aged 50. Ileum; 3 ruptures; sutured; drainage. Immediate operation when admitted on fourth day with peritonitis; died a few hours later.

Female, aged 33. Splenic flexure; openings into peritoneum sutured. Retroperitoneal opening sutured; drainage of this. Operation 10 hours after run over. Recovered.

Male, aged 5. Ileum. Small opening sutured; 3 hours after knocked down by horse. Broncho-pneumonia. Recovered.

Male, aged 15. Jejunum. Resection and end-to-end anastomosis for transverse rupture. Laceration of mesentery. Acute bronchitis. Recovery. Case described above.

Two other instances admitted to my wards. 1. Rupture of duodenum. Operation abandoned because of rapid collapse of patient, did not permit of adequate exploration. 2. Operation by resident assistant surgeon after secondary giving way of damaged part was unsuccessful, and peritonitis proved fatal.

#### A NOTE ON

### THE VALUE OF SOLID PARAFFIN WAX IN FACIAL SURGERY.

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FOR years melted wax has been advocated in filling in defective parts and raising the skin and superficial tissues of depressed areas, especially in injuries and defects of the nose. Since the war, I have operated on a good many cases of facial deformities, particularly in the earlier months before the Special Face Hospital was established at Sidcup. I regard all facial defects as worthy of the highest art of surgery. Patience, with dexterity, will repay all the trouble expended, as a good result will brighten a patient's life.

Having experimented with all kinds of plastic and solid material for the reconstruction of face defects, I suggest solid wax, pure hard paraffin, of melting point  $110^{\circ}$ – $115^{\circ}$  F., for introduction into the tissues as a permanent splint. Melted paraffin has many disadvantages, and personally I find it almost hopeless. The syringe usually gives great trouble, and the wax is put in hot and scalding or else it solidifies in the needle. Press hard on the plunger and a quantity may suddenly be thrown under the skin, solidifying in a lump at the wrong place, and not to be extracted without scarring. Further, melted wax will adapt itself to the skin tissues probably in the wrong place, instead of which we should have skin tissue moulded and adapted to the shape of the wax. Cases, too, have been known of sudden blindness following melted wax injections.

For these reasons, principally, I am using solid, cold wax, cut to shape, and introduced through a small prick. All the above disadvantages are eliminated.

#### *Technique.*

The following is the technique in the case of saddle-nose: (1) Sterilise the wax efficiently by melting in a pot. If surgical wax is not obtainable a Price's candle melted is a good substitute. (2) Make a quarter-inch prick near the depressed part with a tenotome. (3) Elevate around the incision to the required extent with a small elevator. (4) Have the wax poured out to depth of about half an inch in a porringer and solidified in a basin of cold sterile water. (5) Remove the wax *en bloc* from the small dish with an elevator. (6) Break to size (it will not cut properly) and afterwards trim the small splint to shape with a knife. The little shaped splints are about  $\frac{1}{4} \times \frac{1}{4} \times \frac{1}{2}$  inch. Several may be deposited in the one subcutaneous tunnel. (7) Push the wax into its place through the incision, stitch the wound with a fine catgut stitch, and apply a collodion gauze dressing. It will be found best in practice to do these operations in stages, and just too little at a time. More can be done later. Small pieces of wax will lie in the tissues undisturbed and unabsorbed; larger bits might work out through the wound. A useful practical hint is to avoid smearing the little incision with wax, as this tends to delay primary union of the skin edges. Rather drop the piece right into the undermined skin, then push it home. At the conclusion of the operation a vigorous massage of the nose while the patient is still under the general anæsthetic will be found to give an artistic finish to the part. The operation is splendidly simple in actual detail.

In conclusion, I have found melted wax of no service for hide-bound scars to be elevated. These must be raised by undermining with a raspatory through a small incision and kept in position by a solid bar of wax. The cases I have recently operated on have, indeed, been gratifying in their success, and so I venture to propose this method for certain special surgical cases. A depressed skin deformity of an unsightly nature on any part of the body may be similarly treated.

Edmonton.

At Ilfracombe it has been decided to provide an X ray apparatus, with a suitable building, in connexion with the Tyrrell Cottage Hospital, as a war memorial. The cost of the scheme is about £1000.

<sup>2</sup> See also The Acute Abdomen, 2nd ed., W. H. Battle.

<sup>3</sup> Trans. Roy. Soc. Med., ii., 1909.

<sup>4</sup> Loc. cit., No. 3, 1914.

<sup>5</sup> Meyer, Dew, and Stokes: THE LANCET, 1915, ii., 1140.



# THE EXPECTATION OF LIFE IN PULMONARY TUBERCULOSIS,

WITH SPECIAL REFERENCE TO PENSIONS ASSESSMENT.

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IN assessing the disability of discharged men for pension purposes various factors require to be considered. In practice the probable percentage defect of working capacity over a certain period is the main concern of a Medical Board; but other forms of disability have bearing on pension assessment, and an important one is the extent to which disease or injury, attributable to or aggravated by Army service, is likely to shorten life.

In many cases of gunshot wound, for instance, although working capacity is impaired, it can safely be assumed that the probable length of life will not materially differ from that of the average individual of the same age. Where, however, the disability arises from certain types of injury, and especially from disease, it includes curtailment of life as well as immediate reduction of working capacity, as, for instance, in cases of malaria, nephritis, chronic dysentery, heart disease, pulmonary tuberculosis, &c. In some diseases, indeed, it is possible that this factor is more important than the other.

For most of these diseases, however, insufficient information is available to enable the probable duration of life to be estimated, but it should be possible to come to some estimate in the case of pulmonary tuberculosis, which has now been a notifiable disease for a number of years, and concerning which fairly reliable statistics are in existence. Parenthetically, it may be remarked that if such information can be utilised for national purposes, it is an argument for some form of notification of diseases, whether they come under the category of infectious or not.

The figures quoted in this article have been taken from a detailed analysis of the after-history of cases of pulmonary tuberculosis compiled for departmental purposes.

## *Expectation of Life in Notified Male Cases of Pulmonary Tuberculosis.*

Table I. shows the percentage of male survivors distributed in age-groups at May 31st, 1917, of patients who were notified as suffering from pulmonary tuberculosis during the calendar years 1910 (when notification was introduced) to 1916, and concerning whom information was available at the date of inquiry. The average time between the notification of each group and the date of inquiry varies, therefore, from rather less than seven years to less than one year.

TABLE I.

Pulmonary tuberculosis: 7169 male patients notified 1910-1916; percentage surviving at May 31st, 1917.

Year notified.	Age-groups.						
	15-20	20-25	25-35	35-45	45-55	55-65	65+
1910... ..	12.3	13.7	14.1	19.4	26.0	21.0	9.8
1911... ..	15.6	17.6	20.6	18.8	16.9	4.8	Nil.
1912... ..	25.5	27.1	22.4	27.0	16.8	12.4	6.7
1913... ..	30.0	30.1	30.5	26.3	15.7	10.6	4.0
1914... ..	31.5	38.2	35.6	35.0	31.8	27.5	5.4
1915... ..	38.5	47.9	43.2	37.9	34.6	21.4	14.3
1916... ..	60.9	78.1	60.9	53.4	42.4	47.1	26.5

Patients under 15 years of age are not included, partly because there is a high proportion of wrong diagnoses at these ages and partly because such statistics would not be applicable to ex-service men. It will be observed that, especially at the higher ages, the percentage survival of cases notified in 1910 is actually higher than among those notified in more recent years, indicating that at the commencement of notification there was a greater tendency to notify elderly patients who were probably suffering from some other disease, such as chronic bronchitis. It will also be noted

that the percentage survival of cases at the age-period 20-25 is consistently somewhat higher than in other age-groups. Apparently the disease kills less rapidly at these ages.

The general trend of the figures suggests that if the information covered a longer period of time the percentage survivals would follow the course of a geometric progression. If the survivals for the age-groups 15-45 (comprising 5033 cases) are combined, eliminating the less accurate readings at higher ages, and a curve is drawn approximately to fit the percentages, it is found that, especially for survivals after two or three years, the curve follows approximately that of a geometrical progression and a factor can be easily calculated which will carry it on until it meets the base line. From a combination of the actual and hypothetical figures, rearranged to give survivals at 6 months, 1½ years, 2½ years, and so on from the date of inquiry, an expectation of life has been calculated and found to be 3.4 years. A separate estimate for the age-group 20-25 gives an expectation of 3.5 years, the difference, therefore, being so slight as to be negligible, in view of the fairly large error carried by any such rough method.

## *"Arrested" or "Improved" Cases.*

The above calculations apply to all male notified cases at the ages mentioned. The average age of these patients at date of notification closely approximates to 30 years. They include cases at all stages of disease and probably many in whom the diagnosis is wrong.

It is important to obtain some estimate of the expectation of life of patients in an early and hopeful stage of the disease and in whom also the diagnosis has been established with reasonable accuracy. For this purpose the after-history of a group of patients of the sanatorium<sup>1</sup> grade when they first came under notice, was followed. Only those who were discharged from sanatorium with disease "arrested" or "improved"<sup>2</sup> were included, and all those concerning whom the diagnosis was considered wrong or very doubtful, as well as those about whom information was not available at the date of inquiry, were discarded. The absence of tubercle bacilli in the sputum was not regarded as an essential factor in diagnosis, as it is a well-established fact that many true cases of pulmonary tuberculosis occur in whom tubercle bacilli are rarely or never found in the sputum. The patients were mostly insured persons coming from and returning to homes in Glasgow.

Table II. deals with a group of male patients admitted to sanatorium for the first time and discharged therefrom with disease "arrested" or "improved" between 1911 and May 31st, 1916, comprising 631 cases. It shows the percentage of survivals at May 31st, 1916, May 31st, 1917, and May 31st, 1918. Deterioration is obviously occurring rapidly.

TABLE II.

Pulmonary tuberculosis: 631 male cases discharged from sanatorium with disease "arrested" or "improved" before May 31st, 1916.

Date of inquiry.	Per cent. surviving.	Average time elapsed since discharged from sanatorium.
May 31st, 1916 ... ..	81.4	22 months.
May 31st, 1917 ... ..	66.8	34 "
May 31st, 1918 ... ..	55.0	46 "

The information can be analysed in more detail, however, and may be stated as in Table III.

TABLE III.

Pulmonary tuberculosis: 631 male cases discharged from sanatorium with disease "arrested" or "improved" before May 31st, 1916.

Date of enquiry.	Per cent. surviving after lapse of average periods from discharge in months.					
	6	18	30	42	54	66
May 31st, 1916 ... ..	97.2	79.4	73.4	72.5	—	—
May 31st, 1917 ... ..	—	82.6	66.7	58.2	53.3	—
May 31st, 1918 ... ..	—	—	67.7	58.9	45.8	44.0
Averages ... ..	97.2	81.0	69.6	61.9	48.3	44.0

<sup>1</sup> The term sanatorium, as used here, does not include tuberculosis hospitals for advanced or chronic cases.

<sup>2</sup> Roughly, 75 per cent. of discharged sanatorium males.



In this table the percentage of survivors is again shown separately at May 31st, 1916, May 31st, 1917, and May 31st, 1918, but the cases have been split up into groups discharged severally at intervals of, on the average, six months up to 5½ years. The results, where they exist for the same period in more than one group, are combined in the last line of the table, so as to reduce errors of chance. These percentages form the basis of a very crude life table and the expectation of life calculated as above is found to be 6.6 years. The average age is again 30 years.

#### *Expectation of Life compared with the Normal.*

The expectation of life calculated for so-called "arrested" cases alone is certainly greater, but the number of cases is so small (117 males) that it is impossible to place much reliance on any conclusion drawn from their study. The expectation of life calculated as before is, roughly, 14 years. This figure must be regarded as little more than a guess. It is probably too high, since the cases in whom arrest was obtained included a number where an element of doubt as to the diagnosis remained. Moreover, it must be admitted that the differentiation of mere improvement from arrest depends largely on the predilections of the medical officer estimating the result of treatment, so that patients discharged from one sanatorium as "arrested" would be discharged from another as "improved" and vice versa.

Now the expectation of life of a male, aged 30 years, in Glasgow was 29.68 years for the period 1881-1890,<sup>3</sup> and may be taken for practical purposes as 30 years for the period covered by this inquiry. The expectation of life of the "arrested" case of pulmonary tuberculosis is therefore less than half the normal, and of the "arrested" and "improved" ex-sanatorium cases taken together roughly a fifth of the normal.

In view of the fact that the average age of discharged tubercular soldiers is probably under 30 and the normal expectation of life, therefore, greater than 30 years, the probable curtailment of life itself would appear to be justification for assessing for pensions purposes all verified cases of tuberculosis with "arrested" disease at least at 50 per cent., and preferably at 60 per cent. In the opinion of the writer, fitness for work should not be stressed in fixing the minimum assessment.

#### *Graduated Assessment.*

The graduated assessment of disability in cases of pulmonary tuberculosis, according to the character and stage of the disease, presents difficulties which are of the same nature as those discussed at the commencement of this article.

Broadly speaking, a patient who is suffering from the more chronic form of the disease, who will not derive benefit from sanatorium treatment, and who is not urgently requiring a bed in a hospital, will benefit psychologically and will not materially suffer from a moderate amount of work of a suitable kind, although his prospect of life is brief. It would seem desirable to avoid creating an impression that the pursuit of employment on the part of an ex-service man will affect the assessment of his pension, and rather to aim at providing him with maintenance on a level entirely dependent upon the character and stage of the disease. Further, the local authorities responsible for the institutional treatment of tuberculosis admit many patients for preventive reasons and not mainly because of the patient's clinical condition. The tendency is to assess such men as totally disabled. The ex-service man who has a comfortable home and chooses to remain there and to do a certain amount of work suffers in comparison with the careless patient who, on account of his poor home surroundings, is admitted to an institution and is therefore assessed as a person requiring institutional treatment. Practically, the problem can best be solved by a liberal assessment in all unequivocal cases of tuberculosis of the lung, and the inquiry recorded above indicates the justification for such a policy even toward arrested cases.

#### *Difficulties in Estimating the Activity of the Disease.*

The presence of disease which is actively progressive, as indicated by bacteriological and X ray examination, physical signs, continued loss of weight, swinging temperature (actually observed or recorded by the medical officer of a Public Health Department or institution dealing with the

case), rapid and unstable pulse, &c., is sufficient ground for an assessment of 100 per cent.

The graduated assessment of men below 100 per cent. but above the minimum assessment permitted is bound to be associated with a large error, and the solution is probably to be found in diminishing the number of possible intervals. The writer's own experience is that the more familiar one is with this disease the more one will hesitate to make a prognosis, and assessment is, after all, a prognosis in accurate terms. The chronic fibroid type of disease may be associated with a considerable degree of unfitness for work and yet with comparatively prolonged life. On the other hand, the expectation of life of a patient with a small active lesion at one apex may be very much shorter.

In the writer's opinion the extent of lung tissue involved is of limited value for prognostic or assessment purposes, and forms of classification such as the Turban, Turban-Gerhardt, or that based on the number of lobes diseased, suffer in practice from the undue emphasis laid on the local condition as estimated by physical examination. Even where provision in the classification is made for taking account of the patient's general condition, the majority of observers are naturally influenced in their estimation of the general condition by their observation of the extent of lesion. A measure of the activity is what is wanted, and disease of low activity, but not arrested, would naturally fall into the intermediate grade.

#### *Proposed Method of Assessment.*

The method suggested is that cases of tuberculosis should be assessed in three grades: all those with actively progressive disease at 100 per cent., those in whom the disease is arrested at 60 per cent. or 50 per cent., and all those intermediate at 80 per cent. or 70 per cent. It requires to be emphasised that the presence of actively progressive disease is to be estimated not merely by the presence of rales or of tubercle bacilli in the sputum, but should be based more on the patient's general condition, especially as observed after the lapse of a period of time since his discharge from the Army; but in this matter the writer believes that guidance of the highest value may be obtained from examination by X rays. Whatever may be the limits of X ray examination—and these remain to be clearly defined—there is no doubt that actively progressive disease shows very clearly on a properly taken X ray negative as clouded or steamy shadowing.

The proportion of ex-service men falling to be assessed as "arrested" cases will probably be fairly high. It is a fact that many discharged soldiers who first showed evidence of tuberculosis in the Army, and in whom the records indicate that the diagnosis has been accurate (showing, for instance, the presence of tubercle bacilli in the sputum), are working regularly after a year or two and keeping in remarkably good health without ever having received sanatorium treatment. Many of these men who come before pensions boards show no present signs whatever of disease.

The facts suggest that ordinary treatment in a military hospital has been sufficient in their case to effect an arrest of the disease, and it is possible that they are evidence of the value of early diagnosis, arrived at as the result of the readiness of men on Army service to report sick before they have reached that degree of infirmity which generally leads a man in civil employment to give up work and seek treatment. It is possible, also, that many men with fairly strong natural immunity to tuberculosis have contracted the disease under abnormal war conditions of physical and mental stress associated with a manner of life conducive to infection, and that as soon as they have been removed from these conditions their natural recuperative powers have effected a cure. However this may be, the impression of the writer is that the percentage of "arrests" among discharged soldiers, and particularly among those who were not sent to sanatorium direct from the Army, is above the level of civilian experience.

The policy suggested implies, of course, that the greatest care will be taken to eliminate all cases of wrong diagnosis, and there is no doubt many such have occurred among men discharged from the Army as suffering from tuberculosis. The elimination of these will probably become simpler in the course of time, but in the meantime cases in which there is grave doubt whether the men ever suffered from tuberculosis might be dealt with entirely on their own merits and

<sup>3</sup> A New Life Table for Glasgow, by Dr. A. K. Chalmers.



irrespective of any definite grading adopted for established tuberculosis. All men in whom there is a record of tubercle bacilli in the sputum, even if unequivocal physical signs have never been detected, must, for practical purposes, be regarded as definite cases, although in some instances confusion of specimens submitted to a bacteriologist may have occurred.

#### Summary.

1. The expectation of life of males aged, on the average, 30 years, notified in Glasgow as suffering from pulmonary tuberculosis is about 3½ years.
2. The expectation of life of male cases at a sufficiently early stage of the disease to raise hope of recovery is about 6½ years.
3. The expectation of life of male sanatorium cases discharged with the disease "arrested" is estimated at somewhere about 14 years.
4. The normal expectation of life of all males in Glasgow at the age of 30 years may be taken as 30 years, but was probably higher for the period covered by this inquiry.
5. The above calculations, applied to the assessment of soldiers and sailors discharged with pulmonary tuberculosis, justify a minimum assessment of 50 or 60 per cent., and this should apply to men in whom the disease appears to be arrested for the time being.
6. All cases where the disease is actively progressive, as measured by general signs and symptoms, physical signs, bacteriological and X ray examination, should be assessed at 100 per cent. disability.
7. All others—i.e., cases of low activity such as those of the chronic fibroid type—should be placed in one grade at 70 or 80 per cent. disability.

## THE LYMPHOIDOCYTE AND ITS CLINICAL SIGNIFICANCE.

By A. KNYVEET GORDON, M.B., B.C. CANTAB.,

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THE lymphoidocyte is now regarded as the original ancestor both of the red and white corpuscles of the circulating blood. Amongst the evidence for this view, weight may be attached to the fact that in the foetus up till about the sixth month it is the only blood cell found in the lymph nodes and bone-marrow. From this period onwards the intermediate forms leading to the fully developed erythrocytes and leucocytes begin to appear in a definite sequence. After birth the lymphoidocyte is never found in the peripheral circulation in health, but may be present in certain diseases. When we attempt, however, to determine its pathological distribution in the blood we are met with two initial difficulties.

*Nomenclature of the lymphoidocyte.*—The first is one of nomenclature. Such is the confusion in which the literature of hæmatology has become involved by the multiplication of terms that the lymphoidocyte is found to possess no fewer than 89 synonyms. In the case of some authors it is almost impossible to ascertain to what type of cell their communications refer.

*The panoptic stain.*—Secondly, it is essential that the panoptic stain shall be employed, otherwise the characteristic structure of the nucleus, by which the lymphoidocyte can easily be recognised, is not well brought out. With Jenner's or Wright's stain, for instance, a lymphoidocyte may easily be mistaken not only for the pathological leucoblast, but even for a normal large hyaline cell. The same difficulty occurs, though to a less extent, with Leishman's stain, which has also the disadvantage of occasionally giving rise to nuclear precipitates. It follows, therefore, that many of the deductions of Ehrlich and his school before the introduction of the panoptic stain must be received with caution.

After making such allowance as is possible for these difficulties, we find that the occurrence of the lymphoidocyte in the peripheral circulation, though recognised in the case of the leukaemias, particularly those of the lymphatic type, is not mentioned in other diseases. The tacit assumption is made that its presence is associated with a marked total lymphocytosis. I fail to find any reference in

the English text-books of pathology to its clinical prevalence, though Gruner gives a full account of its biology.

Recently, however, I have had the opportunity of examining blood films from a series of cases of subacute bacterial endocarditis of the Libman type under the care of Captain H. J. Starling, M.D., at the Sobraon Military Hospital. Working with the panoptic stain and full controls I have so far found it in 10 out of 11 cases in the following proportions:—

Case 1, 6 per cent.; 2, 10 per cent.; 3, 2 per cent.; 4, 6 per cent.; 5, 4 per cent.; 6, 7 per cent.; 7, 7.5 per cent.; 8, 7 per cent.; 9, 8 per cent.; 10, 5 per cent.

This type of endocarditis appears to be invariably fatal, and of these cases Nos. 3, 4, 5, 6, and 7 are already dead and 1 is moribund.

As I hope to publish the hæmatology of these cases in extenso later on, I do not give further details, my present object being simply to record the presence of lymphoidocytes. I may say, however, that in no case was a marked leucocytosis present, and that it is possible to exclude any type of pernicious anæmia or leukaemia. It is evident, therefore, that their occurrence is not limited to the essential blood diseases.

The question then arose whether the appearance in the peripheral blood of this, the most primitive, type of cell, might not be of wider distribution and significance, whether it might not possibly be a sign of grave illness from divers causes. I therefore examined films from certain other cases, with the following results:—

CASE 11 and 12.—Moribund from old age, there being no clinical or pathological sign of any other disease; lymphoidocytes present in both to the extent of 6 per cent. and 2 per cent. respectively. Both films showed a moderate total leucopenia with slight relative lymphocytosis. Neither patient incidentally had shown any sign of influenza or tuberculosis.

CASE 13.—Moribund from gangrene of both legs. Lymphoidocytes 2.5 per cent.

CASE 14.—Diabetes. Lymphoidocytes 2.5 per cent.

CASE 15.—Carcinoma of liver. Lymphoidocytes 4 per cent.

The lymphoidocyte is well recognised in hæmatological literature, and many excellent drawings of it are published in the *Folia Hæmatologica* and in Gruner's *Biology of the Blood Cells*. The cell varies in size, but is usually about that of a large hyaline; its nucleus rarely fills the cell and is usually oval or slightly notched. It stains more faintly than that of either a leucoblast or a large lymphocyte or hyaline, and is distinguished by containing from two to four definite nuclei. The protoplasm is scanty, basophilic, and never granular.

It would seem desirable that extended investigation should be made on the pathological distribution of the lymphoidocyte in order that its full significance in the peripheral blood may be determined. I publish this note, therefore, mainly with the object of drawing the attention of other workers to the point. I should add that the staining reactions were controlled by observations of normal blood and marrow films, which were repeated on the examination of each case. Typical lymphoidocytes were obtained for comparison from smears from foetal bone-marrow, and from two cases of myeloid and lymphoid leukaemia respectively.

So far films from the blood of 10 patients who were not suffering from any obviously fatal disease have been examined, but without finding any cells that even resembled the lymphoidocyte. These comprise: Influenza + pneumonia, 6; carbon monoxide poisoning (recovering), 1; aortic disease with fair compensation, 3.

ROYAL CORNWALL INFIRMARY, TRURO.—The governors of this charity have recently issued an appeal for £8000 in order to equip the institution with adequate modern sanitary accommodation and to make provision against fire, and also for other improvements. About £3000 have been raised for the scheme.

Dr. W. S. Thayer, of the Johns Hopkins Medical School, Baltimore, in a paper read before the Annual Congress of American Physicians and Surgeons, advocated the establishment of rehabilitation camps for civilians in time of peace, and said that the practicability of such a course had been shown by the war.



## Medical Societies.

### ROYAL SOCIETY OF MEDICINE.

#### SECTION OF PSYCHIATRY.

A MEETING of this section was held on July 11th, Dr. WILLIAM McDUGALL, the President, being in the chair. After announcing a letter of regret for his unavoidable absence from Dr. Bernard Hart, the President formally introduced Professor JUNG, who had come from so great a distance to read his paper on

#### *The Psychogenesis of Mental Disease.*

Professor Jung dealt with the history of the materialistic dogma in psychiatry, according to which a disease of the mind is a disease of the brain. Even to-day the alienists considered physical aetiology a matter of primary importance and psychogenesis as of very secondary interest. He quoted instances to show how this leads frequently to the neglect of important psychological factors. The origin of this misconception was to be found in our system of education. The neurologist receives a grounding in the natural sciences only, whereas a knowledge of psychology is essential to everyone who may be called on to treat mental disease. Then, too, under the present system only the most extreme cases of disease come before the alienist, who has thus no opportunity to study the early phases of mental disease. Apart from minor troubles such as phobias and obsessions, paranoia, hysteria, katatonia, and dementia præcox were the chief diseases in which no histological changes could be found in the brain. He admitted that in the last named changes did sometimes occur, but suggested that the toxins which produced degenerations might be formed in the course of the disease and be a secondary factor. Neurasthenia might be regarded as a mild form of dementia præcox, and in many cases the disease never reaches that aggravated form in which it is usually regarded as almost incurable. The worst cases of katatonia were, he thought, often due to the maladministration of overcrowded asylums, for cases of dementia præcox reacted to their environment in a way which would hardly be expected if one were dealing with an organic disease.

#### *Illustrative Cases.*

Professor Jung then related four cases of katatonia in support of his thesis that this disease is psychogenic in origin. In the first case the patient had had an unhappy love affair in a certain town, as a result of which he had quitted the locality, intending never to go back. On account of the fact that he had relatives in the district he did, however, eventually return, and on this occasion was seized with his first attack of katatonia. He recovered and remained perfectly well until he again revisited the scenes of his unhappy experience. Immediately upon returning for the second time he once more became katatonic. So that in six years the only occasions on which the patient was seized with this illness were those on which he was confronted with a powerful array of distressing memories. Another convincing narrative was told of a woman who, in the course of a family fracas, had been stigmatised by her husband as "mad," whereupon she had said, "Very well, if you call me mad you shall see what it is like to be mad," and had at once become so violent that she was removed to the mental clinic. There she had speedily regained a great measure of calm, but it was judged she should be kept under observation. She remained calm until she found that she was under restraint and could not immediately return to her home and then she again became very violent, so that it was at last found necessary to remove her to another part of the building. Here she recognised that she was among people who were definitely insane and cried out as before, "If you think me mad you shall see what it is like to be mad," and then fell into a condition of katatonia. A psychological predisposition was not enough in itself to cause a psychosis. In the absence of any mental conflict nothing abnormal might ever be remarked. But it was to be noted that such predisposition tended to produce conflicts and so to establish a vicious circle of disease. Only when the

patient finds that he cannot help himself, and that nobody is able to help him, does he become panic-stricken and so insane.

#### *Treatment of the Psychoses.*

Dealing with the treatment of the psychoses, Professor Jung said that it was perhaps too soon to give an opinion on the value of psychotherapy. Most of the cases which he had explored by analysis had been much too complicated for him to deal with them in the course of a single lecture. He had, however, met with one or two more simple cases, and one of these he related in considerable detail. The case in point was that of a girl, quiet and retiring by nature, who quite suddenly developed symptoms of mental disorder. She said that she spoke with God and with Jesus about war and peace and the sins of men. When seen by Professor Jung she was entirely unemotional, and exhibited no curiosity concerning her visitor or the nature of his visit. She admitted having had these conversations, but could not remember what had been said. When it was urged that she must have heard about matters of great importance and she should have made some notes of what she had learned, she showed a calendar whereon she had simply marked the date when these conversations had taken place. She displayed, in fact, no intelligent interest in the unusual event. She denied having had any religious troubles, but it was learned from the mother that on the evening preceding her hallucinations she had returned from a religious meeting somewhat excited, and had announced her complete conversion. Recognising that taciturnity is a mechanism of self-defence, Professor Jung had proceeded patiently to analyse this case, and in three sittings had traced the girl's history through a recent disappointment in love to a shock which she had received some years previously when at the age of 16 she had been severely punished for encouraging an aged idiot in certain obscene actions. It was at this time that she had become a quiet, rather shy girl, for previously she had exhibited a quite normal display of youthful spirits. This case was, in Professor Jung's opinion, clearly one of dementia præcox of psychogenic origin. The conflict in this instance had led to a complete severance of emotional rapport with the world of men. In a personality where there existed a tendency towards dissociation the same conflict would have caused not dementia præcox but hysteria. It was 10 years since the speaker had first claimed that destructive changes associated with dementia præcox are secondary manifestations of disease, though he did not deny that in certain cases they might be the primary cause of disorder.

#### *The Discussion.*

In the course of the subsequent discussion Dr. W. H. B. STODDART said that what criticism he had to offer came from one who was already converted to the psychogenic origin of mental disorders. Certain organic changes had, however, been observed in connexion with dementia præcox which could not be overlooked. General paralytics whose disease was unquestionably organic in origin did react very markedly to environment. He was not convinced that the cases which Professor Jung described were all of the kind which is generally known as dementia præcox in this country.

Dr. HENRY HEAD questioned whether such a disease as dementia præcox really existed. There were cases which began in the classical way and then became atypical—that is to say, they recovered. In any case, it was the mental condition which was of importance rather than the nomenclature. A disease might have a psychogenic origin in some cases and an organic origin in others. This was clearly the case in exophthalmic goitre, whose occasional psychogenic origin had been clearly demonstrated by the recent air-raids.

Dr. WILLIAM BROWN, speaking as a psychologist, expressed his great indebtedness to Professor Jung for his stimulating address. He emphasised the need for a prolonged investigation into the synthesis of mental disorders, quoting cases from his own experience, including one of disorientation which had ultimately yielded to analytical treatment only when a memory dating from the second year of life had been recalled. The question of the possible psychogenesis of epilepsy was also raised in the course of the discussion.

Professor JUNG, in replying, stated that in cases of major epilepsy psycho-therapeutic methods were of little success.



## Reviews and Notices of Books.

*The Pituitary.* A Study of the Morphology, Physiology, Pathology, and Surgical Treatment of the Pituitary, together with an Account of the Therapeutical Uses of the Extracts Made from this Organ. By W. BLAIR BELL. London: Baillière, Tindall, and Cox. 1919. Pp. 348. 30s.

DURING the last two decades much has been written about the pituitary gland, but still much remains to be done ere we can say much definitely about its functions and inter-relations. Dr. Blair Bell's own experimental work, begun in 1906, was primarily undertaken to elucidate the relationship of the pituitary to the female genital functions and to determine the physiological and therapeutical importance of extracts made from this organ. It soon became evident that such studies, to be profitable, must be based on a comprehensive investigation of the morphology, physiology, and pathology of this gland and its relations to metabolism in general and to the other endocrine glands and those that form hormone-poietic secretions. The outcome of such research is the splendidly illustrated volume under review.

The text is divided into four parts. The development, anatomy, histology, and comparative anatomy are set forth in Part I. (pp. 3-78). The scientific study of the pituitary began in 1838, when Rathke described the origin of the hypophysis from the primitive alimentary canal. We cannot follow the author into the many details of the comparative anatomy of the pituitary. Suffice it to note that in all vertebrates higher than the elasmobranchs there is a definite pars nervosa. Extracts made from this structure are active in all respects.

Part. II. (pp. 79-214) deals with the physiology of the gland and the methods for the investigation of its functions. Certain physiological states are associated with marked changes in the pars anterior. In pregnancy, both in animals and women, this part enlarges—there is an increase in the degree of eosinophilia or by chromophobia ("pregnancy cells")—the essential change during pregnancy is towards greater activity. Hibernation—e.g., in hedgehog and dormouse—also produces striking histological appearances, both in the epithelial elements of the partes anterior and intermedia—the secretory cells of this organ. In the pars intermedia vesicles with hyaline (? colloid) contents are almost always found, and may represent its normal secretion. Herring found "hyaline" bodies in the pars nervosa, derived, he thinks, from the pars intermedia which pass via the infundibulum into the third ventricle, and so into the cerebrospinal fluid. The author does not agree with this view. He thinks that the cells of the pars intermedia produce the pressor substance which he calls "infundibulin," and that this secretion and that of the posterior lobe are taken up by the blood stream. Therapeutically the most fruitful results seem to be obtained by intravenous injection of extracts of the organ as a whole or of its individual parts. Next the author deals with the effects of destruction and partial or total removal of the gland with the operative technique, describing a large number of his own experiments, and others also on separation and compression of the stalk. The author agrees with Paulesco and Cushing that total extirpation or removal of very large portions of the pars anterior is fatal, also that the removal of the pars posterior produces no symptoms. The author also finds that the genitalia not only do not atrophy, but continue to develop in the young female after removal of this portion of the pituitary. He differs from Cushing in finding that in none of the cases in which portions of the pars anterior were removed did dystrophia adiposogenitalis—with its lowered blood pressure and sugar tolerance—supervene. This syndrome, however, occurs after compression and separation of the infundibular stalk. The author reconciles these diverging views by assuming that this syndrome is primarily produced by insufficiency of the pars anterior, and that the only sure way to effect this is to interfere with the blood-supply. The inter-relations of pituitary activity with that of the thyroid and ovaries is fully dealt with.

Part III. (pp. 215-300) deals with disorders associated with the pituitary and their treatment. The author deals with hyperpituitarism and acromegaly, and describes the cases

which he has treated; also with hypopituitarism, which is usually not manifested until the child is growing up. The types before and after puberty are described and illustrated, including dystrophia adiposogenitalis. The surgical treatment of pituitary disease is fully dealt with and admirably illustrated.

Part IV. (pp. 301-329) deals with the therapeutic uses of pituitary extracts for which there are as many names as trade firms manufacturing them. The extracts used were made from the whole gland (pituitarin), pars anterior (hypophysin), pars posterior (infundibulin). The preparations are made as dried or liquid extracts. The former are given by the month, but infundibulin is given intramuscularly; this should be done with caution. The indications for their use are carefully noted and special attention is given to the use and pressor effects of infundibulin in shock, collapse, sepsis, serum-sickness, spasmodic asthma, chronic asthenia with low blood pressure, and in obstetrical cases—in which latter its uses and contra-indications are specially described. The author gives the results of his experience in the use of these extracts in other diseases, but they do not seem to be very encouraging. He says:

"The most notable effects and benefits of pituitary medication are obtained in those cases in which a rapid result is desirable. In such circumstances the extract used is that made from the pars posterior, and its action is exerted upon all the unstriated muscle-tissues of the body."

We congratulate Dr. Blair Bell on the success of his endeavour to lift a corner of the veil that still enshrouds the secrets of the pituitary body. Much work has still to be done before the potentialities are laid bare. Perhaps the author, who has already done so much original work to this end, will, in days to come, reveal to us something more of these fascinating mysteries.

*The Practical Medicine Series for 1918.* Vol. VII.: *Skin and Venereal Diseases.* Edited by OLIVER S. ORMSBY, M.D., and J. H. MITCHELL, M.D. Chicago: The Year Book Publishers. \$1.40. Price of the series of eight volumes, \$10 00.

THIS volume is one of a series of eight issued at monthly intervals, covering the entire field of medicine and surgery, each volume aiming at completeness on the subject treated for the year prior to publication. The aim is commendable and well realised in the present volume on Skin and Venereal Diseases. The amount of information it contains is large and it is presented in a stimulating manner. Due attention is given to the sociological, as well as to the purely clinical aspect of venereal disease. This is evidenced by the sections on Venereal Disease contracted in the Army, and the Teaching of Syphilis. Under the heading of Gonorrhœa there is an interesting note on phlebitis of the deep dorsal vein, a subject to which little attention has been devoted. An attractive feature is the criticism offered by the editor on the various statements enunciated in the text.

*The Ophthalmoscope: A Manual for Students.* By GUSTAVUS HARTRIDGE, F.R.C.S. Sixth edition. With 65 illustrations and four plates. London: J. and A. Churchill. Pp. 152. 6s. 6d.

THE first half of this book deals with the theory of ophthalmoscopic images and gives practical instruction in the use of the ophthalmoscope, covering largely the same ground as the author's book on Refraction. The second half deals with the normal fundus and a few of the abnormal conditions most usually found. Two coloured plates of varieties of the normal fundus will be found useful by the student, but the illustrations of abnormal conditions might well be improved.

*A Woman Doctor: Mary Murdoch of Hull.* By HOPE MALLESON, B.A. With a Preface by L. B. ALDRICH-BLAKE, M.S., M.D. Lond. With portrait illustrations. London: Sidgwick and Jackson, Ltd. 1919. Pp. 231. 4s. 6d.

THE life of a good physician is always worth recording for the sake of the medical generations to come. Many students—and especially the women students—will find inspiration in the story of Mary Murdoch's life. But we feel with Dr. Aldrich-Blake that this biography deserves a recognition beyond that of the medical profession. Her insight into human need and her rich possession in the fruits of human



happiness qualify this busy practitioner as an example to all who are striving for a higher conception of citizenship in the world. The biographer has wisely allowed Mary Murdoch to speak very largely for herself, and, indeed, no art could improve upon the transparent sincerity of her finely written letters. Collected in an appendix are to be found also some of her enthusiastic, yet well-balanced lectures and addresses, together with obituary notices published at the time of her death, and amongst these last the one which appeared in our columns on April 1st, 1916. We can well believe that the people of Hull still mourn and still miss their beloved doctor.

*A Handbook of Medical Jurisprudence and Toxicology.* By WILLIAM A. BREND, M.A. Camb., M.D., B.Sc. Lond., Lecturer on Forensic Medicine, Charing Cross Hospital. Third edition, revised. London: Charles Griffin and Co., Ltd. 1919. Pp. 317. 10s. 6d.

THE third edition of Dr. Brend's useful little book has been enlarged and brought up to date, the chapter on insanity and other abnormal mental conditions having been entirely rewritten. Both this chapter and the preceding one on the forms of insanity are as good as can be expected in so small a space. The section on insanity and criminal responsibility, dealing with the history and application of the M'Naughton ruling, is particularly clear and interesting. The book is essentially a convenient work of reference, and if read as such in connexion with law cases of current interest will prove of value alike to the general practitioner and to the medical student.

#### JOURNALS.

*The Journal of Physiology.* Edited by J. N. LANGLEY, D.Sc., F.R.S. Vol. LII., No. 6. Cambridge University Press. 1919. Pp. 391-474. 9s.—The Rate of Diffusion of Gases through Animal Tissues, with some Remarks on the Coefficient of Invasion, by August Krogh. It would seem that the supply of oxygen to cells has never been systematically investigated hitherto. The author describes fully his series of ingenious experiments. The diffusion constant for a gas through a substance is defined as the number of c.cm. (0°C. and 760 mm. Hg) penetrating through 0.001 (1  $\mu$ ) thickness and 1 sq. cm. surface per minute when the pressure difference is one atmosphere. The diffusion constant for oxygen through animal tissues increases with increasing temperature—about 1 per cent. per degree, taking the rate at 20° as unity. Diffusion of gases through animal tissues is much slower than through water or gelatin. The absolute diffusion constants for oxygen at 20° are: water, 0.34; gelatin, 0.28; muscle, 0.14; connective tissue, 0.115; chitin, 0.013; indiarubber, 0.077. The "invasion coefficient" for oxygen into water is many times higher than the "determinations" hitherto made would indicate.

The Number and Distribution of Capillaries in Muscle, with Calculations of the Oxygen Pressure-Head Necessary for Supplying the Tissue, by August Krogh. To utilise the foregoing data it was necessary to know further the rate at which oxygen is used up by the tissue in question, and the average distance which an oxygen molecule has to travel from a capillary into the tissue before entering into chemical combination. As the capillary arrangements in striped muscle are fairly regular, this tissue was chosen as the basis for study. To this end blood-vessels of certain muscles in different animals were injected. It was found that in striated muscles the capillaries are arranged with such regularity along the muscular fibres that each capillary can be taken to supply a definite cylinder of tissue, the average cross-section of which can be determined by counting the capillaries in a known area of the transverse section. The number of capillaries per sq. mm. of the transverse section of striated muscle appears to be a function of the intensity of the metabolism, being higher in small mammals than in larger forms. The necessary oxygen pressure-head deduced from the total number of capillaries is in all cases extremely low.

Influence of Saprophyte Bacteria on Oxidation in Higher Animals, by I. Kianizin. (Fifth series.) This is a short and interesting paper.<sup>1</sup> (1) The Respiratory Response to Anoxæmia; (2) The Effect of Shallow Breathing, by J. S. Haldane, J. C. Meakins, and J. G. Priestley. As to (1) it is known that ordinarily the respiration is regulated with the utmost delicacy in correspondence with the CO<sub>2</sub> tension of the blood passing through the respiratory centre, and that the centre actually responds to increased hydrogen-ion concentration. The apparatus used is described. In each case the subject of the experiment was sitting at rest while breathing from the apparatus. Records were taken with

each variation of the composition of the air breathed—e.g., 3.82 per cent.—4.29 per cent. CO<sub>2</sub>; other observations were made on altering the proportion of oxygen in the inspired air. It was found: 1. The respiratory response to anoxæmia is in three stages: (a) Increased depth of respiration and increased ventilation per minute owing to lowered CO<sub>2</sub> threshold; (b) periodic breathing unless the anoxæmia is considerable; (c) frequent and correspondingly shallow breathing. 2. Excess of CO<sub>2</sub> (increased hydrogen-ion concentration) causes a considerable and persistent increase in depth of respiration and relatively slight increase in frequency. This response is in marked contrast to the response to want of oxygen. 3. The maximum increase in lung ventilation is obtained when excess of CO<sub>2</sub> and anoxæmia are both present. As to (2), shallow breathing, there are two theories as to the harmonising of the regulation of respiration with the metabolism of the body—viz., (a) that it is a matter of reflex nervous control; and (b) that it is a chemical regulation. Investigations showed that there is a distinct connexion between the nervous control and the chemical control. The authors' investigations were carried out on men suffering chronically from the effects of gas poisoning and from a group of symptoms known as D.A.H., "soldier's heart," "irritable heart," "effort syndrome," attention being given to the regulation of the depth of respiration, more especially to the effects of shallow breathing. "Irritable heart" is characterised by breathlessness on exertion, rapid pulse, fainting attacks, giddiness, exhaustion, lassitude, headache, irritability, &c. These patients invariably show a remarkable type of breathing, which is rapid—20 to 60 or more per minute—and shallow—250 to 350 c.cm.—and on exertion the rate increases very abnormally, while the increase in depth is abnormally small. Their alveolar CO<sub>2</sub> is abnormally low. The patients are like a normal individual at high altitudes, where the diminished oxygen tension of the inspired air produces the same series of defects. All showed shallow rapid breathing. The concertina-like apparatus used for regulated limitation of the air inspired at each breath is described and by it records of rate and depth of the respirations were also obtained. It was found that shallow breathing caused unequal ventilation of the lungs, and this in turn produced anoxæmia and consequently periodic respiration and other symptoms. As to the effect of posture on the type and rate of respiration, the recumbent position is normally associated with slowing and deepening of the respiration, and if the deepening is prevented symptoms of anoxæmia are produced. Similar effects on the respiration were produced by abdominal and thoracic constriction—e.g., by use of corsets. These and other observations are regarded as affording an explanation of orthopnoea. In any condition such as bronchitis, asthma, and emphysema, in which the even distribution of the air in the lungs is hindered by local narrowing of the bronchi or local impairment of the lung elasticity, imperfect oxygenation of the mixed arterial blood must tend to be produced in the same way as in shallow breathing.

The Physiological Action of Extracts of the Electrical Organs of the Skate (*Raja clavata*) and Torpedo (*T. maritima*), by P. T. Herring. Extracts of the fresh organs made with Ringer's fluid were used, and their effects tested on the sartorius of the frog, on mammalian blood pressure, and volume of some organs. Electrical organs do not contain a hormone capable of influencing the contraction of cross-striated muscle. The extracts showed no special effects upon smooth muscle, cardiac muscle, blood pressure, or kidney secretion.

The Supply of Oxygen to the Tissues and the Regulation of the Capillary Circulation, by August Krogh. Direct observations by transmitted and direct illumination were made on the capillaries of the muscles of the tongue of deeply narcotised frogs, and also on other adjacent muscles, and on the muscles of urethane-guinea-pigs by reflected light. Capillaries are not mere passive tubes with the blood flowing through all of them at rates which are determined by the state of constriction or dilatation of the corresponding arterioles. Observations by reflected light on the resting muscles of frogs and guinea-pigs showed that most of the capillaries are in a state of contraction and closed to the passage of blood. By tetanic stimulation of the muscle or by gentle massage a large number of capillaries are opened up. They can be observed to contract again afterwards. In spontaneously contracting muscles a large number of capillaries are likewise opened. The average diameter of the open capillaries in resting muscle is much less than the average dimensions of the red corpuscles, which become greatly deformed during their passage. In working muscles the capillaries are somewhat wider. The oxygen pressure in resting muscles is, sometimes at least, very low, but in working muscles it approaches very near to that of the blood. The capillaries are not merely passively dilated by blood pressure, but constantly perform active variations in calibre. Clinical hyperæmia and anæmia are due mainly to

<sup>1</sup> A summary of previous work will be found in the Journal of Physiology, l., 1916.



changes in the calibre of capillaries and the number of open capillaries. The arterio-motor and capillario-motor systems seem to act in opposite directions.

This is a very interesting volume.

*Studium. Revista di Scienza Medica.* Junne, 1919. Pp. 40. Naples: Corso Umberto I. 154. Price 2 lire.—After three years of cessation owing to the war the publication of this monthly periodical has been resumed under the editorship of Dr. Tommaso Senise. We cordially welcome the re-issue with a passing tribute to the artistic design on the cover, with the inscription of "Scientia Lux Lucis," which recalls the style of Walter Crane. The new number contains an editorial review of the literature of the influenza epidemic, with special reference to articles by Trémolières and Rafinesque in the *Presse Médicale* of last February, by Professor J. Boni in *L' Ospedale Maggiore*, Dr. E. Ruggieri in the *Riforma Medica*, F. Schuffer in the *Rivista Critica di Clinica Medica*, and others.—Among other items one of the most important is the report by Professor Leonardo Bianchi to the After-war Commission, on the Biophylaxis and Prophylaxis of Neurosis and Psychosis. In this report he urges the necessity of modifying the Italian law of 1904 concerning insane people and asylums. This law enacted that reception into an asylum was to be limited to those who were a danger to themselves or to others; it was a measure of public safety, not a conception of treatment. The insane, the report insists, must be treated under all circumstances and not only when they are dangerous; the estimate of public safety emanates from a society saturated with bureaucracy from which the social scope of treatment is banished, to say nothing of that of educating the weak-minded.—Professor A. Cardarelli contributes a clinical lecture on Severe Intercoastal Neuralgia Symptomatic of Aneurysm and New Growths, and the editor has an illuminating paper on a New Method of Investigating the Functions of the Central Nervous System. This method consists in an experimental production of ischaemia in different areas of the brain by ligature of the arteries supplying those areas.—In the section devoted to Reviews, the more modern methods of treating tuberculosis are dealt with, notably that of Lo Monaco, by injections of saccharose.—There are also many extracts from current medical literature, notices of recent books, and general news. The *Studium* has now reached its ninth year of existence and we wish it every success in the future.

## Reports and Analytical Records

FROM

### THE LANCET LABORATORY.

UMBROSE.

(ALLEN AND HANBURY, LTD., 7, VERE-STREET, CAVENDISH-SQUARE, LONDON, W.1.)

THE "barium meal" used in radiological practice should, of course, be quite insoluble in water or acids, as the soluble barium salts are highly poisonous. This means that only the pure insoluble sulphate should be used for the purpose when barium is substituted for bismuth. There is no difficulty in obtaining quite pure barium sulphate free from soluble salts, as is shown to be the case with "umbrose." Shaken for several hours with dilute hydrochloric acid the filtered fluid, according to our examination, showed no trace of barium at all. This simple test, it seems to us, should always be carried out before using the preparation for radiological examination, as serious accidents have arisen either through the sulphate being contaminated with soluble barium salt or through the substitution of the carbonate or even sulphide. Such cases have been reported in our columns. Umbrose is mixed with a certain proportion of convenient pabulum—e.g., cocoa, arrowroot, dried milk—and leaves on ignition a pure white residue of barium sulphate, amounting, according to our analysis, to 74 per cent. A reliable shadow-meal is thus presented.

#### OMNOPON-ATRINAL "ROCHE."

(HOFFMANN LA ROCHE CHEMICAL WORKS, LTD. (SWITZERLAND), 7 AND 8, IDOL-LANE, LONDON, E.C. 3)

Containing the alkaloids of opium in their entirety and in a soluble form, omnopon has recently been combined with atrinal, a sulphuric ester of atropine (not the ordinary sulphate), as a preliminary and adjunct to narcosis by inhalation. Claims are made in favour of its advantages compared with the morphine and atropine sulphate combination, on the grounds that it is less toxic than atropine, its paralyzing action on the pneumogastric is less pronounced,

while it avoids the increased blood pressure following the use of ordinary atropine salts. It is also stated that it has no unfavourable effect on respiration. The combination is an interesting one and the claims made are of importance. Each ampoule contains 1.1 c.cm. of fluid, representing 0.02 g. omnopon and 0.001 g. atrinal.

#### CHELTINE FOODS (MILK AND MALTED AND STRICT DIABETIC).

(THE CHELTINE FOOD CO., CHELTINE WORKS, CHELTENHAM.)

We have received, amongst others, three specimens of the milk and malted foods made by the above company. Nos. 1 and 2 are designed for infant feeding, and No. 3 for invalids and patients with weak digestive function. Our analysis sets out their composition per cent. as follows:—

Milk and Malted Food.	No. 1.	No. 2.	No. 3.
Moisture ... ..	5.30	4.35	5.60
Ash ... ..	1.70	3.05	1.75
Fat ... ..	7.94	12.48	7.88
Protein ... ..	14.11	17.00	11.27
Sugars ... ..	14.85	22.30	12.00
Starch and dextrin ... ..	56.10	40.82	61.50
Total matters soluble in cold water ... ..	34.25	36.75	26.50

Food No. 1 is intended for infant feeding up to the fifth month, when it is replaced by food No. 2. In each case the food is directed to be prepared with diluted cow's milk. It will be noted that No. 2 is richer in all food materials, fat, protein, and sugar, than No. 1, from which it may be fairly inferred that more milk is used in this case. The conversion of starch by malt is not complete in both cases, but a greater conversion is shown in No. 2. Food No. 3 shows still more unconverted starch and dextrin, which, however, are readily dissolved or assimilated as the result of partial digestion with active malt. In addition, we have received two foods described respectively as (4) diabetic strict flour and (5) diabetic strict food. The main question, of course, in regard to these latter foods is the amount of sugar they are capable of yielding on hydrolysis. The results obtained in our experiments were as follows, in terms of reducing sugar after digestion with acid:—No. 4, 18.16 per cent. and No. 5, 16.00 per cent. They contain, therefore, about a fourth only of the quantity of sugar-yielding substances in ordinary flour, the carbohydrates being replaced largely by assimilable proteins.

#### ELIXIR YADIL.

(CLEMENT AND JOHNSON, 1A, SICILIAN AVENUE, LONDON, W.C. 1.)

Reference has been made in our columns<sup>1</sup> to the employment of yadil in influenza when its administration internally appeared to ward off the complications of that disease. Its active constituent is described as trimethenal-allyl carbide, a substance related to the essential oil of garlic. The ordinary preparation has a decided smell and taste resembling garlic, and for those patients who find objection to these characteristics an elixir is now prepared with suitable adjuncts and aromatics obscuring the allylic odour and taste. It is an amber-coloured fluid with sweet and aromatic flavour. Its antiseptic properties are claimed to be established in clinical practice.

#### SUPEROL.

(K. RAYMENT, 2, BROAD STREET-PLACE, BLONFIELD-STREET, LONDON, E.C. 2.)

Chinosol will be barely familiar under the name of "Superol," which is now being imported into this country from the Amsterdam Superphosphate Works by the above agent. A good deal of work has been done in regard to determining the germicidal value of chinosol, and while in some directions it compares unfavourably with other antiseptics, it possesses certain advantages of its own. Those whose experience with its application was satisfactory and who, through the war, were unable to get supplies, as it was exclusively produced in Germany, may be interested to know that its manufacture has been undertaken by the above company under the name of "Superol." It is identical, according to our examination, with chinosol, a combination of potassium sulphate with oxy-chinoline sulphate, the base being prepared by the oxidation of nitro-benzene and aniline.

<sup>1</sup> THE LANCET, March 15th, 1919, p. 440.



# THE LANCET.

LONDON: SATURDAY, JULY 19, 1919.

## The Federation of Medical and Allied Societies.

It will be remembered that at a conference between the Medical Parliamentary Committee and the representatives of other allied organisations held in May last certain resolutions were come to which were published in *THE LANCET* the following week.<sup>1</sup> The resolutions provided for the constitution of a permanent body with various duties towards the medical profession and towards the public, while the drafting of a financial scheme under which the work would be done was left to the existing committee, acting as a provisional body with the responsibility of making a report. The report, it was agreed, would be submitted to the representatives of the whole constituent bodies, and being approved, a new executive would come into being, when all the preliminary stages might be considered over. That was the project and so much has now been done. The Medical Parliamentary Committee has been reborn in what it is hoped will be a permanent shape; it has been renamed; its support for the future is under actual consideration, and it yet has to justify its existence by its works. Such is the outcome of the meeting held at the College of Ambulance last Friday, when the representatives of 47 medical and allied societies met the provisional Medical Parliamentary Committee, heard their report on the future constitution, and in the main adopted their scheme.

For reasons which seemed sufficient to the majority of those at the meeting, the Medical Parliamentary Committee now takes to itself the clumsier but more definite name of British Federation of Medical and Allied Societies, a brief discussion on this alteration of title answering an eternally old question by replying that "British" can be used as an adjective connoting all our Irish interests and all those of our Dominions over the seas. Those who look at the resolutions passed at the large meeting in May—and we hope that many will do so—will allow that for the rest the scheme, which has now been adopted, for carrying on the Federation under a change of name, and under some variance of scope owing to the multiplication of interests, has throughout the same general idea, and that this idea has prevailed since, at the meeting of the medical profession in Steinway Hall in October last year, the Medical Parliamentary Committee came into existence. At that first meeting Dr. CHRISTOPHER ADDISON moved a successful resolution to the effect that, "in the interests of national health it is essential that the considered views of the medical

profession should be voiced by representative medical men in the House of Commons." At the meeting last May the formation of a permanent medical committee was agreed upon by general resolution, having for its objective to supply expert information on health questions to medical Members of Parliament, to warn the bodies constituting the committee of impending legislation affecting such questions, to facilitate communication between any of those bodies where they were particularly interested, and, lastly, to assist in increasing medical representation in Parliament. The story is one of natural evolution. The stage has now been reached when, to carry out this programme, an executive has been elected and plans have been formulated for raising the necessary funds. Finance, as ever, lags behind, and while the meeting last week recognised the merits of the scheme proposed by the Medical Parliamentary Committee for financing the Federation in the future, discussion of the subject in detail is promised.

So much for what is, and while past experience of unified movements within our ranks makes optimistic prophecy risky, we see no reason why the new Federation should not have before it an immediately and widely successful career. Of course, if the Federation is not supported it will not be a Federation, and will effect nothing; equally, of course, those who decide to join the movement *only* when it is successful may in this case find themselves with no movement to join. But there is so much work ahead of the new Federation, and so real and wide a feeling that this work should be done, that we refuse to believe that any apathy, at this critical stage, will be allowed to nullify the strenuous efforts of the past six months.

## Hack v. Hack and Munden.

MR. M. M. MUNDEN is to be congratulated upon the verdict of the jury in the unsuccessful petition for divorce in which he was cited as co-respondent by Mr. H. S. HACK, the husband of one of his patients. The evidence in the case has been reported in unusual detail, and it was evident that the nauseous story told by the respondent and her maid, together with the letters produced by the latter, could yield no verdict other than that returned. This was made all the clearer when Mr. MUNDEN himself had been in the witness-box and when his evidence had been corroborated by his wife. The story which had to be met was one lacking in practically all those elements of probability which are usually present in the accounts of alleged conjugal infidelity laid before the divorce court. Mrs. HACK was the patient of Mr. MUNDEN from May, 1913, to the autumn of 1917, and she was, as he fully recognised, suffering from alcoholism and hysteria. He also attended her for more than one miscarriage. According to Mrs. HACK, he seduced her in the drawing-room in 1914, and from that time onwards committed adultery with her on various occasions under the cloak of professional attendances, for

<sup>1</sup> *THE LANCET*, May 10th, p. 808.



which, in fact, he charged as such. On one of the dates assigned to these acts Mrs. MUNDEN was waiting outside the house in the motor-car, in which she frequently accompanied her husband on his rounds. This in itself would be a story of unusual depravity and recklessness on the part of a medical man who had himself been recently married, whatever might be the physical or mental condition of the patient with whom he was intimate. When it is remembered, however, that Mr. MUNDEN was attending Mrs. HACK for alcoholism and hysteria, which was not in dispute, it will be seen at once that only the strongest proof of infatuation in no common degree on his part could render the allegations credible.

Folly and imprudence have limits even in those rendered blind by passion to the likelihood of such a woman betraying her lover, but in the case of Mr. MUNDEN and Mrs. HACK there was not a tittle of evidence of even the most casual friendship, or the most ordinary social intercourse. That he visited his patient as a medical man at intervals was common ground, and no witness on behalf of the petitioner attempted to prove anything more. Nor was there even anything to suggest that Mr. and Mrs. MUNDEN did not live together as a perfectly united married couple. In these circumstances it was only natural that Mrs. MUNDEN should be able to support her husband in his statement that he was only absent for the period necessary for a professional visit on a night when Mrs. HACK and her maid swore that he spent at least two hours in the bedroom of the former. In the same way the doctor's wife could state to a material extent what took place on another occasion when her husband and herself were interrupted at dinner by a visit from Mrs. HACK, who was taken by him into the surgery and afterwards got rid of. There was a singular absence of independent testimony from the whole case. Among the facts referred to, however, were the damning letters produced by the maidservant, to whose custody the respondent had entrusted them. They were written to Mrs. HACK by other men than the co-respondent, in terms that will have been noted by all who read them, and among them was no line of writing from Mr. MUNDEN. In short, the co-respondent, so far as the evidence went, had never sent to the respondent anything more incriminating than a prescription; and he will have the heartiest sympathy of all in the position in which he found himself placed.

Medical men know well that the case of HACK v. HACK and MUNDEN is not an isolated one, but an example of a class. It is a rare example of what may occur, but by no means without parallel. It is a danger which has to be faced by members of nearly all branches of the medical profession, that at any time a woman with whom they have been alone may make against them a charge of undue intimacy or of improper conduct of some kind without any ground whatever for doing so. There is no absolute safeguard against such charges, nor, of course, can we say that on all occasions when a medical man sees a female patient alone he ought to have a third person present. This would be a

counsel of perfection which in practice would not be possible of fulfilment. Precautionary steps may be taken in cases where symptoms displayed by the patient point to their being desirable, but always the principal safeguards for the doctor would appear to consist in confining the interview to the limit of time necessary for the matter in hand, and the keeping of strict records made with the least possible delay, which should contain all essential details of the patient's condition with the treatment recommended. The ethical rule which restrains a medical practitioner from discussing even with his wife the diseases or idiosyncrasies of his patients deprives him of a limited form of protection which he might otherwise have, this being especially so when there is no professional colleague with whom to discuss any salient points in the case or in the demeanour of a patient. Another way of avoiding risk is to refuse attendance, but it is a dangerous method for a young doctor to adopt—it does not improve his practice, and might lead to his being asked to formulate his reasons for his unusual conduct. A practitioner cannot be blamed for continuing his attendance in risky circumstances any more than a barrister can be blamed for continuing his advocacy on behalf of a client of whose probity he feels doubtful. The medical man will, however, exercise prudence and care in future attendances on such a patient, confident in his own integrity and honour, and not without some faith in the time-honoured maxim which ascribes ultimate victory to truth. To join one of the defence societies is absolutely necessary for the medical practitioner, and we congratulate the Medical Defence Union on securing the complete acquittal of their member from a ruinous charge.

## The Conditions of Asylum Medical Service.

THE Asylums Committee of the London County Council has just presented its report to the Council on a revised scale of remuneration and other improvements in the conditions of service of the assistant medical officers at the Council's mental hospitals. It may be recalled<sup>1</sup> that shortly before the war the discontent with their position felt by asylum officers throughout the country resulted in a movement for association to protect their interests and advance the status of asylum service. In May, 1914, a petition was presented by the assistant medical officers of the London asylums to the County Council asking for a betterment of their conditions of service and pay. A deputation then received explained the difficulties experienced by the Council in obtaining the staff for its mental hospitals by adducing three causes: for the unpopularity of the service. The specialty of mental diseases is alone in this country in not enjoying a teaching centre; opportunities for advancement in the lunacy service are practically non-existent; and, thirdly, outside the

<sup>1</sup> THE LANCET, 1914, i., 116.



strictly limited number of superintendentships the conditions of asylum service preclude any prospect of living a life of reasonable freedom and responsibility. The deputation suggested that facilities should be given for study-leave sufficient to enable medical officers to obtain a diploma in psychological medicine, and that officers should be seconded for the purpose of holding clinical posts at the Maudsley Hospital, of taking post-graduate courses elsewhere, or of carrying out research work. It was finally urged that permission to marry should not be withheld from any medical officer on the permanent staff after a reasonable length of service.

The war postponed consideration of these suggestions, and now that the matter comes up again for decision the Committee admits that the difficulties have increased rather than diminished, in view of the greater scarcity of qualified medical men and the growing attraction for the medical entrant of other branches of public service. In view of this the Committee proposes a drastic revision of the remuneration scale, the rate of pay for the first assistant being fixed at £700, equivalent to £875 with the present war bonus and percentage additions. His colleagues would similarly look to a salary running up to £755, £650, and £553 respectively in ascending order of seniority. This scale to count for the larger mental hospitals with 2000 or more patients. It is further proposed to remove the restriction upon the civil state of medical officers below the grade of second assistant, and to put them in this respect in the same position as the senior assistant who already finds suitable accommodation provided for him as a married man within the asylum precincts. Sympathetic consideration has been given to the points raised in regard to education, special medical qualifications, and leave, and a further vital change is submitted for the approval of the Council—namely, not to appoint any officer in future exclusively to a single institution, but to leave open the question of transfer from one mental hospital to another.

The time is, indeed, more than ripe for the suggested reforms. The life of the asylum medical officer has in the past tended neither to the efficiency of the service nor to the development of the medical officer's own powers and character. The disabilities in regard to marriage could hardly have been enforced by any authority possessed of human sympathy and social imagination. To the Ministry of Health, under the recent Act, it is lawful to transfer by Order in Council any powers and duties of the Secretary of State under the Lunacy Acts. The London County Council has already, without pressure from above, begun to set its house in order in regard to a proper mental medical service, but it remains to be seen whether the service can become such as it should be, in the interests of staff and patients, without being placed under the Minister who directs the other public health services of the country. The quasi-autonomy of the Board of Control is an anachronism.

## Annotations.

"Ne quid nimitis."

### THE OSLER PRESENTATION.

A DISTINGUISHED company, which included the President of the General Medical Council, the Director-General of the Army Medical Service, and the High Commissioner for Canada, assembled on Friday, July 11th, at the House of the Royal Society of Medicine, to do honour to Sir William Osler on the eve of his seventieth birthday. Sir Clifford Allbutt presented the two large octavo volumes of essays written by pupils, colleagues, and friends in all parts of the British Dominions and America, alluding feelingly to Sir William Osler's leadership in the relief of sickness and adversity, and to the fruitfulness of the marriage of science and letters exemplified in his career, concluding with the words:—

"In these volumes we hope you will find the kind of offering from your fellow-workers which will please you best; immaterial offerings indeed, but such as may outlive a more material gift. As to you we owe much of the inspiration of these essays, and as in many of their subjects you have taken a bountiful part, so by them we desire to give some form to our common interests and affections.

We pray that health and strength may long be spared to you and to her who is the partner of your life; and that for many years to come you will abide in your place as a Nestor of modern Oxford, as a leader in the van of Medicine, and as an example to us all."

Sir William Osler, in responding to the gift, recalled his own vagrant career—as a student in Toronto, Montreal, London, Berlin, and Vienna, as a teacher in Montreal, Philadelphia, Baltimore, and Oxford. Loving the profession of medicine and believing ardently in its future, he had been content to live in it and for it. We may recall his own words spoken 14 years ago in taking leave of his friends in the United States:—

I have loved no darkness,  
Sophisticated no truth,  
Nursed no delusions,  
Allowed no fears.

In the spirit of equanimity, which he then praised, he has borne success with humility, the admiration of his friends without pride, and has stood the test of sorrow with unflinching courage. The 14 years among us have brought Sir William Osler in full measure the affection of us all.

### DEGENERATION AND REGENERATION IN THE PERIPHERAL NERVES.

Professor Onari Kimura, of the Pathological Institute of the Imperial University at Sendai, Japan, has published an elaborate monograph<sup>1</sup> on degeneration and regeneration in the peripheral nerves, with especial reference to non-traumatic cases and experimental beri-beri, embodying the results of a long series of investigations on non-traumatic "neuritis." His researches were conducted on some 20 fowls and pigeons, in which typical "polyneuritis" was produced by feeding on polished rice for varying periods and in varying combinations, fully detailed in the monograph. By way of comparison, some 16 dogs and guinea-pigs were subjected to nerve section with immediate enclosing of the central end in an animal

<sup>1</sup> Mitteilungen a. d. pathologischen Institut der Kaiserlichen Universität zu Sendai, Japan, 1919, erster Band, erster Heft, pp. 1-160.



membrane filled with fresh blood, or the cut ends were placed in apposition in various ways—e.g., in one case they were surrounded by a mass of brain-substance taken fresh from another guinea-pig. The minute histological investigation of a human case of acute tuberculous polyneuritis and of progressive hypertrophic interstitial neuritis (Dejerine-Sottas) was also undertaken. As Professor Kimura intends to deal with the traumatic material in a subsequent communication, his allusions to it are brief, but he points out that regeneration in section cases is different from what obtains in non-traumatic cases, to which he devotes almost the whole of his paper. The pathological changes in the nerves and muscles of birds fed on polished rice are essentially of a regressive-degenerative character. In the muscles simple atrophy and fatty degeneration are the chief changes, but they are not of primary significance, for often within one week of the resumption of normal feeding wasted muscles recover their ordinary volume and apparently also their full functional power. The severity of the anatomical changes in the peripheral nerves, in experimental "rice-neuritis," bears no constant parallel relationship to the clinical symptoms. In their essentials they consist of a pure degeneration; in no instance did Professor Kimura find any sign of alterations of an inflammatory nature. Degeneration does not by any means always commence at the periphery of the nerve fibres; on the contrary, it may appear anywhere along the course of a nerve, sometimes at different levels in different fibres of the same nerve. Further, normal and degenerated fibres are seen side by side. The suggestion is made that experimental "neuritis" is a general affection of the nervous system, with local lesions at sites that are somehow predisposed. Lower extremities are much more usually affected than upper, with special incidence on the peroneal nerves. The first recognisable sign of degeneration is in the axon, frequently noted when the myelin sheath is still intact, nor does it necessarily progress distally by a mere Wallerian process, for the morbid agent may attack spots beyond the original lesion. Once the nerve fibre gets to the stage of complete myelin degeneration no axon can be found in it; in fact, the latter disappears before any complete break-up of myelin. The myelin fragments are, according to all appearance, absorbed *in situ* after being dissolved or otherwise chemically modified by some (? fermentative) function of the cells of the sheath of Schwann, or stream in this dissolved state towards lymph and venous channels; in the human cases, however, there was evidence of direct phagocytic activity for the scavenging of some at least of the degenerative products. When a fibre in a state of complete myelin disintegration is seen to contain within its neurilemma an axon, such axon, according to Professor Kimura, is invariably a new formation—i.e., a regenerated axon. To the problem of regeneration in non-traumatic "neuritis" he devotes an important part of his research. His view, supported by much histological evidence, is that the way is paved for the new axons by protoplasmic prolongations of the cells of the neurilemmal sheath, that these link up to form more or less "solid" protoplasmic paths, filling the otherwise nearly empty fibre. In or through this protoplasm the new axon makes its appearance, either by direct outgrowth from the proximal end, or—a very important alternative—by differentiation from this

ribbon-like protoplasm, beginning at the end nearest to the old axon-stump, and spreading link by link peripheral-wards. It is commonly a simple, smooth, delicate axon, with neither whorl nor end-bulb formation on its course, thereby differing from what is seen in the majority of cases of regeneration after trauma. Much importance in this matter is attached by the author to the intactness of the neighbouring connective tissue supporting the nerve. For the equally interesting question of the origin of the new myelin formation these researches of Professor Kimura unfortunately do not serve; he merely indicates the possibility of part of the protoplasmic bridges within the fibre sheath being allocated to that purpose. It is to be regretted, also, that he modestly considers his experimental material too meagre for any exhaustive contribution to the problem of the pathogenesis of beriberi, or "rice-neuritis," and contents himself with a review of the literature and present state of knowledge on this vexed question. He remarks with justice that little enough attention has been paid to the actual pathology of the deficiency diseases, and is not clear that the "monophagismus" group of beriberi, scurvy, Barlow's disease, and pellagra contains conditions essentially alike in their pathogenesis. Whether "ein schädliches plus" beyond mere partial starvation is essential Professor Kimura does not allow himself to say, but he quotes with approval the opinion of Eijkman—which for that matter had been expressed before—that absence of some essential element in food may allow the development of some nerve poison to which the symptoms are attributable. The monograph is illustrated with admirable coloured drawings, and micro-photographs reproduced in collotype, and there is a very long bibliography.

#### INSURANCE FOR MEDICAL MEN.

THE Managing Committee of the Medical Insurance Agency met last week and found itself able to make substantial interim allotments, amounting to £455—£125 to the Royal Medical Benevolent Fund, £125 to the Royal Medical Benevolent Fund Guild, £105 to Epsom College Royal Medical Foundation, and £100 to the Royal St. Anne's School. In this way the committee was fulfilling one of its prime objects. For the Agency, when founded 12 years ago with the intention of assisting medical men to obtain the best terms of insurance of all kinds, has from the first kept in mind as one of the chief reasons for its existence the practical aid of the benevolent institutions of the profession. The Royal Medical Benevolent Fund is the most largely benefited of such institutions in the recent distribution, but its record deserves that this should be so, while its offspring, the Guild, is doing most admirable work, the special feature here being the personal interest of individual ladies in the work. It has seemed to the Agency that one of the most practical means it could take to help less fortunate members of the profession was to contribute to the education of children. This it has done by subscriptions to Epsom College, where boys are received on the foundation, and to the Royal St. Anne's School, where girls obtain an excellent education. This benevolent side of the Agency's work has commended it to many members of the profession, though not to so many as might have been expected to resort to it. Last year the total



distributed from the Agency's medical benevolence account was £1002 10s., including contributions of £150 to the War Emergency Fund of the Royal Medical Benevolent Fund, and £100 to the Belgian Doctors' and Pharmacists' Relief Fund. At the same time the insurers received an advantage by the return out of the commissions received by the Agency of certain sums which in 1918 totalled £697. Since the foundation of the Agency £7200 have been returned in this way to insurers, a sum which represents a direct saving to the profession. The Agency is not bound to any particular companies or forms of policy, and is able to advise medical practitioners contemplating insurance as to the best form of policy to suit their particular conditions. The life insurance business conducted through the Agency is considerable, and it is confidently anticipated that as the conditions disturbed by the war become more stable this form of business will largely increase. The insurance of motor-cars is growing into an extensive branch of energy; in spite of the difficulties in the way of motorists created by the war and the shortage of petrol and of cars the number of motor insurances has increased, and experience has proved that the Agency, owing to the amount of business it conducts in this direction, is able to assure to its clients that their claims shall be promptly and generously met. In presenting the financial report the chairman, Dr. G. E. Haslip, was able to speak in the most hopeful terms of the future of the Agency, and mentioned that vacancies, due to deaths of several members of the committee, had been filled by the election of Dr. E. Weaver Adams, Dr. H. A. Des Vœux, Lieutenant-Colonel R. H. Elliot, I.M.S., Dr. R. A. Gibbons, and Dr. R. Langdon-Down.

#### PENTOSURIA.

THE occurrence of pentoses in the urine is not so rare an event as is commonly supposed. Pentosuria is not necessarily associated with any morbid symptoms, and does not of itself call for any particular treatment; the importance of the condition arises from the fact that its presence may lead to a hasty diagnosis of diabetes, with consequent dietetic restrictions which are unnecessary. Two distinct types may be recognised: (1) the alimentary form, in which the sugar is l-arabinose and the urine rotates polarised light to the right; (2) true or essential pentosuria, in which the sugar is usually i-arabinose and the urine is optically inactive, unless some other sugar is present as well. Alimentary pentosuria is apt to cause mistakes in diagnosis, especially at this time of the year when fruit is being eaten more extensively than at other seasons. The tolerance limit for pentoses is small, about half a gramme, and even in healthy people a surfeit of cherries will cause the appearance of the sugar in the urine. Plums, gooseberries, strawberries, apples, and other fruits in sufficient amount may give rise to a similar result. The amount of sugar excreted is usually small, 0·5 per cent. or under, and as arabinose does not reduce as readily as dextrose the reaction is delayed and is often of a peculiar type. When, for example, the urine is added to Fehling's or Benedict's solution and boiled no change occurs for a time, but after continued boiling the colour of the solution suddenly changes to green, no turbidity occurring even when the heating is prolonged. A small percentage of dextrose or other reducing substance may give a similar result.

More characteristic is the orcin reaction, best carried out in the form of Bial's test. 4–5 c.cm. of Bial's reagent (0·5 gr. orcin, 250 c.cm. fuming hydrochloric acid, sp. gr. 1·195, and 12 drops of liq. ferri perchlor.) are heated to boiling in a test-tube and 1 c.cm. of the urine added; on standing a green-blue colour develops when a pentose is present. If the solution is cooled, extracted with amyl alcohol, and the extract examined with the spectroscope, it shows a band between the red and yellow (C and D). Glycuronic acid may give a similar reaction, but it also gives Tollen's naphthol-resorcinol test. The most conclusive evidence is furnished by preparing the diphenylhydrazone with a melting-point of 216–218° C. for the l-arabinose derivative and 204–205° C. for the i-arabinose compound, and the parabrom-phenyl-osazone which melts at 196–200° C. in the case of l-arabinose and 200–202° C. for the inactive form. As pentoses are not fermented by yeast the reducing power of the urine in cases of pure pentosuria is not impaired by mixing it with yeast and standing in a warm place for 24 hours.

#### PRACTICAL ISSUES ON THE ALCOHOL QUESTION.

WE welcome the scientific investigation of alcohol with reference to practical issues. No one drinks a dilution of pure alcohol and water, and yet hitherto, whilst interesting evidence has been accumulated, physiological experiments have, in the main, been based not on the actual beverages consumed by the public, but literally on  $C_2H_5OH + H_2O$ . That formula does not by any means present the story of such beverages as claret, sherry, port, beer, champagne, and so forth, none of which is a mere dilution of pure alcohol, and it is well known that these various alcoholic beverages differ in their effects. The effervescent wine champagne, for example, has a different effect from claret, though both contain the same amount of alcohol. There are important varying factors in the numerous alcoholic beverages consumed by the public which must count in regard to their effects. A mixture of whisky and water, for example, is below the specific gravity of water, whilst wines and beers are above this point on account of the solid matters in solution. Osmotic pressure must therefore vary, and with it the rate of diffusibility of the alcohol.

In an important investigation undertaken for the Medical Research Committee by Dr. Edward Mellanby,<sup>1</sup> bearing on the absorption into, and disappearance from, the blood of alcohol under different conditions, these points find interesting illustration. It is shown that differences in intensity of intoxicating symptoms obtained by taking the same amount of alcohol in one or several drinks depend on the type of beverage drunk and the interval between the drinks. Foodstuffs inhibit intoxication in consequence of their action in delaying the absorption of alcohol from the alimentary canal. The most effective inhibitor is milk, the action of which appears to be dependent to some extent on its fat content. Its specific influence in delaying absorption more than counterbalances its general effect as a fluid, and Dr. Mellanby comments upon the striking differences observed in the effects of a dose of alcohol when given two hours after the consump-

<sup>1</sup> Special Report Series, No. 31. National Health Insurance, Medical Research Committee: Alcohol: Its Absorption into, and Disappearance from, the Blood under Different Conditions. London: Published by His Majesty's Stationery Office.



tion of half a litre of water and after half a litre of milk respectively. In the first case a dog may become incapable of standing or walking, in the latter case it may show no sign whatever of unsteadiness. Whisky is found to be more intoxicating than stout, partly because of its greater concentration of alcohol, and partly because stout contains something which inhibits the absorption of alcohol to some extent. These results are interesting in discussing the factors influencing intoxication. It is found that intoxication is related to the amount of alcohol in the blood and probably to the rate of accumulation in the blood. Dilute solutions of alcohol are less intoxicating than strong solutions containing the same amount of alcohol, the difference becoming more marked the greater the quantity of alcohol consumed and the greater the dilution. These results have an important bearing on the question of what constitutes an intoxicating liquor, a question which is being fought out in the U.S. courts in connexion with the legality of the sale of 2.75 per cent. (alcohol) beer under prohibition. Dr. Mellanby's investigation was confined to the use of dogs as subjects, but the various factors shown to affect the results in a dog are likely to have a corresponding influence in man, and similar experiments so far being carried out on human beings indicate that the results are strictly comparable. There is one difference, however, noted. The hind legs of a dog are the first to show weakness, and it is this which makes it more difficult for a dog to stand still than to walk when intoxicated. In other words, in walking the weakness of the hind legs is compensated for by the front legs and the muscles of the other parts, and collapse prevented. In man the whole support of the body depends upon the legs, and the base of the standing man is relatively much smaller than that of the dog. Consequently, balance is a more difficult matter in an intoxicated man, and therefore unsteadiness is a more predominant feature in the complete picture.

The report is one of the best contributions on the practical side of the question that has been issued, and the evidence that the effect of alcohol is cumulative because its disappearance from the blood is remarkably slow is not the least important observation made—apparently it makes no difference whether a given amount of spirit is taken in one dose or in divided doses at intervals which may extend to two hours.

#### THE CONSULTATIVE COUNCILS OF THE MINISTRY OF HEALTH.

THE draft orders establishing Consultative Councils under the Ministry of Health for England and Wales are now being issued. There are five of these Councils, four for England and one for Wales. The English Councils are to give expert advice in connexion with: (1) Medical and allied services; (2) local health administration; (3) National Insurance; and (4) general health questions. Each English Council will be composed of 20 members, and the Minister and Parliamentary Secretary to the Ministry will be respectively President and Vice-President. The Welsh Council, with the same ex-officio officers, will consist of 30 members chosen to give advice under all four of the English sub-headings. The period of office is for three years, and during the first three years one-third of the Council will retire by lot, but can be reappointed for one further term of three years. The personnel will consist of women as well as men.

#### ENCEPHALITIS LETHARGICA.

DURING the past year reports have been received which show that cases with the symptomatology of encephalitis lethargica have occurred in many countries. There appears to be practical unanimity that the disease is to be regarded as distinct from the encephalitic form of poliomyelitis. Many observers are of the opinion that it is a disease allied to poliomyelitis; while others, mainly those who have made a special study of the history of the disease, incline to the view that encephalitis lethargica is associated in some intimate causal manner with influenza.<sup>6</sup> The latter point out that previous recorded epidemics of lethargy have been associated in point of time with epidemics of influenza, and they suggest that an attack of influenza either predisposes the patient to the lethargy or in some unexplained way activates the virus of lethargic encephalitis. The symptomatology of the recorded cases is the fairly constant one which is already familiar to readers of THE LANCET. The various epidemics differ, however, in the severity of the individual attacks, and particularly in the mortality which, in the case of the Australian epidemic, was as high as 70 per cent. The pathological reports on the fatal cases show constant involvement of the basal ganglia and the pons by an encephalitic process, characterised by well-marked perivascular lymphocytic infiltration with occasional venous thrombosis and necrosis of the brain substance. The severe cases show generalisation of this process in the central nervous system.<sup>4</sup> Inoculation experiments were particularly striking in the case of the Australian epidemic. The virus produced typical lesions, not only when inoculated into monkeys, but also on injection into sheep and into a horse and a calf. Herein it differed markedly from the virus of poliomyelitis, to which the monkey alone has been proved to be susceptible.<sup>5</sup> In another group of cases, on the other hand, experimental inoculation produced clinical and pathological evidence that the disease was acute poliomyelitis with an unusual distribution of the lesions.<sup>2</sup> On the whole, it would appear that while the symptomatology of encephalitis lethargica may occur as a result of the lesions of epidemic poliomyelitis, yet there exists a disease *sui generis* which produces such symptoms as a constant feature, owing to the regularity with which it involves the basal ganglia. Further light on the symptomatology of the disease was thrown by Dr. E. Farquhar Buzzard in his paper read before the Neurological Section of the Royal Society of Medicine on July 10th. In a considerable number of cases which he put on record the initial stage, presenting cranial nerve palsies associated with lethargy, was followed by the appearance of various involuntary movements of the face, tongue, and limbs. The character of these movements was athetoid, with some features strongly reminiscent of chorea, but a general characteristic of all was the absence of interference with the due performance of voluntary movements. In this they resembled the involuntary movements seen in paralysis agitans, and, indeed, in one of the cases described by Dr. Buzzard the aspect of the patient suggested this diagnosis. As is well known, the lesion of Parkinson's disease is localised in the basal ganglia, and cases of disseminated sclerosis in which the patches occur in the same region exhibit sleepiness and drowsiness to a marked degree. It appears, therefore, that lethargy may take its place



among the true localising signs of cerebral lesions. Such being the case, it is to be expected that any disease producing a lesion in this region may cause lethargy. As Sir Thomas Barlow pointed out in the course of the discussion, one of Dr. Buzzard's cases might well have been a case of measles with encephalitis as a complication. So far during this year true encephalitis lethargica has appeared only sporadically, and under such circumstances the separation of a disease with such a complex symptomatology presents great difficulty. Dr. Buzzard indicated the importance of the further development of our knowledge of filter-passing organisms in connexion with diseases in this category.

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## TREATMENT OF ANTHRAX BY LOCAL INJECTION OF SERUM.

In the *American Journal of the Medical Sciences* for June Dr. Joseph C. Regan and Dr. Catherine Regan have reported a case of anthrax which, in addition to other features of interest, seems to indicate the value of a new method of treatment—the local injection of anti-anthrax serum. A man, aged 26 years, was admitted to hospital on Nov. 21st, 1918, as a case of parotitis. On the 18th, while shaving, he cut himself on the right side of the neck. He lathered soap over the wound with a new shaving brush which he had washed and placed in boiling water. Next day about noon he complained of headache, backache, and pains all over the body. Towards evening the neck became stiff, especially on the right side, so that it hurt him to turn his head. This he attributed to a small pustule which had developed at the wounded spot. During the night he had a chill and felt feverish. On the 20th swelling of the neck was more marked and was tender. On the 23rd he came under observation. His voice was hoarse. The throat was congested. Over the right interscapular region a few moist râles were heard on inspiration. On the right side of the neck,  $1\frac{1}{2}$  in. below the angle of the jaw, was a considerable swelling with a pustule about 25 mm. in diameter in the centre, like a vaccination lesion on the ninth day. In the centre of the pustule was a black depressed eschar, surrounded by an elevated white border. At the outer margin of the eschar were a number of small elevations resembling vesicles, which discharged continuously serous fluid. The surrounding tissues were very cedematous. Smears and cultures were taken from the ulcerative surface, exposed by lifting the margin of the eschar, and showed anthrax bacilli. This was verified by inoculation of a mouse. A culture from the patient's blood was sterile. On the 24th, at 10 A.M., 48 c.cm. of anti-anthrax serum were injected into the muscles of the right buttock, and in the evening 10 c.cm. into the indurated tissues around

the pustule. From 99° F. at 8 A.M. the temperature rose to 101° at 8 P.M., and returned to 99° on the following morning. This was regarded as a serum reaction. On the 25th the oedema had slightly extended, and the lesion seemed more definitely elevated. 30 c.cm. of serum were injected into the right buttock, and 10 c.cm. into the region around the pustule. On the 26th the inflammation and swelling rapidly subsided. On the 27th the pustule had shrunk considerably and lost its red areola. The most marked swelling was localised in a mass of glands below the angle of the jaw. Twelve c.cm. of serum were injected in their neighbourhood. On the 29th another intramuscular injection of 30 c.cm. was given and the glandular swelling subsided rapidly. Recovery ensued. The anthrax bacillus was cultivated from the shaving brush. Only serum treatment was used. Its success rendered excision of the lesion unnecessary. The local injection of serum does not appear to have been previously tried. The mildness of the attack, despite the situation of the pustule in the neck, is noteworthy.

## MEDICAL BOARDS OF THE MINISTRY OF PENSIONS.

MEDICAL practitioners wishing to serve on the Boards of the Ministry of Pensions, and especially those who have had practice and experience in the diagnosis and treatment of war diseases such as trench fever, dysentery, malaria, &c., are requested to communicate with the Commissioner of Medical Services of the Region in which they reside. The names and addresses of the Commissioners and the boundaries of their Regions are given below:—

London and South-Eastern Region: Dr. H. J. Neilson: Hotel Windsor, Victoria-street, S.W. 1. County Boundaries: The City of London and Metropolitan Police Districts, and the counties of Kent, Surrey, and Sussex.

Eastern Region: Dr. T. Basil Rhodes, 80, Westbourne-terrace, Paddington, W. 2. County Boundaries: Norfolk, Suffolk, Cambridgeshire, Oxfordshire, Huntingdonshire, Bedfordshire, Berkshire, Buckinghamshire, Northamptonshire, Leicestershire, Rutlandshire, Hertfordshire, and Essex (except the portion of the two latter included in London and South-Eastern Region).

South-Western Region: Dr. J. Young, 5A, Union-street, Bristol. County Boundaries: Gloucestershire, Wiltshire, Dorset, Somerset, Devonshire, Cornwall, Hampshire, Isle of Wight.

West Midland Region: Dr. E. R. Hill, Queen's College, Paradise-street, Birmingham. County Boundaries: Staffordshire, Shropshire, Herefordshire, Worcestershire, and Warwickshire.

East Central Region: Dr. Gibbs Lloyd, Acting Commissioner, Basinghall Buildings, Basinghall-street, Leeds. County Boundaries: Yorkshire (except the Cleveland district on the north, which is included in Northern Region, Middlesbrough Area), Derbyshire (except district included in Chester (new)), Nottinghamshire, and Lincolnshire.

North-Western Region: Dr. A. H. Williams, 1, North-parade, Deansgate, Manchester. County Boundaries: Lancashire, Cheshire, Isle of Man, and portion of Derbyshire embracing Glossop and New Mills.

Northern Region: Dr. W. Lloyd Reade, 47, Pilgrim-street, Newcastle-on-Tyne. County Boundaries: Northumberland, the town of Berwick, Durham, the Cleveland district of Yorkshire, Cumberland, and Westmorland.

Welsh Region: Dr. Bickerton Edwards, 30, Park-place, Cardiff. County Boundaries: The whole of Wales and Monmouthshire.

Scottish Region: Dr. G. H. Gibson, 59, Cockburn-street, Edinburgh. The whole of Scotland.

Irish Region: Dr. D. A. Carruthers, 41, Upper Fitzwilliam-street, Dublin. The whole of Ireland.

It is understood that the remuneration will be 1 guinea per session of 2½ hours for ordinary members of the Board and 2 guineas per session for specialist members of the Board.



### A NATIONAL COLLECTION OF WAR SPECIMENS.

As our readers are already aware, the Council of the Royal College of Surgeons of England, at the request of the Army Council, placed its Museum, workrooms, and staff at the disposal of the Royal Army Medical Corps at an early phase of the war for the purpose of building up a national collection to represent the injuries and diseases suffered by soldiers under modern conditions of warfare. From the conservator's annual report, dealing with the welfare of the Museum during the past 12 months, we learn that altogether 4000 specimens have been received, chiefly from hospitals in France, although a representative series was also obtained from base hospitals in the Eastern Mediterranean. Over 1200 of these specimens have already been examined, mounted, described, and placed on exhibition in the Museum. At the conclusion of fighting plans had to be considered regarding the future of the War Office or national collection: (1) as regards its housing and upkeep; (2) as regards its completion. The future home of the collection remains unsettled, the War Office having no building at its disposal sufficient to accommodate a collection which requires the floor-space of three of the larger rooms of the Museum for its display. As these rooms are now needed for their pre-war purposes, the Council of the College has consented to devote the floor-space and galleries of one room for the display of the national collection until the War Office has determined on its future home and upkeep. Whatever plan may be adopted it is to be hoped that the collection will be placed where it may be available for study by civilian surgeons as well as by officers of the Royal Army Medical Corps—that it may, indeed, form a bond between the civil and military branches of the profession. The main burden of preparing the collection—certainly the most extensive and instructive of its kind ever assembled—has fallen on Professor S. G. Shattock and Mr. Cecil Beadles, and arrangements are now being made, so we are given to understand, between the Director-General of Army Medical Services and the Council of the College to secure the services of these two gentlemen in completing the collection—a task which will entail at least two more years of labour. Not only has the Museum of the College served the needs of our own Medical Service, but also those of Canada, Australia, and New Zealand. Of the 4000 specimens forwarded to the Museum about 1600 of them were collected by the Colonial Medical Services, and these have recently been removed from the Museum to form teaching collections in Canada, Australia, and New Zealand. Thus, in spite of a much depleted staff, the Museum of the College was able to render a considerable service by securing definite and permanent records of our medical and surgical experience of modern warfare. Further, we learn from the conservator's report that the Museum is being gradually restored to its pre-war state, but that it will not be fully open for study until October next. The indiscriminate bombing carried on by the enemy made it necessary to remove all the spirit specimens—some 12,000 in number—to the cellars in the basement of the College, and their return is possible only when the War Office specimens have been arranged in the room now set aside for their display. The opportunity has also been taken of effecting some very desirable alterations in the arrangement of

the contents of the Museum. In spite of the war we are glad to note that many valuable donations have been made to the collection, and that researches of value have been carried out. Mr. Alban Doran continues to compile a catalogue of the surgical instruments, which will form a standard history of surgical invention—one which, we hope, the Council of the College may see its way to publish some future day.

### MEDICAL AID FOR CROFTERS AND COTTARS.

IN one important section of Great Britain a form of State medical service has been a going concern for a number of years, and deserves the close attention of all those interested in the reconciling of private and State-subsidised practice. The medical service now obtaining in the Highlands and Islands of North Britain is described by the Statutory Board, which has charge of it, as a spontaneous growth combining in certain districts the efficiency of a private or competitive service with the stability of an official service provided by the State. The Board constituted under the Highlands and Islands Grant Act of 1913 for the period of four years has been continued on account of war conditions, and has just presented its fifth report. Of the schemes prepared and approved in 1914 by the Secretary for Scotland only those involving grants to medical practitioners and to district nursing associations have come into effect. The scarcity both of doctors and nurses was naturally enhanced during the year 1918 covered by the present report. The serious situation created by the influenza pandemic was only met by the high sense of individual duty prevailing in the service. The medical service, which has now stood the test of three years' experience, covers 143 practices, nine of which in normal times require the coöperation of two doctors. In spite of depleted staff the year 1918 saw an increase of 7 per cent. in the travelling and of 21 per cent. in the number of visits over the preceding year. We note, however, that the increase is confined to patients coming within the Board's scheme, and is balanced by an almost corresponding decrease in respect of private practice. In point of fact, at the present time about four-fifths of the entire medical service rendered to the crofters and cottars is subsidised or maintained from public sources. In some of the poorer districts the amount of private practice is now almost negligible. Travelling grants enable practitioners to visit distant patients at low uniform fees; these grants in 1918 amounted, in the case of poorer practices, to a sum producing a net income of about £360 a year, and in the aggregate to some £32,000. The nursing service was recently referred to by Mr. Munro, Secretary for Scotland, in reply to a question in the House of Commons. A scheme at present before the Treasury would have the effect of increasing the nurses' remuneration by approximately 30 per cent. on the pre-war figure. The number of nursing associations on the grant list is stated in the report to be 38 and the total number of nurses employed 98, of whom 49 are fully trained. The cost of this service for the year in question amounted to £4000. Partly trained nurses have been perforce accepted during the war years, but some of these have already been replaced by others with higher qualifications, and on the new county (as opposed to the parish) basis specialised schemes



of public welfare are contemplated, in addition to the general nursing work of the area. £130-£135 for a fully trained nurse and £100-£110 for a midwife or nurse with intermediate qualifications are the rates of remuneration suggested by the Board as meeting present requirements. Although the remaining schemes under the Board's mandate have been practically in abeyance during the war, a study of the report will not fail to bring home to the careful student the lesson of what can be attained by a judicious blending of public and private effort.

#### THE CARRIER AND THE ATYPICAL CASE.

MUCH is to be gained from an extended study of those diseases which tend to appear and to spread in closely aggregated communities. Among such diseases cerebro-spinal fever occupies a prominent place. In the present issue of THE LANCET we publish an article by Lieutenant-Colonel J. Dorgan, R.A.M.C., which raises many points of importance, especially with regard to the administrative methods to be adopted when dealing with an outbreak among a population living under army or institutional conditions. His contention is that the atypical and unrecognised case is the factor of primary importance in the spread of the disease, while the healthy carrier is relatively innocuous. He supports his view with circumstantial and statistical evidence, laying stress upon the acknowledged fact that the healthy carrier is seldom known either to develop the disease himself or to transmit it to others. Proof of transmission is, in the nature of things, very difficult to establish, since the carrier is usually discovered after the case of infection. But the occurrence in an epidemic of atypical infections due to the meningococcus, as adduced by Dr. Dorgan, is closely paralleled by the well-attested occurrence of atypical cases in the course of any considerable outbreak of diphtheria, or, indeed, by our knowledge of almost all epidemic diseases. It would be of interest to know how the meningococcus carrier-rate among patients suffering from such atypical attacks compares with that in healthy contacts and non-contacts living in the epidemic area in view of the wide differences which have been demonstrated under similar circumstances in other diseases. While Dr. Dorgan regards the susceptibility of the individual rather than the virulence of the organism as the determining factor in the occurrence or non-occurrence of meningitis in a person exposed to infection, his article may be read in conjunction with the concluding instalment of the Goulstonian lectures on the Spread of Bacterial Infection, which appears in our present issue. The primary importance of persons suffering from atypical infections in the spread of cerebro-spinal fever would agree well with Dr. W. W. C. Topley's suggestion as to the possible mode of origin of an outbreak of disease. In his view a variation in the biological properties of the parasite would be the essential factor, and the high potential infectivity of the atypical case as compared with the healthy carrier would find its explanation in the fact that the former was harbouring the more infective organisms. Either view would depreciate the general application of measures of isolation in dealing with healthy carriers, while emphasising the crucial importance of improving environmental conditions, more especially by the elimination of overcrowding and the provision of free ventilation.

## BRITISH FEDERATION OF MEDICAL AND ALLIED SOCIETIES

(LATE MEDICAL PARLIAMENTARY COMMITTEE).

At the Conference between the Medical Parliamentary Committee and the representatives of other organisations held on May 2nd<sup>1</sup> it was decided that the giving of effect to seven resolutions then passed should be left to the existing provisional committee. On Friday last, July 11th, at a meeting held in the College of Ambulance, this provisional committee submitted its report.

Dr. ARTHUR LATHAM, honorary secretary of the Medical Parliamentary Committee, was unanimously elected to the chair, when he explained the absence of Sir Watson Cheyne, who had hitherto occupied the position of chairman. Owing to ill-health and the pressure of his Parliamentary duties Sir Watson Cheyne found himself unable to give the necessary time to the affairs of the organisation, and he had written regretting the necessity for his retirement from the office of chairman, which was entirely due to physical disabilities and not to any differences of opinion. He found it inadvisable to accept any outside work, especially in the present conditions of travelling, and he was able to do his Parliamentary work by attending to that and that alone. He was pleased, he added, to leave his name on the committee. In view of Sir Watson Cheyne's resignation, said Dr. Latham, the provisional committee had invited Sir Malcolm Morris to be chairman, and he had accepted the position, but was unable to preside at the present meeting owing to an important engagement previously entered into. Dr. Latham read a letter from Sir Watson Cheyne expressing his pleasure that Sir Malcolm Morris should take his place, and in this letter he indicated as pressing matters in which the activities of the organisation would be most useful—the Bill just introduced to raise the insurance limit to £250, and the Medical Service Bill which Dr. Addison would bring in next winter.

#### *The Future Policy before the Meeting.*

Dr. Latham then explained the policy of the Medical Parliamentary Committee, which was intended to be constructive by collecting the opinions of all branches of the medical profession on matters of public health. This idea was submitted to the Conference on May 2nd, when certain resolutions were passed, and a provisional committee was empowered to put these resolutions into shape, and form a new federated body. So far no less than 47 societies had accepted representation on this committee, and it was hoped that the number would be increased when the ideas of the committee were better understood. However, he thought that to persuade the representatives of 47 societies associated with and allied to the medical profession to sit round one table was something of an achievement. The business of the present meeting would be the appointment of an executive in order that work might be started at once, while some additional members would have to be co-opted and the question of the title of the organisation discussed. The name Medical Parliamentary Committee had unfortunately given rise to the idea that the body was going to do something which it never intended to do. The name savoured too much of politics. Lastly, it would be necessary to discuss the question of finance.

The minutes of the meeting on May 2nd were taken as read, when some discussion arose respecting the hour of meeting, as the time most convenient to London and country members respectively clashed, while a time that would be generally convenient to the medical profession might not suit the representatives of allied bodies. It was felt that the convenience of provincial representatives should be considered in order that the organisation might be enabled to get the views of members throughout the country. On the suggestion of the Chairman, the matter was left in the hands of the executive committee.

#### *The Societies Represented.*

Dr. N. HOWARD MUMMERY, the honorary organising secretary of the Medical Parliamentary Committee, then read

<sup>1</sup> THE LANCET, May 10th, p. 808.



the names of the societies attending and their representatives as follows:—

Association of Certifying Factory Surgeons (Incorporated).  
Association of Medical Officers of Health.  
Association of British Postal Medical Officers.  
Association of Panel Committees.  
Association of Public Vaccinators.  
Association of School Medical Officers of Scotland.  
Birmingham and District General Practitioners' Union.  
British Dental Association.  
Brighton and District Medico-Chirurgical Society.  
British Science Guild.  
Central Committee for the State Registration of Nurses.  
College of Nursing, Ltd.  
Council of British Ophthalmologists.  
Eastern Valley Medical Association.  
Harveian Society.  
Harrowgate Medical Society.  
Incorporated Midwives Institute.  
Infirmary Medical Superintendents' Society.  
Irish Medical Association.  
Leeds and West Riding Medico-Chirurgical Association.  
London Dermatological Society.  
Manchester Odontological Society.  
Medical Officers of Schools' Association.  
Medical Women's Federation.  
Medico-Psychological Association of Great Britain and Ireland.

Medico-Political Union.  
Metropolitan Police Surgeons' Association.  
Midland Medical Society.  
Midland Obstetrical and Gynaecological Society.  
National Association for the Prevention of Tuberculosis.  
National Council for Combating Venereal Diseases.  
National Medical Journal.  
National Medical Union.  
New London Dermatological Society.  
North London Medical and Chirurgical Society.  
North of England Tuberculosis Society.  
Pathological Society of Great Britain and Ireland.  
Pharmaceutical Society of Great Britain.  
Physiological Society.  
Poor-law Medical Officers' Association.  
Reading Pathological Society.  
Royal Institute of Public Health.  
The Royal Society of Medicine.  
Scottish Union of Medical Women: Eastern Branch and Western Branch.  
South-West London Medical Society.  
Southampton Medical Parliamentary Committee.  
State Medical Service Association.  
Tottenham Medical Union.  
Tuberculosis Society.

The Council of the British Medical Association had not, he said, sent a representative, but the matter would come up for discussion at the next general meeting of the members.

#### *The Provisional Report.*

The report of the provisional subcommittee was then voted upon paragraph by paragraph, when Dr. A. E. BOYCOTT, representing the Pathological Society of Great Britain and Ireland, remarked that if he voted for or against a proposition he must not be taken as pledging his society. Other representatives being in a similar position, the Chairman was subsequently asked for a ruling on the matter, when he said that what was wanted was the definite opinion of representatives, though this would not necessarily commit their societies. Without such definite opinions the committee could not come to a satisfactory conclusion on any subject, and he thought it was the duty of all representatives to vote on the matter before them. The report ran as follows:—

*Report of the Provisional Subcommittee Appointed by the Medical Parliamentary Committee at the Conference held at the Central Hall, Westminster, on May 2nd, 1919.*

In pursuance of the resolutions passed at the Conference on May 2nd, 1919, the provisional subcommittee have to report:—

1. That the office of the committee has been temporarily established at 20, Hanover-square, London, W.1.  
2. That the subcommittee has met on five occasions for the purpose of deliberation and conduct of business.

The following resolutions, as recorded in the minutes of these meetings, have been passed:—

(a) The appointment of a provisional chairman in the place of Sir William Watson Cheyne, resigned. This office has been offered to, and has been accepted by, Sir Malcolm Morris, K.C.V.O.

(b) The appointment of a provisional organising secretary. This office has been offered to, and has been accepted by, Dr. N. Howard Mummery, who has offered to act in an honorary capacity until the Conference called for July 11th, 1919.

3. That the necessary estimated annual and preliminary expenditure is as follows:—

<i>Annual Expenditure.</i>		<i>Preliminary Expenditure.</i>	
Rent of office ... ..	£200	Office fittings and furniture ... ..	£92
Material and incidental expenses ... ..	300	Expenses of incorporation ... ..	100
Salaries of organising secretary, clerk, and lobby correspondent ... ..	1326		£192
Annual ... ..	£1826		
Total for first year ... ..	£2018.		

4. That in the opinion of the provisional subcommittee the time has now been reached when it is essential to further expansion and increased activities that:—

(i.) The committee should establish a Federation under the title of "The British Federation of Medical and Allied Societies" to carry on the work commenced by the Medical Parliamentary Committee. Only thus can it acquire the financial basis necessary to its further existence.

(ii.) That such Federation should form itself into an incorporated association, limited by guarantee and not having a share capital, under the Companies' Acts, 1908-1917. That it be registered under the Board of Trade (Section 20) with limited liability, without the word "Limited" after its name, but with the word "Incorporated" added. In this form it is expressly laid down that it cannot be considered a "trade-union." That it be registered under the title of "The British Federation of Medical and Allied Societies (Inc.)," late Medical Parliamentary Committee.

5. That the representatives of the affiliated and allied bodies and the coöpted members shall form the Council of the Federation.

6. That an executive committee be elected to carry out the business of the Federation, with power to engage the services of the necessary officers and servants on the salaried list, obtain the necessary permanent officers of the Federation, with power to appoint subcommittees, and to incur the necessary preliminary expenses.

7. That the following financial scheme be adopted and incorporated in the articles of association:—

#### *(a) Entrance fee.*

(i.) For each association, society, or allied body represented on the Council of the Federation a sum of not less than two guineas (£2 2s.).

(ii.) For each coöpted member of the Council of the Federation a sum of not less than two guineas (£2 2s.).

(iii.) At a later date, to be fixed when deemed appropriate by the Council of the Federation, for each directly elected representative of the medical profession a sum of not less than one guinea (£1 1s.).

#### *(b) Annual subscription.*

(i.) That members of each association, society, or allied body represented on the Council of the Federation be asked through the various executives of those bodies to subscribe to the funds of the Federation a sum of not less than half a guinea and thereby constitute themselves members of that Federation.

(ii.) For each coöpted member of the Council of the Federation a sum of not less than two guineas (£2 2s.).

(iii.) Subject to par. 7 (a) (iii.) above a sum of not less than one guinea (£1 1s.).

#### *(c) Guarantee fund.*

To meet immediate requirements credit be obtained from a banker in the sum of two thousand pounds (£2000) secured by the personal guarantee of selected members of the Council of the Federation, or other members who may offer to act in that capacity. Provided that ten guarantors, each in the sum of £200, or 20 guarantors, each in the sum of £100, be the number necessary; or such proportion of each as may be deemed advisable. Such guarantees to be required only until funds are available from entrance fees and subscriptions.

The first sections of the report were passed subject to some discussion.

On par. 4, referring to the change of name, the Chairman said that many people thought the organisation was going to engage in politics, and the name Parliamentary Committee was not understood. The industrial bodies of the country usually called their organisations "federations," and he thought it would make clearer the objects of the present body if the name Federation rather than Parliamentary Committee were adopted. After some discussion the change was agreed to, the Chairman stating, in answer to a question, that the change of name did not imply any change in the policy and objects of the Medical Parliamentary Committee.

#### *The Guarantee Fund.*

On par. 7, dealing with the financial scheme, some discussion arose as to the powers and responsibilities of the various societies represented in regard to the payment of subscriptions by their members, the Chairman pointing out that any society which did not agree with any of the resolutions that might be passed in regard to finance had a perfect right to withdraw. At present the Federation had no money, and it was necessary if work was to be done that there should be a guarantee fund.

Dr. C. BUTTAR said he had hoped that each society would contribute according to membership. As more and more societies joined *6d.* a head would cover the whole of the finances required. As long as the Federation did not appeal, as it ought to do, to each individual of the medical profession, a payment of so much per head per member of a society would be the best arrangement.

Finally, it was decided to leave the matter for the present in the hands of the executive committee to draw up a scheme for raising funds which should be submitted to the various societies asking for an expression of opinion, while at the next general meeting the representatives of these societies should be empowered to vote on a scheme.

A guarantee fund of approaching £1300 was then announced.

#### *Coöption of Members of the Council of the Federation.*

The number of representatives of the Council is 53, and the number of coöpted members 10, of whom 2 may be



engaged in consulting medical practice. The following were accordingly co-opted:—

Mr. J. Y. W. MacAlister.	Mr. E. F. White.
Mr. Frank Coke (Ashford).	Dr. Arthur Shadwell.
Dr. W. Hodgson (Crewe).	Lieut.-Col. F. E. Fremantle.
Sir Thomas Parkinson.	Sir Bertrand Dawson.
Dr. Howard Marshall (Cirencester).	Mr. J. P. Lockhart-Mummery.

#### *The Executive Committee.*

The following Executive Committee of 20 (of whom 4 may be engaged in consulting practice with power to add to their number) was elected:—

Dr. Rashell Davison, Association of Medical Officers of Health.  
 Dr. H. J. Cardale, Association of Panel Committees.  
 Mr. C. F. Rilot, British Dental Association.  
 Sir Ronald Ross, British Science Guild.  
 Mrs. Bedford Fenwick, Central Committee for the State Registration of Nurses.  
 Mr. Comyns Berkeley, College of Nursing, Ltd.  
 Mr. Frank Coke, Medico-Political Union.  
 Miss Rosalind Paget, Incorporated Midwives Institute.  
 Dr. Jane Walker, Medical Women's Association.  
 Dr. R. H. Cole, Medico-Psychological Association.  
 Mr. E. B. Turner, National Council for Combating Venereal Diseases.  
 Dr. Edwin Smith, National Medical Union.  
 Mr. Rowsell, Pharmaceutical Society of Great Britain.  
 Professor Starling, Physiological Society.  
 Dr. A. Withers Green, Poor-law Medical Officers' Association.  
 Dr. W. Pasteur, Royal Society of Medicine.  
 Dr. Chalmers Watson, Scottish Union of Medical Women.  
 Dr. Halliday Sutherland, Tuberculosis Society.  
 Dr. S. Squire Sprigge.  
 Dr. Arthur Shadwell.

#### *Ex-officio.*

Chairman: Sir Malcolm Morris, K.C.V.O.  
 Vice-chairmen: Dr. Arthur Latham, Dr. E. H. M. Stancomb.  
 Hon. Treasurers: Sir Thomas Horder, Dr. J. F. Gordon Dill.  
 Hon. Secretary: Dr. Charles Buttar.

## NATIONAL CONFERENCE ON INFANT WELFARE.

(Continued from p. 78.)

At the afternoon session on July 2nd Dr. RHODA ADAMSON, clinical lecturer in obstetrics at the University of Leeds and honorary medical officer to the Leeds Maternity Hospital, spoke on the subject of the

### *Industrial Employment of Mothers in Relation to Infant Mortality.*

She insisted that the most suitable person to attend to the young child was the child's own mother. Failing which, these duties were best carried out by someone trained in infant care. That if the mother was employed in some industry away from home she had to make some provision for the care of her young children during the hours that she could not be with them, and the well-being of the children depended very much upon the type of care the mother was able to substitute for that of her own. She thought that employment of married women was largely a matter of custom in some localities and hard necessity in others. Some women continued to work after marriage at the same trades that employed them while unmarried because they preferred this type of work to the dull routine of housework to which they were unaccustomed and because they could marry earlier when the house contained two breadwinners. Others, as a matter of course, gave up all active wage-earning employment on a marriage which had been postponed until the husband was able to support a wife and family with his unaided earnings. Others were driven to seek paid employment at some later period after marriage because the family income without their help was not sufficient to maintain it. Under this heading the speaker included widows with insufficient pensions and married women with invalid or lazy husbands. The children of the home-keeping mother were more usually breast-fed during the earlier months of infancy, she said, because, from her point of view, this method was more economical and simpler than any other method. The children of the mothers working away from home were sometimes breast-fed at night and bottle-fed by day, but more usually entirely bottle-fed.

The first method was generally recognised as being the most desirable and to give the infant a far greater chance of life during the early weeks after birth than bottle-feeding with whatever mixture happened to be chosen as a substitute. If the mother was unable to nurse her child the preparation of an artificial bottle-feed required much care and attention; it could not with safety be left to a woman to carry out by the light of nature in a casual way. It was essential, she thought, that the mother should stay at home herself or that there should be adequate provision of well-staffed day nurseries in all areas where mothers of young children were compelled to leave them because of employment away from home. She emphasised the fact that the health of young children was very largely dependent upon their share of fresh air and sunlight and the general cleanliness of their surroundings. So that children living in the country, even though in poor homes, were healthier than those brought up in crowded slum areas, though in such cases the family income might be much greater. In towns, therefore, it was essential that the children should be taken out of doors by their mothers or else placed in an open-air shelter in connexion with some day nursery.

### *The Provision of Nurseries and the Need of a State Allowance for Mothers.*

Failing the general institution of endowment of motherhood and the exclusion of such mothers from industrial employment while in receipt of an allowance, it appeared essential to procure the general provision of nurseries capable of accommodating young children as daily or permanent boarders. Such nurseries were costly to establish and expensive in their upkeep, and no working woman could by her regular payment be expected to defray her share of expense of such a nursery without some additional grant towards the cost from local or central government funds. If, therefore, the State might in either case be expected to contribute towards the expense of maintenance and care of children of the working classes it appeared more reasonable to pay the mother to carry out these duties rather than some other disinterested institution. The speaker suggested that such State allowance should be optional, to be claimed by the mother if she saw fit, and that coupled with its payment should be inspection to ensure that it was being applied for the benefit of the children and incidentally also for the mother. It was well recognised that an infant ran the greatest risk of death during the first three months after birth. Therefore, if some scheme could be devised to make it possible for mothers of children under three months old to remain at home personally to nurse and care for their children a certain saving of infant life might be brought about. The present factory regulations of the Home Office excluded a mother from industrial employment for four weeks after the birth of a child, this exclusion having been enjoined in the interests of the health of the mother, but with this four weeks' exclusion there was no provision whatever for the financial help of the mother to maintain herself and the child, and therefore it possibly involved underfeeding of both mother and child. Personally Dr. Adamson was not in favour of any law or Home Office regulation directed towards the exclusion of all married women with children from industrial employment for any period, however short. She considered that the average mother of young children would prefer to stay at home and look after them if the family income did not need to be augmented by her industrial employment. She thought that the effect of exclusion of such women from factory work would be two-fold, some would practise some form of birth control to avoid the risk of losing their work, and others who had not avoided parenthood would be driven into less well paid employment, such as domestic work, which still necessitated their absence from their home and children.

MISS L. BARKER, O.B.E., of the Training Department, Ministry of Labour, said that mothers were forced into industry by their husbands being: (1) dead; (2) disabled; (3) out of health; (4) of such a low category industrially as to be unable to earn a fair wage; (5) gone away, leaving wife and children; (6) out of employment. She would like to see creches established, with hours to fit those of the working mother, and with rules framed to avoid the ill-effects of broken treatment of child during week-end (overfeeding and the like). Also some sort of centre to which elder children could be sent during out-of-school hours, when



the mother was working. Creches should have a training service or school for nursemaids attached, and the attendance at lectures, needlework classes, &c., of mothers whose children are in residence should be one of the terms under which the child is accepted. Creches or nursery schools might well be centres for antenatal teaching also. Her personal experience was that the health and general physique of children at creches and babies' homes at Woolwich were increased in contrast with those not cared for in this way.

#### *Back-to-back Houses.*

Mrs. HOLDEN (Dewsbury), in emphasising the unhealthiness of back-to-back houses, quoted the following table from a pre-war report of the medical officer of health for Dewsbury:—

	Back-to-back houses.		Through houses.	
	Working.	Not working.	Mothers working.	Mothers not working.
Number of children born ...	108	360	78	5
Number dying under 1 year ...	40	34	6	5
Rate per 1000 deaths ...	370	94	64	

She summed up her arguments against the employment of the nursing mother in industry by stating that first, the strain of the double duty is too much for the mother; secondly, equally important, the atmospheric conditions of a home shut up the greater part of the day are bound to be bad for all, especially the young children.

## MEDICINE AND THE LAW.

### *Medical Fees in Court.*

It was reported recently in the daily press that in an action for damages at Westminster County Court against the London County Council Mr. Blackwell, counsel for a carman, said that a woman doctor from the Royal Free Hospital had been subpoenaed to give evidence. She had been offered a guinea, but wrote that "she could not think of accepting so inadequate a fee." The judge, Sir Alfred Tobin, said he understood from the registrar that the correct fee was one guinea plus travelling expenses, whereupon Mr. Blackwell replied that in this case the expenses would be a few pence. "Fortunately we can get on without her now." His honour is then reported to have observed: "It is a great contempt of court for the lady not to come when proper fee is offered. If any application was made to me to deal with it I should know how to do so. I would deal as severely as I can, for it is most important that justice should be assisted and not impeded." Those who are conversant with county court methods will not too readily assume that learned counsel was correctly instructed when he declared that the lady had been subpoenaed. Many house-surgeons and physicians, before now, have been induced to appear in this species of action, have given really expert evidence, and have failed to receive even the usual fee allowed by the rules. But there is, of course, no legitimate excuse, if a subpoena has been accepted, for failure to appear, save physical disability or the order of a higher court; and a witness who has accepted subpoena must be content to receive the fees allowable by the rules of the particular court, unless the solicitor in charge of the case is willing to pay something more substantial. An unwilling witness may, however, always refuse to attend, save after subpoena, to take the oath unless paid the regulation fee, and, having taken the oath, to testify otherwise than as to the facts unless paid a fee satisfactory to himself.

### *Tuberculosis and Marriage.*

The second trial of the case of *Porter v. Barnard* has ended in a verdict for the plaintiff for £250, the judgment including the costs of both trials. The plaintiff had first met the defendant, who at that time was fourth engineer in a tramp steamer, in Richmond Park. He was then home for a brief period of leave and he invited the plaintiff and her sister to tea. After the acquaintance had been renewed during a later return of the defendant to his home he became engaged to be married to the plaintiff. Before the proposed marriage took place, however, the question of whether the plaintiff was suffering from tuberculosis arose, and the defendant's father, being a medical practitioner, made an examination, from which he concluded that it was undesirable that she should be married. The breaking off of the engagement led to the action for breach of promise of marriage which

has now ended in the plaintiff's favour, medical evidence having been given on both sides as to the safety or otherwise of marriage in view of the condition of the plaintiff's health. She had been under treatment at the Downs Sanatorium, Sutton, for tuberculosis, so that there was evidence of her having at one time suffered from the disease; but the questions left to the jury indicate the facts which Mr. Justice McCardie considered essential to the establishment of the defence set up. The questions left to the jury and the answers given were:—

- (1) "Was the plaintiff suffering from tuberculosis on June 1st, 1918 (the date on which the parties became engaged)?"—"No."
- (2) "Was the plaintiff unfit through tuberculosis to marry either (a) on October 28th, 1918; (b) at Christmas, 1918; or (c) within a reasonable time afterwards?"—"No."
- (3) "Did the plaintiff know on June 1st, 1918, that she was suffering from tuberculosis?" No answer was given to this question, which, it apparently was considered, should be answered if Question (1) had received an affirmative reply.

The case at any rate seems to show that the courts will recognise the undesirable nature of a marriage between persons one of whom is tuberculous, and will regard the breaking off of an engagement between them as justified, but the various aspects of the question would perhaps have been more clearly considered if the facts had been found to justify a judgment for the defendant.

## TUBERCULOSIS.

### *After-care for Consumptives.*

HOWEVER adequate may be the medical treatment provided by county council and insurance committees, there always remains a need for voluntary help in the matter of the care of the tuberculous. Rather than apply for Poor-law relief, many a worker will continue in his employment until medical treatment can be of little use to him, while in cases where medical treatment has already been given a sympathetic interest in his family difficulties from some voluntary committee with a financial backing will often make all the difference between a complete cure and a relapse. The reports of the various care committees in the county of Lancashire show that during the past year 279 patients have been assisted in various ways. Help most frequently takes the form of extra food and clothing. The loan of bedsteads and bedding for those who would otherwise be unable to sleep in separate beds is an important part of the work, but the personal interest of the members of the committee is probably the most important of all, though it does not appear on the balance-sheet.

### *Segregation of Advanced Consumptives.*

At the request of the Southwark borough council the town clerk, the medical officer of health, and the tuberculosis officer have prepared a report on (1) the question of the provision by the State of accommodation other than that provided by institutions maintained by voluntary charitable bodies, in which persons in an advanced stage of consumption can end their days; and (2) the question of compulsory powers being given to local authorities to remove cases where it can be shown that the patients, having regard to their surroundings, are a danger to the health of those with whom they reside. With regard to the first point, the report states that as far back as 1913 at a conference of London sanitary authorities convened by the London County Council, the chairman of the conference drew attention to the necessity for providing "rest homes," and pointed out how undesirable it was that advanced consumptives should be mixed with the more hopeful cases. The only provision made by the State at present is accommodation in a Poor-law institute and a number of beds for discharged soldiers provided by arrangement with the Insurance Commissioners. Very few consumptives will voluntarily enter a workhouse infirmary. The medical officer of health has now been unofficially informed that if the borough council makes an application to the London County Council to have the hospital in the Kennington Park-road taken over for the reception of the cases of tuberculosis above referred to, the London County Council will be prepared to bear all the maintenance charges. The acquiring of this hospital would not prevent the Council recommending legislation giving powers for the compulsory



removal of dangerous infectious cases of tuberculosis from their homes to an institution. This question is dealt with in the second part of the report, which points out that compulsory powers of removal by local authorities in respect of certain cases of infectious disease already exist under the Public Health (London) Act, 1891, but that this does not extend to tuberculosis.

"Article 7 of the Tuberculosis (in hospital) Regulations, 1911, provides that nothing in the Regulation shall authorise or require a medical officer of health or a local authority to put in force any enactment which renders a consumptive or the person in charge of the patient or any other persons liable to a penalty, or subjects the person to any restriction, prohibition or disability affecting himself or his employment, occupation or means of livelihood on the ground of his suffering from tuberculosis.

Compulsory powers of removal have, however, been obtained by some of the provincial councils under private Acts of Parliament—e.g., the St. Helens Corporation Act of 1903.

The Public Health (Prevention and Treatment of Disease) Act, 1913, also contains a special clause dealing with treatment of tuberculosis. Sec. 3 empowers any sanitary authority to make any such arrangement as may be sanctioned by the Local Government for the treatment of tuberculosis; this power to be in addition to and not in derogation of any other power."

If this section be acted upon it may become the practice of one borough compulsorily to remove advanced consumptives, whilst another might adopt less drastic means. Having regard to the fact that a certain percentage of consumptive cases are a danger and cause of infection to others, and refuse to enter an institution or take steps to prevent the spread of the disease, compulsory removal should be general throughout the country in certain cases. The Tuberculosis Regulations of 1911 should be extended so as to give the medical officer of health power to order, with due legal precautions, the compulsory removal of a case where it is clearly proved that such a case is tending to spread the disease and the affected person refuses to take advantage of voluntary measures offered.

#### *The Hairmyres Colony.*

The *British Journal of Tuberculosis* for July makes Mr. J. E. Chapman's memorandum on "Colonies" (L. G. B. Reports on Public Health Subjects. New Series. No. 122) the occasion for a long and useful review of the place of such colonies in the anti-tuberculosis campaign. An interesting experiment was confirmed on June 14th when the Hairmyres Colony was officially opened by the Secretary for Scotland. As long ago as 1905 the district committee of the Middle Ward of Lanarkshire made a beginning in the systematic treatment of pulmonary tuberculosis under a system of voluntary notification. Since that time their hands have been greatly strengthened by the coming of compulsory notification and the provisions in the Insurance Act for the treatment of tuberculosis. Experience has shown them that the method of treating consumptives for three months in a sanatorium and then allowing their patients to compete for a livelihood in the open market of labour was satisfactory neither from the clinical point of view nor from that of the local authority which was constantly called upon to provide treatment for cases of relapse. The colony will be peopled by children as well as by selected cases of adults in whom the disease has been arrested by sanatorium treatment. The former will be taught in open-air schools, and the latter trained, under medical supervision, in various outdoor industries, such as market-gardening, bee-keeping, poultry-farming, and forestry.

#### *A Colony Scheme for the East Midlands.*

The Mayor of Nottingham with Major Brockington, of Leicester, recently presented a tuberculosis colony scheme to the Minister of Pensions on behalf of the East Midlands Joint Committee. The site chosen by the committee for the establishment of a training colony is at Bretby Hall, near Burton-on-Trent. The Derby borough committee, which is at present dealing with a large number of applications from consumptives, has passed a resolution strongly urging the Government to give effect to the scheme.

#### *Anti-tuberculosis Campaign in Bombay.*

The annual report of the King George V. Anti-Tuberculosis League shows an increase in the amount of treatment provided, the patients treated being 1215, as compared with 972 in 1917. On Dec. 7th, 1918, Lord and Lady Willingdon opened a sanatorium, which has been erected by the league from voluntary subscriptions. Up to the end of last year treatment was given for the most part in the two dispensaries, in which, since 1913, more than 4000 cases have received treatment. About three-quarters of these cases had

tuberculosis of the lungs and the remainder were chiefly cases of tuberculous glands. Domiciliary treatment has also been supplied by the doctors and nurses, and the occasion made use of for much valuable propaganda. This part of its work is rightly regarded by the officers of the league as very important, since consumption spreads to a great extent among the uneducated natives who have no conception of its infectivity. For the enlightenment of these classes lectures are arranged in the different native languages and pamphlets are distributed describing the early signs of consumption, and giving instructions for its treatment in the home. A systematic examination of school children has convinced the medical officers that early tubercle can often be diagnosed by loss of weight.

#### *The American Tuberculosis Association.*

At the annual meeting of this association held recently in Atlantic City Sir William Osler was elected a vice-president. A resolution was adopted, viewing with grave concern the efforts being made in certain quarters to have the Daylight Saving Bill repealed, and protesting against any attempts to impede the operation of such law. The great help it was at the present time in preserving the health of the country generally was emphasised. The Army medical officers present discussed the responsibility of the Government for the proper care and treatment of the tuberculous soldier prior to his return to civilian life. A representative from Surgeon-General Estes Nichols's office (of No. 16 General Hospital) then described a plan which was under consideration. It was proposed, he stated, to give treatment in special reconstruction towns or communities, which would be located upon lands in the National forests, the idea being to attract the patients to healthful wood-working industries, and to afford them an opportunity to retain control of the land holdings after they were cured. They would be under proper medical supervision, but not to the same extent, of course, as during their time in a sanatorium. Such communities would require financial assistance at first, but eventually should become self-supporting.

#### *The Hog as a Test for Bovine Tubercle.*

Dr. Burton Rogers, of Chicago, Illinois, has recently drawn attention to the value of the hog as an indicator of the existence of bovine tuberculosis on a farm. Wherever pigs and cows are kept together it is found that the former greedily devour the faeces of the latter; indeed, the symbiosis is often purposely arranged in order that cowsheds may be kept clean. The tuberculous cows swallow their sputum, and the bacilli thus pass out in their faeces, with the result that the pigs become infected. Among 40 million hogs examined by American veterinary inspectors in 1917 3,974,000, or nearly 10 per cent., were found to be tuberculous. Dr. Rogers points out that if the pigs slaughtered and subsequently examined had been previously labelled with the name of the farm on which they were reared, valuable presumptive evidence of the existence of bovine tubercle and of its localisation to specific farms would have been obtained and could have been used with great advantage in a campaign to eradicate the disease from among cattle.

## NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

#### *An Indian Ministry of Health.*

THE conference of provincial medical and sanitary officers recently summoned by the Government of India has concluded its meetings at Simla under the presidency of Sir San Karan Nair, member of the Viceroy's Council for Education and Sanitation, who invited his hearers to consider how a central health organisation could coördinate the work of preventive action, clinical practice, and medical research. As regards the question of assistance to the provinces in severe epidemics, he made the suggestion of a mobile corps, lent in normal times to the provinces to supplement the provincial staffs, but subject to the withdrawal by the Government of India acting on the advice of its Public Health Board, in order to concentrate in any area where extensive epidemic disease had broken out. The function of the corps would include popular education in preventive methods. A resolution was passed calling for the establishment of a Central Public Health Board consisting



of official and non-official members, and the creation of similar boards in the provinces. The conference laid stress on the importance of certain kindred measures such as the establishment of an epidemiological statistical bureau, the increase of curative medical staffs, the multiplication of dispensaries, and the future development of research facilities on the lines of the Central Research Institute.

#### *Lahore Milk-supply.*

In the course of the campaign which he has inaugurated against food adulteration the officer commanding the Lahore area, now under martial law, has come across some surprising figures in regard to the milk-supply. Of large numbers of samples that have been analysed only two have been found absolutely pure, the extent of adulteration varying from 2 to 34 per cent., with a general average of not less than 10 per cent. About 2000 maunds of milk per diem are consumed in the Punjab capital, which would mean that 200 maunds of water are being daily sold as milk. As the price of milk is 3 annas per seer, or Rs.7·8 per maund, the Lahore public are daily being robbed of Rs.1500, or, say, Rs.5½ lakhs, per annum. Heavy fines and sentences of imprisonment under martial law have for the moment practically stamped out the practice of adulteration, with the rather amazing result that, the available number of cows remaining the same, there is a distinct shortage of milk.

#### *The Red Cross in India.*

The Indian Joint War Committee of the Order of St. John of Jerusalem and the British Red Cross Society have just issued their report on last year's activities. The figures of expenditure in the various centres in which Indian Expeditionary Forces were engaged and in India itself speak eloquently of the extent of its operations. The total expenditure during the year was 51½ lakhs of rupees (£300,000 sterling); 37½ lakhs were expended on account of Mesopotamia, over 1½ on East Africa, Egypt, and Palestine, and the remainder was made up by expenditure on the Marri and Waziristan operation and on hospitals in India itself. The expenses of management amount only to 63 per cent. (or just over 3 pies in the rupee) of the total expenditure. The history of the year shows great progress in the assumption by Government of responsibility for this type of expenditure. The standard supply of Government equipment to military hospitals and field medical units has been greatly extended, and numerous articles originally classed as "comforts" are now recognised as "necessaries." The burden, which will in the future fall on Red Cross activities, will thus be materially lightened.—The Baluchistan Red Cross and Comforts Fund has undertaken to supply the whole of the troops in the East Persian Cordon and on the lines of communication with regular consignments of tobacco and other amenities, which are sent to each unit in rotation.

#### *The Health of the Army in India.*

The annual report of the Sanitary Commissioner with the Government of India has just been published. The figures presented compare favourably with those of the two preceding years; for 1917 the death-rate was 4·83 per 1000, as against 6·54 in 1916, 5·95 in 1915, and 4·51 the ratio for the pre-war quinquennium, while the admission ratio is stated at 771·7 per 1000, comparing with 772 in 1916, 823·1 in 1915, and 567·2 in the quinquennium before the war. There was a substantial increase, however, in the ratio of constantly sick, even when comparison is made with the two preceding years, the figures for 1917 being 45·66 per 1000, while the ratio was 39·75 in 1916 and 39·08 in 1915. This difference, we are told, is "accounted for chiefly by the increased number of admissions for two diseases which require prolonged treatment—namely, venereal disease and malaria—of which diseases the average constantly sick ratio has increased 5·33 per 1000." The ratio of men sent home invalided was considerably smaller than in the two preceding years, though very much greater than in the pre-war period. Malaria was again the great cause of sickness and inefficiency among the British troops in India. The mortality rate among the Indian troops showed a marked increase, the figure being 11·51 per 1000 as compared with 8·97 in 1916 and 8·55 in 1915. An increase in venereal disease was also experienced among the India troops, the chief factor in which is reported to have been the large number of young recruits constantly joining stations and replacing the trained men going on active service.

## Correspondence.

"Audi alteram partem."

### A CRITICISM OF

### THE MEMORANDUM ON MALARIA.

To the Editor of THE LANCET.

SIR,—You published in THE LANCET of July 12th a note upon the Memorandum on Malaria, recently issued by the Ministry of Pensions, and purporting to assist the practitioner in dealing with malaria and, in particular, with the diagnosis, treatment, and prevention of this disease. Bearing the name of Sir Ronald Ross, this Memorandum is certain to receive considerable attention, and to a smaller circle the name of his collaborator, Lieutenant-Colonel S. P. James, will be equally well known.

Perusal of this Memorandum shows that it is written by those who have but little knowledge of the circumstances of general practice and leads one to suppose that adherence to its precepts would be of grave disadvantage to our patients, particularly pensioners, and ourselves. There is also a wider point of view. This is an official Memorandum, and may be presumed to carry on the army policy of occasional issue of memoranda on diseases of immediate importance. The policy was admirable, but the actual memoranda were often of dubious value. One might well have hoped that the Pensions Ministry would have sought to improve on this. It has not done so. If the criticisms I make are sustained there can be no doubt that the pamphlet ought to be superseded forthwith.

#### *Criticisms and Reasons.*

I make the following criticisms, for each of which I adduce reasons, viz. :—

(1) That the description of malaria given is not that of the form of malaria which will give us most trouble in the British Isles, and is, moreover, calculated rather to obscure than to elucidate the nature of the disease.

(2) That the methods of diagnosis on which most emphasis is laid are of little or no value to the practitioner in the British Isles, and that important methods of diagnosis have been omitted.

(3) That the treatment suggested is not adapted to the class of case to be treated, is in part dangerous, and errs gravely in emphasising the value of quinine and excluding other factors necessary for recovery.

#### *1. Description of Malaria.*

The reasons for my first criticism are as follows. The description of malaria as a morbid process takes up most of the paragraphs headed "The Diagnosis of Malaria." It is almost wholly devoted to the nature and periodicity of acute attacks of fever. Particular emphasis is laid on periodicity. Only in the rarest cases is the general practitioner likely to be able to keep or obtain any accurate record of his patient's temperature. These paragraphs are therefore almost useless. The description of a rigor is, of course, accurate enough, but the general practitioner, faced with a definite rigor in a patient returned from abroad, and probably volunteering the information that he has an attack of ague, has no need to read up the symptoms of malarial rigor. The symptoms of the apyrexial stage are hardly mentioned, and the disease is dealt with as if it consisted of a sequence of rigors with an absolutely inactive infection between times. This is scientifically incorrect and misleading, and clinically very fallacious. However, it is admitted that a succession of rigors may give rise to certain signs, &c. These are described under the heading "Malarial Cachexia." I quote, "Considerable enlargement of the spleen and severe anæmia are the obvious clinical physical signs." "Serious symptoms are usually absent unless the patient is suffering from another disease." "Chronic irregular 'low' fever is not present." "As a rule, patients suffering from this condition are not emaciated." One can only remark that if such a condition as considerable splenic enlargement and severe anæmia without serious symptoms or fever or emaciation does actually exist, I never had the fortune to see it in one of Sir Ronald Ross's own hospitals. It may occur in the tropics, but it does not at home. My experience in two special malaria hospitals strongly suggests that this sort of clinical



picture-making is inaccurate and misleading when addressed to practitioners in the British Isles, and is therefore wholly out of place in the Memorandum. There is also a list of "the chief 'pernicious' symptoms sometimes met with in cases of acute malarial fever." These are useful in their place, but they are not nearly so useful as would have been some account of the symptoms as we shall see them and as they have actually been seen in the hospitals over which Sir Ronald Ross held sway. I would instance chronic tachycardia and "effort syndrome," chronic headache and depression, chronic pains in the side, &c. I have dealt with these elsewhere.<sup>1</sup> My subsequent experience has shown me that I was right in supposing that it was such symptoms as these that were going to be the despair of medical referees, medical boards, and practitioners, whereas those of the acute attack presented no difficulty. I should like further to state that these symptoms were studied only with the strongest official discouragement, even to the extent of refusal of permission to publish any paper on them. That this should be so makes one doubly anxious to raise discussion on the deductions of Sir Ronald Ross and others from the same material, for the two different views we have of the disease as seen at home are scarcely compatible, and it is well that truth should prevail.

### 2. Methods of Diagnosis.

My second point is that the methods of diagnosis on which most emphasis is laid are of little or no value to the practitioner in the British Isles. These methods are three. The first is entitled "Clinical Symptoms and Signs." The only one mentioned is periodic fever. This is the one sign of which the practitioner can hardly hope to get accurate record. The second is "The Results of Blood Examination." No mention is made of what results are to be expected, presumably nothing but the presence of the parasite suffices. Yet there are other important points in the blood examination—e.g., pigment cells; and even if the practitioner were presumed to be too busy to examine his own blood slides, he might at least be put in a position to understand a specialist report on the same. The third point is "The Effects of Therapeutic Doses of Quinine." We may sometimes be driven to this resort, and it is one to bear well in mind, but it is not the kind of method which much enhances one's reputation among patients, and it is absolutely useless unless fever be actually present. Most of the pensioners who have come to me for advice had to be diagnosed by means other than any of these three, and so also will they have to be diagnosed and their pensions assessed by medical boards and referees. No other method of diagnosis is mentioned. Might not the hyperalgesic areas described by Carmalt Jones have been just mentioned? Is not herpes labialis important confirmatory evidence where a recent attack is alleged, or perisplenitis, or slight jaundice? I feel fully justified in the statement that the methods of diagnosis laid down are of little use to practitioners, while those omitted would have been of great assistance.

### 3. Treatment Suggested.

My third point is that the treatment suggested is not adapted to the class of case to be treated, is in part dangerous, and errs gravely in emphasising the value of quinine and excluding other factors necessary for recovery. The treatment advocated is quinine and nothing else. This is to be given for *three months* after each acute attack. I have seen a great many patients from Sir Ronald Ross's hospitals, and never did I meet one who could suggest he was cured by any method of giving quinine. Some had had heroic doses, some had had none. One of the latter was cured, many of the former were certainly not. This is a vexed question, but I would ask fellow-practitioners dealing with malaria, which is being overcome by the natural resistance of the body in this country, not to follow methods which may be suitable for those who are liable to frequent reinfection—a distinction between cases which Sir Ronald Ross does not seem to make or to consider to have any bearing on treatment. The treatment I brand as dangerous is that by the intramuscular route. The instructions are "..... the operation presents no difficulty. The stab should be made deeply into the gluteal muscle and the solution injected." The result of such instructions, or lack of more definite instructions, resulted in so many paralysed

limbs that I was informed by an officer on a hospital ship that each boat was bringing home four or five cases. Certainly there followed stringent orders that intramuscular quinine must only be given under the supervision of the officer in charge of a medical division. Moreover, Colonel Leonard Dudgeon has recently most ably demonstrated the destructive results of intramuscular injections. Are we to learn our lessons so badly that this method is still to be advocated with all the weight of Sir Ronald Ross's name and the approval of a Government department? We may well say, "Pity the poor pensioner." Finally, I desire to draw attention to the total lack of any mention of the general hygienic treatment of malaria as carried out in convalescent camps and of the peculiar measures adapted to the successful treatment of such otherwise fatal complications as blackwater fever, and, generally speaking, the "pernicious" symptoms referred to in the Memorandum.

### The Author's Views.

I fully recognise the fact that I am pitting the opinions of an unknown individual against those of an acknowledged authority. But the practical results of this authority and a genuine interest in the welfare of pensioners compels me to the opinion that it is high time someone spoke up. I would state my own views on the diagnosis and treatment of malaria as follows:—

1. The diagnosis of malaria as seen between actual attacks in this country can only be made by careful investigation of all the symptoms, including particularly those mentioned in the paper referred to, and only by such careful attention can any proper estimate of the degree of disablement be made.

2. The most important principle in the treatment of malaria in pensioners is the improvement of the natural resistance of the body with the aid of as little quinine as possible.

I am, Sir, yours faithfully,

GORDON WARD, M.D. Lond.

Sevenoaks, Kent, July 14th, 1919.

## TRAINING OF THE JUNIOR OFFICERS OF THE INDIAN MEDICAL SERVICE IN INDIA.

### To the Editor of THE LANCET.

SIR,—The enclosed letter, addressed to the Secretary of State for India, if published in THE LANCET, should arouse professional interest in a very important question.

I am, Sir, yours faithfully,

G. J. H. EVATT, M.D.,

Major-General (retd.).

July 10th, 1919.

### [ENCLOSURE.]

From Major-General Sir George J. H. Evatt, K.C.B., M.D.,

Junior United Service Club, London, S.W. 1.

To the Right Hon. the Secretary of State for India,

India Office, London.

July 10th, 1919.

SIR,—I have the honour to submit the following proposals as to further training in India of the young officers of the Indian Medical Service before appointment to any medical post in India.

- (2) All newly appointed medical officers to be detained at Bombay on arrival for six weeks and to be constituted in a "class" to study Health Conditions and Sanitary Arrangements in and about Bombay city and neighbourhood.

- (3) Representative officials of local experience to show and explain to the class of young officers:—

- (a) The system of Drainage of Bombay city.
- (b) The Sewerage system of Bombay city and district.
- (c) The Water-supply system as to collection, storage, and distribution.

- (d) Public Baths and Wash-houses.

- (e) Segregation of Infectious and Contagious Diseases, arrangements for prevention and treatment of Cholera, Small-pox, Plague, Malaria. Segregation hospitals. Vaccination in full. Leprosy to be studied in full.

- (f) Hospitals in Bombay to be visited as to structure. Training of nurses. Convalescent establishments attached to hospitals. The cost and expenditure of hospitals and the means of raising funds explained.

- (g) Lunacy and Lunatic Asylums to be fully visited and explained to the young officers in a class by efficient specialist officer.

- (h) The Races of the Indian People to be explained by a skilled specialist in this racial subject.

- (j) The Creeds and Castes of the Indian People to be popularly explained to the young officers.

- (k) Outline description of the Indian Empire, its Presidencies, Native states. Provinces, and description of Government methods. The Province and the District.

<sup>1</sup> Proc. Roy. Soc. Med., 1919, xii., Section of Medicine, pp. 15-36.



(l) The Methods of dealing with prisoners under confinement in jails throughout the country. Jails to be visited and explained to the young officers very fully.

(m) The Cantonment of Poona to be visited, studied, and explained by competent local officers. Barracks and hospitals to be seen.

(n) The class to be controlled by the Director of Medical Services, Bombay, who would nominate instructors and maintain discipline during the course.

(o) Detention Allowance to be granted to the young officers. A medical officer not under the rank of Major to be attached to the class pro tem. as Discipline Officer and Director of Studies and Chief Instructor. Two officers as assistant instructors could be allowed.

(p) An Examination might be held at the termination of the class to see what progress has been made.

(q) Certain public men who would represent sections of the Indian people to be invited to address these young officers during the course of study.

I should be glad to have an acknowledgment of this letter.

Your obedient servant,

London, 1919.

G. J. H. EVATT, M.G.

## INDUSTRIAL MEDICAL SERVICE.

To the Editor of THE LANCET.

SIR,—Dr. Prosser White's letter in THE LANCET of July 5th emphasises two of the most important duties of a real factory doctor—i.e., close familiarity with actual working conditions and the necessary investigation of all cases of injury. To familiarise himself properly with the conditions of employment and with the reactions of the workers to their work the doctor should practically live and work amongst his workers. Periodical inspection by a trained observer can, perhaps, do much, but even in his case several days spent in the factory would throw light on much that passes unnoticed or appears obscure on a cursory inspection and would familiarise him with the local difficulties which his full-time colleague appreciates so thoroughly. For the purpose of prevention of accident and disease the constant supervision of the factory M.O. and of his "tentacles"—i.e., the foremen, works managers, &c., who work with him to the common end of good output, health, and content of workers—is far more valuable to both workers and management than occasional visits by headquarters staff and by the C.F.S. when, and not till when, some trouble has occurred. Moreover, the full-time man will have examined every worker and carded his findings for reference. This index will serve as evidence in case of a claim for compensation under the Workmen's Compensation Act.

*The Industrial "Expert."*

In the second of your special articles on an industrial medical service you suggest that it is for the Certifying Surgeons' Association to organise proper training schemes for the training of the industrial specialist. But in so doing the interests of the full-time medical officer and that of the lay workers in the factory should be studiously borne in mind. In practice full-time medical officers handle many things which at first sight do not appear strictly within the duties of a medical man, such as absenteeism and its prevention, causes of wastage of factory personnel, the administration of the Workmen's Compensation Act, canteen supervision, and the investigation of many grievances of workmen (since there is very often a medical side to such).

I can scarcely consider the quarterly inspection of workers as adequate to detect hygienic faults. Nor is it satisfactory to leave the working out of the remedies to an "expert" from headquarters, invaluable though his advice may be in its proper place. The full-time medical officer is also in a better position to get faults remedied than the headquarters man, since he can continue worrying the management until the fault is remedied.

*The Factory Doctor and Private Practice.*

It is doubtful how much private practice a factory doctor should undertake. On the one hand, he should be in touch with the modern developments of medicine, but on the other it is his duty to treat the factory rather than the individual worker, which means that his function is preventive rather than curative so far as the individual is concerned. The workman's panel doctor is the man to represent the private interests of the individual. Moreover, the man has a legal right to free choice of doctor, and an attempt to force him to choose the factory doctor is scarcely to be desired in a

civilian community. Cases will arise in which the apparent interest of the factory runs counter to that of the man, as when tuberculosis or venereal disease is in question. How, then, can a doctor serve both masters fairly and please both? He will also run the risk of losing practice if he does not please the worker and his wife by his decisions.

*Supply and Demand.*

It is true enough, as stated in the article, that supply creates demand; and here trained factory doctors are the supply. But demand should be stimulated simultaneously, and that was why I wrote to the *Times* and *Cassier's Monthly* rather than in the first instance to medical papers. The daily press has avoided such subjects till lately, perhaps fearing that the political aspect of attempts to benefit the condition of workers might do them harm. Managers in the past have regarded the doctor askance, since it is through his certificates that they have lost labour. Some of them are beginning to see that had the doctor been in charge, they might have at least lost less labour, since he would probably have sent the worker off duty sooner, and so prevented a prolonged illness. Moreover, the full-time man is far more in a position to judge whether the disease or injury was in fact due to factory conditions than an outsider, since he should have at his disposal the records of work done by each worker on any day, as well as legal evidence, with witnesses' names, in case of accident, besides a more intimate knowledge of the factory conditions and of any peculiarities in the way of special poisonings or disorders due to special processes used in the factory. The value of a full-time doctor previously trained in factory medicine and law, as well as in the other accessory subjects needed by a factory doctor, will be evident to an enlightened manager, and such a doctor will stand a better chance of getting a good appointment. It is of no use to supply these men without some sort of guarantee that they will get suitably paid jobs. If we would raise the demand for trained factory doctors, we should address the managers in terms of output, the workers in those of wages, and the general public in those of industrial peace and health. The three things are synonymous, but the form in which they appeal to the different classes concerned varies, and should be considered in our appeals. The type of man to train as a factory doctor is the enthusiast with the doggedness of the "importunate widow." He should have had some training in research methods, and should be a good physiologist and psychologist, knowing something of mass-psychology.

I am, Sir, yours faithfully,

July 5th, 1919.

H. GEORGE P. CASTELLAIN.

## EPIDEMIC PERINEPHRIC SUPPURATION.

To the Editor of THE LANCET.

SIR,—The recent letters in THE LANCET on the above subject must have been of great interest to a large number of medical officers who have served abroad during the last few years. In Macedonia there were many cases: the diagnosis was complicated by the prevalence of large and tender livers and spleens. Lieutenant-Colonel J. Patrick and the writer collected the notes of some 20 cases last year, and this number falls far short of the total that occurred in the Force. As regards bacteriology, *Staphylococcus aureus* is undoubtedly the usual organism present in the pus. In one case Captain R. R. Elworthy isolated a *Staphylococcus albus* and this was confirmed by Colonel Leonard Dudgeon. Dr. W. Pasteur may be interested to hear that I know of five cases who died of staphylococcal pyæmia. In at least one of these *Staphylococcus aureus* was isolated by blood culture. As regards his statement that "the urine never contained pus," pus, in quantities varying from a trace to a considerable quantity, was present in half our cases. Albumin was present in rather more than half, and *Staphylococcus aureus* was isolated from the urine in rather less than half the cases.

Radiographic examination was helpful in some cases, the usual signs being a haziness on the affected side with loss of definition of the kidney shadow and of the shadow thrown by the psoas and quadratus lumborum. Diminution of the movement of the diaphragm on the affected side was also noted in some, with absence of elevation of the dome at a point which helped to differentiate a right perinephric



abscess from a hepatic abscess. The vertebral shadows were normal. All the cases referred to occurred before the influenza scourge reached the Balkans. I have no reason to think that influenza affected the incidence of the perinephric infection, though I have heard of cases in which this abscess occurred in patients suffering from influenza and pneumonia.

I am, Sir, yours faithfully,

H. A. T. FAIRBANK,

Major, R.A.M.C. (F.F.), late Lieutenant-Colonel; Assistant Consulting Surgeon, B.S.F.

Harley-street, W., July 9th, 1919.

## THE POSITION OF NATIONAL STATISTICS.

To the Editor of THE LANCET.

SIR,—It is a matter of common knowledge to all who have had occasion to use official statistics, whether published or departmental, that the national and imperial equipment for obtaining and publishing statistical data is very imperfect in its scope and inadequate in its machinery. Further, the efforts made are departmental, are under no common controlling or directing authority, and suffer very gravely from lack of coördination. There is no need to adduce proofs of these statements nor to enumerate the various efforts, fruitless in the main, which have hitherto been made to remedy these defects.

The Council of the Royal Statistical Society have appointed a special committee to deal with the subject in the belief that the time is now ripe for a new movement in the direction of reform and that the consciousness of the existing defects is present to the minds of His Majesty's Ministers, Members of Parliament, and civil servants, as well as to others interested in statistics. It is proposed to petition His Majesty's Government to set up a Parliamentary Committee to examine the whole question of the collection and presentation of public statistics, and to report on means of improvement. It is believed that this method of procedure is more likely to be effective than the pressing of specific proposals on His Majesty's Ministers. The officers of local governing and other public bodies, as well as of scientific societies, are being invited to bring the matter at once before their councils. Moreover, publicists and others who are known to be interested, are being approached directly.

We ask the courtesy of your columns to lend support to this movement, and invite your readers to help with their influence and signatures. The Council will be glad if all who are disposed to sign such a petition would communicate with the Secretary, Official Statistics Committee, Royal Statistical Society, 9, Adelphi-terrace, W.C.2. A copy of the petition will then in due course be sent to them for signature.

I am, Sir, yours faithfully,

GEOFFREY DRAGE,

Chairman, Official Statistics Committee.

July 10th, 1919.

## HUTCHINSON'S TEETH.

To the Editor of THE LANCET.

SIR,—The point raised by Dr. David Walsh in a letter in your issue of July 12th has been dealt with by two masters of the craft. Sir Jonathan Hutchinson,<sup>1</sup> in an original communication to the Pathological Society, made the following statement:—

"The recognition of the subjects of inherited syphilis, by means of their incisor teeth, can only be effected, with any confidence, between the ages of 8 and from 25 to 30. Later than 31 the notches have generally been worn level, and the teeth merely resemble those of a much older person. I have seen teeth preserving their peculiar syphilitic stamp in patients of middle age, but in a large majority of instances such is not the fact."

Professor A. Fournier,<sup>2</sup> in his lectures on the subject, states—the translation is a literal one:

"A second point, and one of real practical interest: the Hutchinson tooth modifies itself in form beyond the age of adolescence and finishes by losing absolutely its characteristic notch. Under the influence of functional use the arch of the free border diminishes progressively in height, and the mathematical rise is lowered. It might be described as an arch which is falling in. There comes a time when the curve of the arch is scarcely perceptible. The arch appears to have straightened itself out. Finally, all trace of the notch disappears, and the free border transforms itself into a nearly straight line. To be precise, from the age of 20 to 22 years, the notch is markedly lessened,

at 25 it is almost straight. At this period there still exists, for a certain time at least, a certain sign which allows us to recognise a lesion, it is the bevel of the anterior border of the notch. Remember that the Hutchinson notch is cut away from above downwards, and from before backwards at the expense of the anterior border. This bevel, which caps and dominates the notch, is naturally only affected in the later stages, by the rubbing away of the tooth, therefore it persists, and is quite easily recognisable, at a period when the notch has disappeared. It constitutes, therefore, the last trace of the lesion. After the age of 25 years the bevel in its turn becomes effaced ..... this fact is so well known that it has been very truly stated that after the thirtieth year the Hutchinson tooth no longer exists."

To illustrate his lecture Fournier showed a case which must have very closely resembled the case described by Dr. Walsh.

I am, Sir, yours faithfully,

G. D. KETTLEWELL.

V.D. Clinic, South Devon and East Cornwall Hospital,  
Plymouth, July 12th, 1919.

## Obituary.

FREDERICK PAGE, M.D. EDIN., F.R.C.S. ENG.,  
D.C.L. DURH.,

EMERITUS PROFESSOR OF SURGERY IN THE UNIVERSITY OF DURHAM.

Professor F. Page died at his residence, 20, Victoria-square, Newcastle-on-Tyne, on July 3rd, at the age of 79 years. He was the son of a well-known surgeon in Portsmouth, and after a private school education entered Edinburgh University, where he graduated M.D. in 1868, becoming house physician at the infirmary, and then enlarging his range of vision by a trip to Western Australia, where he held a position at the Colonial Hospital, Perth. Four years on the junior staff of the Royal Infirmary, Newcastle-on-Tyne, determined his stay in the city with which his professional and public activities were thereafter identified. As a surgeon his reputation soon extended beyond the Royal Infirmary and the Fleming Memorial Hospital for Sick Children, where his attendance was assiduous. He became professor of surgery in the University of Durham and registrar of the College of Medicine, receiving in 1888 the degree of M.A. (hon. causâ), and examining in clinical surgery at his old University of Edinburgh. To a number of special hospitals he was also attached in a consulting capacity. To most men these onerous duties would have afforded sufficient outlet for their powers, but Page contrived to reconcile a life of public service with his many professional engagements. He was on the Commission of the Peace, becoming chairman of the visiting committee of prison justices and presided over the licensing committee for the city. In private life his tastes were literary and dramatic.

Professor Page married in 1876 the eldest daughter of Mr. John Graham and niece of Professor T. Graham, F.R.S., sometime Master of the Mint, by whom he had a son and two daughters.

SIR J. H. MEIRING BECK.

THE death of Senator Sir J. H. Meiring Beck, M.R.C.P., F.R.S.E., Minister of Posts and Telegraphs in General Louis Botha's Cabinet, is a great loss to the Union of South Africa. Sir Meiring Beck was a true South African, and his chief aim during his political life was to heal racial estrangements and mollify party asperities. While a loyal adherent of General Botha, he was popular with all political parties. He combined, in fact, in no small degree the best attributes of a cultured English gentleman with the fervour of the Afrikaner patriot. Born at Worcester, Cape Province, in 1856, he was educated at the South African College, Cape Town, and afterwards studied medicine in Edinburgh, Berlin, and Vienna. At Edinburgh he graduated with first-class honours, gaining the Beaver Scholarship. He practised at Kimberley, Worcester, and Rondebosch, becoming President of the Colonial Medical Council and President of the British Medical Association, Cape Town. For over 20 years he was a member of the Cape University Council.

Sir Meiring Beck represented his native town of Worcester in the Cape Parliament, was a Cape delegate at the National Convention of 1908-9, and on the creation of the Union was made a Senator. After filling the post of chairman of committees in the Senate he became Minister of Posts and Telegraphs in 1916.

<sup>1</sup> Trans. Path. Socy., x., 296.

<sup>2</sup> La Syphilis Héritaire Tardive, 1886, pp. 91, 92.



## Medical News.

**ROYAL COLLEGE OF SURGEONS OF ENGLAND.**—A quarterly meeting of the Council was held on July 10th, Sir George H. Makins, the President, being in the chair.—The President reported the result of the recent meeting of Fellows for the election of two members of Council as given in THE LANCET of July 12th, and Sir Berkeley Moynihan and Sir Cuthbert Wallace were introduced and made declarations in the terms of the oath prescribed by the Charter of 1800 and took their seats as members of the Council.—It was resolved to grant, in conjunction with the Royal College of Physicians of London, Diplomas in Public Health to 12 successful candidates (11 men and one woman).—The recent resolution of the General Medical Council that every student should be required in future to attend a practical course in ophthalmology was considered, and it was resolved to refer it to the Committee of Management for consideration.—A letter was read from the secretary of the Joint Matriculation Board of the Universities of Manchester, Liverpool, Sheffield, and Birmingham, inquiring if the College would accept the school certificate issued by the Board for the purpose of the exemption of the holder of such a certificate from the Preliminary examination. The matter was referred to the Committee of Management.—A letter was read from Dr. F. Wood Jones resigning his appointment as Examiner in Anatomy under the Conjoint Examining Board in consequence of his having been appointed to the chair of anatomy in the University of Adelaide.—It was resolved that Dr. Wood Jones's resignation should be accepted and should take effect on his departure from England in the autumn. It was further resolved that he should be permitted to deliver his Arris and Gale lecture in October next.—The President reported his attendance at meetings of the panel to assist the Minister of Health in the formation of a Consultative Medical Council. A letter was read from Dr. Christopher Addison, stating that, with the advice of the temporary panel constituted in accordance with the terms of his letter of May 27th last, he had framed the list of bodies to be invited to suggest the names of persons suitable to become members of the Consultative Council on Medical and Allied Services to be set up in England under the Ministry of Health Act, 1919, and asking the Royal College of Surgeons of England to furnish him with the names of six persons who, in its opinion, would be specially suitable, if appointed by him, to serve upon the Council as first constituted; pointing out that, while it is desirable that the Minister should, before coming to his decision, have as large a range as practicable of persons willing and suitable to serve only a relatively small proportion of the persons whose names are suggested can in the first instance find a place upon the Council, the total membership of which might with advantage be kept below the maximum number of 20 contemplated by the Order; and stating that the Act provides for the payment to members of the Council of a subsistence allowance and reasonable compensation for loss of remunerative time and for the repayment of travelling expenses. The matter was referred to a committee to consider and report.—Sir George Makins was re-elected President, and Sir Anthony A. Bowly and Sir John Bland-Sutton were elected Vice-presidents. Sir D'Arcy Power was re-elected a member of the Executive Committee of the Imperial Cancer Research Fund.—The next meeting of the Council will be held on Thursday, July 24th.

**UNIVERSITY OF BRISTOL.**—The following professorial appointments have been made:—Chair of Education: Helen Marion Wodehouse, M.A., D.Phil., Principal of the Bingley Training College, Yorkshire; Henry Overton Wills Chair of Physics: Arthur Mannering Tyndall, D.Sc., Acting Head of the Department of Physics in the University during the war; Henry Overton Wills Chair of Physiology: George A. Buckmaster, M.A., M.D., D.P.H., Assistant Professor of Physiology in the University of London.

At examinations held recently the following candidates were successful:—

### DEGREES OF M.B., CH.B.

*Final Examination, Part I, only (including Forensic Medicine and Toxicology).*—Hilda Mary Brown.

*Second Examination, Part II, (completing examination).*—Macdonald Critchley, John Rukin Duerden, and Phyllis Thekla Slepmann.

### DIPLOMA IN DENTAL SURGERY.

*Final Examination.*—Violette Burgeois.

*Third Examination.*—Edward Jaue, Tusker.

*Second Examination.*—Norman Harry Bodenham and Kenneth George Hyland.

### DIPLOMA IN PUBLIC HEALTH.

Alison Edgar Wilson.

**UNIVERSITY OF MANCHESTER.**—The following have obtained the Diploma in Public Health of the University:—

A. W. Baker, G. H. T. N. Clarke, C. J. Crawford, C. O. Hargreaves, A. Heath, J. L. Meynell, E. N. Ramsbottom, H. F. Sheldon, and E. H. Walker.

**ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.**—The following candidates have passed the Triple Qualification Examinations:—

### FINAL EXAMINATION.

John Stewart Marshall Connell, Robert Berry Forgan, Poon Lip Loh, Thomas Lloyd Edwards, John Kohler Steel, John Fraser Kerr, Ssem Stein, Thomas Richard O'Keefe, William Gibb, Daniel Adrian Stegman, Maurice Julius Woodberg, and Jung Babadur Singh.

*Medicine.*—Norman Joseph Patterson, Mandayam Anandampillay Parthasarathy Iyengar, Gordon Beveridge, Thomas Dier, Lewis Rifkind, John Alfred Alexander Duncan, and John Richard Larson.

*Surgery.*—Thomas Dier, Thomas Ferguson Minford, and Thomas Blaney.

*Midwifery.*—Norman Joseph Patterson, Mandayam Anandampillay Parthasarathy Iyengar, Gordon Beveridge, Lewis Rifkind, Patabandi Martin Fernando, James Innes Coventry, John Alfred Alexander Duncan, and John Richard Larson.

*Medical Jurisprudence.*—Thomas Arnoldus du Toit, Andrew Gold, Douglas Chieuc Scotland, Thomas Dier, George Murray Shaw Lindsay, William Grant, Henry Godfrey Fitzmaurice, Jessie Melville Lyall Wright, Joseph Butler Dobson, James MacCoshan, James Sydney Alexander Rodgers, Robert Smith, and John Richard Larson.

**ROYAL COLLEGE OF SURGEONS OF EDINBURGH.**—At a meeting of the College held on July 11th the following candidates, having passed the requisite examinations between March 17th and 20th, were admitted Fellows:—

Joshua Isadore Baez, Robert Chalmers, James Erlank, Aubrey Scott Gillett, Eben Stuart Burt Hamilton, Maurice Bertram Lawrie, George Millar, Sengarapillai Ponniah, Alan Thomas Roberts, George John Chase Smyth, Harvey Henry Vincent Welch, and John Benson Young.

**UNIVERSITY OF ABERDEEN: GRADUATION CEREMONY.**—The summer graduation ceremony was held on July 11th, when Sir Douglas Haig and Sir Roger Keyes attended to receive the honorary degree of Doctor of Laws, which was also conferred upon Sir James Cantlie, Emeritus Professor John Theodore Cash, Sir David Hardie (in absentia), member of the Senate of the University of Queensland and late Lieutenant-Colonel, R.A.M.C., Sir James Porter, late Director-General, Naval Medical Department, and Dr. John Scott Riddell, Director of the North-Eastern District Red Cross Society. The following degrees were also conferred:—

### DOCTOR OF MEDICINE (M.D.).

Francis James Browne (highest honours for thesis), William Wilson Ingram (commendation), Alfred George Brown Duncan (honours), Archie Reith Fraser (honours), George A. Jam, Ratan Edulji Dastur, Andrew Smith Leslie, David Murdoch Marr, and Cameron Macdonald Nicol.

### BACHELOR OF MEDICINE (M.B.) AND BACHELOR OF SURGERY (CH.B.).

John Allan, Annie Anderson, William Anderson, Margaret Mitchell Chapman, James Sylvester Cook, James Clyne Trigue Crowden, Elizabeth May Dow, Dorothy Margaret Jane Emslie, William Alexander Falconer, John Fiddes, Alexander Coutts Fowler, Alexander E. I. Gammie (second-class honours), Coral Olive Gordon (second-class honours), James Innes Hutchison, Mary Victoria Littlejohn, Bethia Muir Newlan, Margaret Porteous, Lewis Stevens Robertson, Keith Sargent Roden, Irene Tomina Joan Ruxton, George Alexander Shepherd (second class honours), Henry Third, Atholl Thomas, and Louise Tomory.

\* Passed Final Professional Examination with distinction.

† Passed Final Professional Examination with much distinction.

The John Murray medal and scholarship were awarded to Dr. George Alexander Shepherd.

**UNIVERSITY OF DUBLIN, TRINITY COLLEGE, SCHOOL OF PHYSIC.**—At examinations held recently the following candidates were successful:—

### FINAL MEDICAL EXAMINATION.

*Part I, Materia Medica and Therapeutics, Medical Jurisprudence and Hygiene, Pathology.*—Albert Victor John Russell (high marks), George Hall Davis (high marks), Theodore Kvitloff and Edmund Cyril Smith (equal) (high marks), Francis Victor Small, Joseph Hirschmann, Harold Osmond Holmeyer, John Frederick Wickham, Mervyn Edmund McBrien, Margaret Tate Stevenson, Cecil Emrys McQuide and Esie Stuart Smyth (equal), Emily Elapheth Grace Bailie, Barney Mosholowitz, Thomas Falkland Litton Cary and Nannette Norris (equal), William Richard Burns, John Henry B-nell Crosbie, and William Bruce Briggs.

*Pathology only (completing examination).*—James Alexander Acheson, *Materia Medica and Therapeutics, Medical Jurisprudence and Hygiene.*—John Russell Craig, Francis Young Pratt, Robert Sturgeon Chapman, Thomas Gerald Warham, John Douglas Thompson, Albert Stanley Bradlaw, and William Harlan Smith. Richard Victor Dowse, John Carson Brennan, and Henry Allman Lavelle.

*Part II, Medicine.*—Cyril Daniel Brink, John Charles Joseph Callanan, William Frederick McConnell, and James Sinclair Quin (equal), Gerald Fitzmaurice Keatinge and Leslie James Nugent (equal), Jessie Gilbert, Mary Christina Sheppard, Thomas James Russell Warren, Eric Stuart Bwing Mack, Albert William Darnley Magee, and Samuel John Laverty, Henry Blundell Van der Merwe, and Victor George Walker (equal).



**Surgery.**—James Sinclair Quin, Albert Hugh Thompson, Richard Counihan, Cecil Joseph Quinlan, Thomas James Russell Warren, Gertrude Rice, Reoher FitzJames Haythornthwaite, Frederick William Godboy, Charles Goring Ambrose, William Joseph Hogan and Thomas Madill (equus), Patrick Casey, Frederick John Dymoke, and Albert William Darnley Magee.

**Midwifery.**—Leonard Abrahamson (high marks), Frederick William Robertson (high marks), John Gerard Holmes, John Henry Coolahan, Janie Millar Cummins, Harris Cohen, Cyril Daniel Brink, Hilken Hilda Dowse, Thomas Madill, Richard Edmonde Murphy, Thomas Donald Gordon, Francis John Gerard Battersby, Abgar Head Aldin, and Samuel Reginald Hill.

#### DIPLOMA IN PUBLIC HEALTH.

**Part II., Sanitary Engineering, Vital Statistics and Public Health Law, Hygiene and Epidemiology.**—Henry Cunningham Mulholland, Beattie Lyons, Robert Condy, Gilbert Marshall, Cecil William Clements Robinson, and Charles Ernest Moore.

**QUEEN'S UNIVERSITY OF BELFAST.**—At the graduation ceremony on July 9th a distinguished honorary graduate was Viscount Bryce, on whom was conferred the degree of LL.D. Sir David Semple, M.D., had the honorary degree of D.Sc. conferred upon him in recognition of his original researches in enteric fever, tetanus, and bacterial vaccine therapy. Lieutenant-Colonel Robert McCarrison received the honorary degree of LL.D. (in absentia) for his brilliant researches in goitre and the ductless glands, while Lieutenant-Colonel J. A. Sinton, V.C., received the honorary degree of M.D. in recognition of his early distinctions and of his valour in the field. The following degrees by examination in medicine were conferred:—

**M.D.**—Eileen M. Bell (with distinction and gold medal), Nathaniel Beattie, Joseph Corker, Caroline V. Lowe, James Lyons, and Peter P. Wright.

**M.B., B.Ch., B.A.O.**—William R. Abernethy, Samuel Ballantine, Hugh Carson, Thomas J. A. Connolly, Eric A. Davison, Samuel Hall, Benjamin Herbert, John M. Hovey, Daniel J. M'Gurk, William C. M'Kee, Thomas H. M'Kenna, Mary M. Merrick, Robert Nimmons, David G. Roulston, Alexander M'W. Segerdall, Ruth M. Slade, and Henry W. Wild.

**Diploma in Public Health.**—Ivlie Ald, John B. Alexander, Samuel T. Beggs, James Boyd, Llewellyn D. I. Graham, William M'Dermott, Edward B. C. Mayrs, Thomas Milling, Frederick A. E. Silcock, James Tate, Percival S. Walker, and George Wilson.

**THE SOUTH LONDON HOSPITAL FOR WOMEN.**—The third anniversary of the opening of the hospital was celebrated on July 9th, when purses representing a total collection of £700 were handed to Lady Carishrooke. Lady Londonderry, chairman of the board of management, drew attention to the fact that a sum of £7000 was required before the end of the year to meet anticipated ordinary expenditure.

**METROPOLITAN HOSPITAL SUNDAY FUND.**—The following are among the amounts received at the Mansion House up to July 11th, the total amount being then £56,000:

St. Columba's Church of Scotland, Pont street, £575; St. James's, Piccadilly, £380; Christ Church, Lancaster-gate, £236; Holy Trinity, Sloane-street, £278; St. Paul's, Knightsbridge, £227; St. Peter's, Eaton-square, £214; St. Simon's, Upper Chelsea, £173; St. Jude's, Kensington, £146; St. Stephen's, Avenue-road, £132; St. Stephen's, Gloucester-road, £130; Holy Trinity, Kensington Gore, £122; Greek Church, Bayswater, £121; Essex Church, Kensington, £119; St. Peter's, Cranley-gardens, £109; Christ Church, Mayfair, £103; Cannon Brewery Co., Ltd., £105; St. Mary in the Boltons, £103; Temple Church, £102.

**ROYAL MEDICAL BENEVOLENT FUND.**—At the last meeting of the committee, held on July 8th, 20 cases were considered and £200 voted to 15 of the applicants. The following is a summary of some of the cases relieved:—

Widow, aged 52, of L.S.A. Lond. who practised at Leyton and died in 1914. Receives £2 10s. per week from the sale of the practice, and £2 from children. Has five children, only the two eldest working, the third at home, and the two youngest at school. Requires help owing to the increased cost of living. Relieved four times, £35. Voted £10.—Daughter, aged 64, of M.R.C.S. Eng. who practised at Blackheath and died in 1881. Suffers from chronic ill-health and is entirely dependent on her sister, who applies for her. Her only income is £5 from investments. Relieved 14 times, £131. Voted £10 in two instalments.—Widow, aged 39, of M.D. Durh. who practised at Tamworth and died in 1917. Was left totally unprovided for with seven children, now aged 17-3 years. Only the eldest is working, and she helps all she can. Applicant receives £150 from dividends, and about £52 by letting rooms. Brother-in-law pays rent, and relations help a little with education. Relieved twice, £30. Voted £12.—Daughters, aged 43 and 47, of M.R.C.S. Eng. who practised at Poplar and died in 1892. They live on the West Coast and take in paying guests, and during the last 12 months have made £70. Rent and rates £79. They find it necessary to apply for help owing to the very short season in 1918, and the increased cost of living. Relieved six times, £60. Voted £10.—Widow, aged 53, of L.R.C.P. & S. Edin. who practised at New Quay and died in 1893. Applicant suffers from ill-health and is unable to work. Has two sons, who are both in the Navy, and help whenever possible. Pays £6 a year rent. Relieved 16 times, £161. Voted £18 in two instalments.—Daughter, aged 67, of M.R.C.S. Eng. who practised at Liverpool and died in 1885. Receives £30 from another charity and £7 from dividends. Lives with sister, and they share the rent, which is £17. Suffers from ill-health and deafness and is unable to work. Relieved five times, £58. Voted £18 in 12 instalments.—Widow, aged 65, of M.B. Dub. who practised at Acton and died in 1912. Applicant was left with four children, now all married and only able to help very slightly. She earns a little by needlework. Has let her flat for £2 2s. a

week until July 14th. Rent £50. Unable to manage owing to high cost of living. Relieved three times, £25. Voted £12 in 12 instalments.

—Widow, aged 70, of M.D. Glasg. who practised at Dennistoun and died in 1876. Applicant lives with married daughter and is too old to work. She receives £20 from another charity and £48 from children. Suffers from rheumatism and neuritis. Relieved five times, £60. Voted £18 in 12 instalments.—Daughter, aged 63, of L.R.C.P. Edin. who practised at Holloway and died in 1884. Only income £40 a year from another charity. Suffers from ill-health, which prevents her from working. Rent £41. Relieved 15 times, £139. Voted £18 in 12 instalments.

Subscriptions may be sent to the acting honorary treasurer, Dr. Samuel West, at 11, Chandos-street, Cavendish-square, London, W.1.

Sir Arbutnot Lane, on the invitation of the committee of the French Hospital, Shaftesbury-avenue, will act as senior surgeon to the institution.

Mr. G. G. Henderson, M.A., D.Sc., LL.D., F.I.C., has been appointed Regius professor of chemistry in the University of Glasgow in the room of the late Professor John Ferguson.

**THE LATE DR. ARTHUR FULLER.**—Dr. Arthur Fuller, who died at Kimberley on June 2nd, was a well-known citizen, having long been a member of the hospital board and school board. He was at the time of his death President of the South African Permanent Mutual Building and Investment Society.

**THE CHEMISTS' EXHIBITION.**—More than usual interest was taken in the Chemists' Exhibition opened at the Northampton Institute, Clerkenwell, on Monday, July 14th, inasmuch as the occasion marked the revival of a demonstration held annually previously to the war. A period had elapsed, therefore, in which pharmaceutical developments had taken place, and a stimulus had been given to the preparation of so many drugs not before made in this country. These facts made the exhibits peculiarly attractive and served to swell both the number of exhibitors and visitors. Pride was manifest in British manufactures, and the various products shown were a proof that foreign monopoly in this section of industry need no longer exist. Altogether the exhibition was a credit to the great British drug houses, and it is to be followed by a medical exhibition to be held in the Central Hall, Westminster, from Oct. 6th-10th next.

**A CREMATORIUM FOR THE CAPE.**—The Health Committee of the Capetown Town Council, having had remitted to it for consideration the subject of the establishment of a crematorium in the city, reports that the method of disposing of dead bodies by cremation is, there is no doubt, the most sanitary, but that if a crematorium is to be established it should be under the control of the Burial Board, and not of the municipality. The city council apparently not possessing powers to establish a crematorium, it would be necessary for special legislation to be enacted to enable one to be instituted. In submitting a report from the medical officer of health on English cremation procedure, the committee recommended that the matter be brought to the notice of the Minister of the Interior, Sir Thomas Watt, with a view to a Bill being submitted to the Union Parliament under which a crematorium could be established. The question will be considered by the Cape Municipal Association at the session to be held at Mossel Bay.

**MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.**—The annual meeting of the association will be held from Tuesday to Thursday, July 22nd to 24th, at York, under the presidency of Dr. Bedford Pierce. On Monday, July 21st, the council will meet at 5.30 P.M. at the Medical Society's Rooms, 17, Stonegate, York. On Tuesday the annual meeting will commence at 11 A.M. at "The Retreat," when the following officers will be proposed for the year 1919-20:—President: Dr. Bedford Pierce. President-elect: Dr. W. F. Menzies. Ex-President: Lieutenant-Colonel John Keay. Treasurer: Dr. James Chambers. Editors of Journal: Dr. J. R. Lord and Dr. Thomas Drapes. General Secretary: Major R. Worth. Registrar: Dr. A. A. Miller. A paper will then be read by Dr. G. R. Jeffrey entitled "Notes on a Case Treated by Hypnotic Suggestion." At 3 P.M. prizes and medals awarded during the year will be presented, and the presidential address will then be delivered by Dr. Pierce. Dr. G. L. Brunton will read a paper entitled "Notes on the Cytology of the Cerebro-spinal Fluid." The annual dinner will take place at 7.30 P.M. at the Station Hotel, York. On Wednesday, at the Bishop's Room in St. William's College at 10 A.M., papers will be read as follows: "The Value of Treatment by Psychological Analysis," by Dr. J. W. Astley Cooper; "An Analysis of 200 Cases of Mental Defect," by Dr. J. E. Middlemiss. Wednesday afternoon and Thursday are devoted to social entertainment of which a special programme has been issued.



## The Services.

### THE CASUALTY LIST.

THE names of the following medical officers appear among the casualties announced:—

*Accidentally killed.*—Capt. R. C. Dickson, R.A.M.C. (S.R.), qualified at Edinburgh in 1911, and joined the R.A.M.C. shortly afterwards.

*Died.*—Lieut. Col. J. Gould, C.B.E., I.M.S., was a student at University College, Liverpool, and qualified at Manchester in 1890, and joined the I.M.S. shortly afterwards.

#### Casualties among the Sons of Medical Men.

Lieut. G. Allison, Gurkha Rifles, killed in action on the Indian frontier on June 8th, 1919, elder son of Dr. T. M. Allison, of Newcastle-upon-Tyne. Second Lieut. G. M. Dickson, Black Watch, killed in action in France, October, 1918, and Capt. R. C. Dickson, R.A.M.C. (S.R.), accidentally killed on service in India, June, 1919, sons of the late Dr. G. C. Dickson, of Carnoustie, Scotland.

### THE HONOURS LIST.

The following awards to medical officers are announced:—

*C.M.G.*—Surg.-Cmdr. J. Chambers, R.N., for valuable services as operating surgeon at the Royal Naval Hospital, Chatham, since December, 1915.

*O.B.E.*—Surg.-Cmdr. R. H. J. Browne, R.N., for valuable services as principal medical officer on the staff of the Vice-Admiral Commanding the Battle Cruiser Force. Surg. Lt.-Cmdr. E. L. Markham, R.N., for valuable services in H.M.S. *Caradoc*, 6th Light Cruiser Squadron. Surg.-Cmdr. F. W. Parker, R.N., for valuable services as senior medical officer, R.N. Sick Quarters Invergordon.

*D.S.O.*—Surg. Lieut.-Cmdr. N. S. Meiklejohn, R.N., for distinguished services in H.M.S. *Caledon*, as Senior Medical Officer, 1st Light Cruiser Squadron.

*Military Cross.*—Temp. Capt. John Campbell, R.A.M.C., for conspicuous gallantry and devotion to duty north of Sherqat, on Oct. 27th/28th, 1918; he showed great skill and a total disregard of danger in tending the wounded under fire; on several occasions, owing to the intensity of the enemy's fire, he had to move his aid-post, but in spite of all difficulties he managed to evacuate all cases successfully.

The name of Surg.-Lieut. W. A. Mallam, R.N.V.R., has been brought to the notice of the Admiralty for valuable services in the prosecution of the war.

*Foreign Decorations.*—*French.*—*Croix de Guerre.*—Col. J. D. Alexander, D.S.O.; Bt. Lt.-Col. (temp. Lt.-Col.) E. B. Bird, D.S.O., R.A.M.C. (T.F.); Temp. Capt. (acting Maj.) A. J. Blake, M.C., R.A.M.C. (T.F.); Temp. Capt. (acting Maj.) A. W. S. Christie, R.A.M.C.; Bt. Col. (temp. Col.) H. E. M. Douglas, V.C., C.M.G., D.S.O., R.A.M.C.; Capt. (acting Lt.-Col.) W. R. Gardner, D.S.O., R.A.M.C. (S.R.); Capt. C. F. Hacker, M.C., R.A.M.C.; Capt. W. J. Knight, M.C., R.A.M.C.; Lt.-Col. (temp. Col.) L. N. Lloyd, C.M.G., D.S.O., R.A.M.C.; Capt. S. McCausland, M.C., R.A.M.C. (T.F.); Temp. Capt. J. C. Ogilvie, M.C., R.A.M.C.; Maj. (acting Lt.-Col.) D. de C. O'Grady, R.A.M.C.; Capt. (acting Lt.-Col.) E. Phillips, M.C., R.A.M.C.; Lt.-Col. (temp. Col.) H. S. Robb, C.M.G., D.S.O., R.A.M.C.; Temp. Capt. (acting Lt.-Col.) L. D. Shaw, D.S.O., R.A.M.C.; Capt. (acting Maj.) J. R. N. Warburton, M.C., R.A.M.C. (S.R.).

*Greek.*—*Medal of Military Merit, 2nd Class.*—Surg.-Cmdr. T. W. Myles, R.N.

*The Territorial Decoration.*—The Territorial Decoration has been conferred upon the undermentioned officers of the Territorial Force:—Army Medical Service: Col. G. H. Edington. Royal Army Medical Corps: Lts.-Col. J. S. Warack, J. Smart, E. J. Cross, John McKie, Maj. (temp. Lt.-Col.) M. G. Brenner, Maj. (acting Col.) D. Horie, Maj. (acting Lt.-Col.) W. F. Roe, Majs. F. W. Bailey, H. Stallard, A. F. Rutherford, V. Howard, N. MacLaren, F. B. Jefferies, H. W. Pritchard, W. Bryce, A. C. Farquharson, F. J. Oxley, W. W. Jones, E. G. Stocker, J. Evans, B. Edenbrooke (T.F.H.), J. N. Macmillan, E. M. Dyer, C. J. Martin, H. F. Horne, Capts. (acting Majs.) C. T. Holland, A. P. Watson, Capt. and Qr.-Mrs. J. Boxall, J. H. Maund.

### ROYAL NAVAL MEDICAL SERVICE.

Surg.-Comdr. E. G. E. O'Leary is placed on Retired List at own request.

W. J. Morris and J. F. Pace to be Surgeon-Lieutenants.

### ARMY MEDICAL SERVICE.

Col. T. Du B. White is placed on retired pay.

Temp. Col. A. H. Tubby (Lieutenant-Colonel, R.A.M.C., T.F.) relinquishes his temporary commission on re-posting.

Temp. Col. Sir H. M. Rigby (Brevet Lieutenant-Colonel, R.A.M.C., T.F.) relinquishes his commission on ceasing to be specially employed and on re-posting.

Temp. Col. H. McI. W. Gray (Major, R.A.M.C., T.F.) relinquishes his temporary commission on re-posting.

### ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonels relinquish the temporary rank of Colonel on ceasing to be specially employed: E. W. W. Cochrane, L. N. Lloyd.

Major and Brevet Lieut.-Col. M. G. Winder relinquishes the temporary rank of Lieutenant-Colonel on re-posting.

The undermentioned relinquish the acting rank of Lieutenant-Colonel on re-posting: Majors R. E. U. Newman, E. M. O'Neill, R. F. M. Fawcett, W. J. Waters, H. H. A. Emerson, L. V. Thurston (on ceasing to command a Medical Unit); Capts. H. A. Harbison, G. P. Taylor, C. Clarke, F. R. Laing, A. J. Hickey, T. A. Weston, J. R. Hill, H. H. Leeson (on ceasing to command a Field Ambulance); Temp. Capts. J. G. Johnston, K. G. Fraser.

Temp. Lieut.-Col. E. G. Gauntlett (Captain, R.A.M.C., T.F.), relinquishes his temporary commission on ceasing to be specially employed and on re-posting.

The undermentioned to be acting Lieutenant-Colonels whilst commanding Medical Units: Majors A. S. Williams, E. M. O'Neill, A. M. Rose, (Brevet Lieut.-Col.) C. W. Holden; Capts. (acting Major) T. A. Weston, E. A. Sutton; Temp. Capts. (acting Majors) H. S. Dewar, K. G. Fraser.

Major E. E. Parkes to be acting Lieutenant-Colonel whilst specially employed.

Temp. Capt. J. B. Butler to be acting Major whilst specially employed.

The undermentioned to be Captains: Capt. W. H. Cornelius, from Spec. Res.; Temp. Capts. R. H. Lucas, P. J. S. O'Grady.

Late temporary Captain to be Captain: J. E. English.

Temp. Capt. F. F. Middleweek relinquishes the temporary rank of Major on ceasing to command troops on a Hospital Ship.

Temporary Lieutenants to be temporary Captains: A. H. Marsh, W. H. W. McWhirter, F. P. Harder, J. Butterworth, D. D. Farquharson, F. H. Nixey, D. H. Vickery.

To be Lieutenants and to be temporary Captains: Capts. M. C. Paterson (from Spec. Res.), P. A. Stewart (from Spec. Res.); Temp. Capts. C. H. C. Byrne, A. J. Bado, G. W. B. Shaw.

Officers relinquishing their commissions:—Temp. Lieut.-Cols. A. Balfour and J. W. W. Stephens (retain the rank of Lieutenant-Colonel). Temporary Majors retaining rank of Major: J. M. Crocker, F. M. R. Walshe, J. C. Pounson, G. Schofield. Temp. Hon. Major G. Hodge (retains the honorary rank of Major). Temp. Capts. J. C. Stiven (granted rank of Lieutenant-Colonel). Temporary Captains granted the rank of Major: R. Edward, D. O. Riddel, H. B. Graham, R. K. B. Brnie, J. G. Heath, J. H. Jones, D. M. Morrison. Temp. Hon. Capt. (acting Major) O. H. Stansfield (granted the honorary rank of Major). Temporary Captains retaining the rank of Captain: C. E. Fenn, D. MacIntyre, E. Morgan, P. A. Rostan, A. M. Ross, C. L. Sprule, O. C. Gruner, J. R. Rees, W. Robinson, R. Park, T. Milling, E. N. Russell, A. F. Galloway, J. M. Johnson, C. A. Lawrence, H. E. Soones, J. H. Sutcliffe, J. A. Vennart, A. J. Rae, D. R. E. Roberts, D. Smith, G. B. Kennedy, W. R. che, M. Davidson, J. Goss, G. T. O'Donnell, O. P. N. Fearn, F. W. Rowland, R. J. Hutchinson, G. Deery, V. E. Somerset, J. J. Delany, F. J. Waldeimer, T. G. Wakeling, J. W. Sutherland, T. F. Griffin, D. Watson, F. O. Steadman, C. Bennett, K. J. Yeo, J. L. B. Dixon, A. L. Krogh, J. Appleyard, J. G. Forbes, A. B. Klein, H. V. Deakin, W. Bain, M. Scott, E. Wordley, A. F. Ross, T. H. Campbell, F. H. McCaughey, A. L. Robinson, T. F. Dillon, J. Nunan, A. Langwill, C. H. Burgess, H. G. Frenn, A. B. Cheves, L. R. G. de Glanville, N. Matthews, J. Healey, A. W. D. Coventon, M. J. Landy, K. McLay, J. F. Paul, J. L. Pearce, W. McAlpine, C. W. J. Dunlop, R. B. Radcliffe, T. J. D. Quigley, P. C. Leslie, F. S. Turner, W. R. H. Smith, C. G. Adams, H. A. C. Swertz, B. A. Runtin, G. Graham, R. W. Ironside, N. MacLeod, F. C. Matthew, A. Rhodes, W. E. Waller, F. W. Grant, H. W. Smartt, A. F. Readdie, C. F. D'ew, H. Keighley, C. B. Davies, P. J. Maguire, G. C. F. Roe, E. C. A. Smith, E. B. Paget-Tomlinson, W. L. Stuart. Temporary Lieutenant granted rank of Captain: F. G. McGuinness. Temporary Lieutenants retaining the rank of Lieutenant: R. Ringrose, A. Prentice, J. C. Loughbridge, E. W. Dewey, C. H. Lee, E. D. Townroe.

#### Canadian Army Medical Corps.

Temporary Majors (acting Lieutenant-Colonels) to be temporary Lieutenant-Colonels: S. R. Harrison, C. Hunter, E. H. Selby, W. A. G. Bauld, J. G. W. Johnson, F. H. Mackay, A. E. H. Bennett, W. M. Hart, D. A. L. Graham, A. L. Johnson, R. St. J. MacDermid, R. H. M. Hardisty, T. H. McKillip, H. R. MacDermid, F. A. C. Scrimger, G. A. Platt, G. S. Strath, G. Musson, J. T. Hill.

Temporary Captains (acting Majors) to be temporary Majors: J. A. M. Hemmeon, F. B. MacIntosh, K. A. MacKenzie, G. W. A. Aitken.

Temp. Capt. A. B. James to be acting Major while employed at No. 11 Canadian General Hospital.

Temp. Major J. McW. Taylor and Temp. Capt. H. A. Mitchell retire in the British Isles.

#### SPECIAL RESERVE OF OFFICERS.

Capt. W. S. Wallace and A. W. A. Davies relinquish their commissions and retain the rank of Captain.

Capt. W. R. Gardner relinquishes the acting rank of Lieutenant-Colonel on re-posting.

Capt. (acting Major) J. F. W. Sandison to be acting Lieutenant-Colonel whilst commanding a Medical Unit.

#### TERRITORIAL FORCE.

Lieut.-Col. (acting Col.) E. B. Dowsett relinquishes his acting rank on vacating the appointment of Assistant Director of Medical Services.

Majors (acting Lieutenant-Colonels) relinquishing their acting rank on ceasing to be specially employed: D. F. Todd, J. O. Summerhayes, J. Gray, H. E. S. Richards.

Capt. E. G. Gauntlett is restored to the establishment on ceasing to hold a temporary commission in the R.A.M.C.

Capt. (acting Major) R. C. Plummer, R. S. Taylor, P. R. Bo'us, H. J. D. Smythe, A. L. Sharplin, H. W. Bayly, J. H. Lloyd, and A. W. Stott relinquish their acting rank on ceasing to be specially employed.

Captains to be acting Majors whilst specially employed: A. Rankine, E. G. T. Poynder, H. T. Jones, F. R. Humphreys, K. I. S. Smith.

Capt. J. A. Parsons is restored to the establishment.

Capt. A. Fordyce relinquishes his commission and retains the rank of Captain.

1st Scottish General Hospital: Capt. (acting Major) C. Kerr relinquishes the acting rank of Major on ceasing to be specially employed.

3rd Scottish General Hospital: Capt. (acting Major) R. Fullerton relinquishes his acting rank on ceasing to be specially employed.

5th Southern General Hospital: Capt. (acting Major) P. H. Green relinquishes the acting rank of Major on ceasing to be specially employed, and is restored to the establishment.

2nd Eastern General Hospital: Capt. (acting Major) R. Whittington relinquishes his acting rank on ceasing to be specially employed.

3rd London General Hospital: Capt. (Brevet Major) A. H. Gosse is restored to the establishment.

1st London Sanitary Company: Capt. (Brevet Major) C. C. Frye is restored to the establishment.



## ROYAL AIR FORCE.

*Medical Branch.*—The undermentioned are transferred to Unemployed List: Major H. F. Horne; Capt. (acting Major) A. H. Todd; Capt. M. R. Dobson, T. R. F. Kerby, F. Irvine, J. A. Gordon, D. Cameron (R.A.M.C., T.F.), J. C. H. Allan; Lieuts. A. G. Graham, H. W. Toms, O. F. Conoley.

A. G. Graham is granted a temporary commission as Captain.

*Dental Branch.*—Capt. J. Barratt is transferred to Unemployed List.

## INDIA AND THE INDIAN MEDICAL SERVICE.

The King has approved the retirement of Lieut.-Col. C. T. Hudson and Capt. C. C. McCredy in consequence of ill-health. The King has also approved the relinquishment of temporary rank of Capt. J. H. Pary.

*Medical Corps.*—T. F. Pedley to be Lieutenant-Colonel; E. F. Neve and O. H. Elmes to be Captains; and A. D. Cameron to be Lieutenant in the Medical Corps, Indian Defence Force.

Lieut.-Col. A. W. R. Cochrane, Superintendent, King Edward VII. Memorial Sanatorium at Blowati, has been appointed a Civil Surgeon, Second Class, with effect from May 8th. Lieut.-Col. J. C. Lamont resigns. Lieut.-Col. C. H. Bensley, Inspector-General of Prisons, Central Provinces, has been appointed Acting Inspector-General, Civil Hospitals pro tem. The services of Major J. M. Holmes, Deputy Sanitary Commissioner and Health Officer, Imperial City, Delhi, have been replaced at the disposal of Government of India Army Department. Mr. T. Harvey, Sanitary Engineer, will hold charge of the office of Health Officer, Imperial City, in addition to his own duties. Col. M. C. MacWatt, Inspector-General, Civil Hospitals, Punjab, has been appointed Acting Director General, Indian Medical Service, vice Major-General W. R. Edwards, C.B., C.M.G., on leave in Kashmir. Major R. M. Dalziel, Superintendent of Central Jail, Multan, has been appointed officiating Inspector-General of Prisons, Punjab, relieving Major W. T. Finlayson. Major W. G. Hamilton has been appointed to act as Superintendent, Presidency Jail, during the absence on deputation of Lieut.-Col. F. S. C. Thompson. Major J. P. Lynch, R.A.M.C., has been appointed to hold medical charge of the Civil Station of Barrackpore, vice Capt. D. J. McLaren, R.A.M.C. Major E. O. Thurston has been appointed Civil Surgeon of Hooghly. Bt. Lieut.-Col. C. A. Gill has been reappointed Chief Malaria Medical Officer, Punjab, on reversion from military duty, relieving Major C. E. Southen, Chief Plague Medical Officer, Punjab, of the additional charge. The services of Major J. E. Clement, Superintendent, Central Jail, Lucknow, and A. W. Overbeek-Wright, Superintendent, Lunatic Asylum, Agra, are placed at the disposal of the Government of India Army Department. Major C. L. Dunn, whose services have been placed at the disposal of the United Provinces Government by the Government of India, has been appointed a Deputy Sanitary Commissioner.

## AUXILIARY ROYAL ARMY MEDICAL CORPS FUNDS.

The usual quarterly committee meeting was held on Friday, July 4th, at 11, Chandos-street, Cavendish-square, W., when 12 grants were made to cases in the Benevolent Branch for Officers, amounting to £298. Requests for relief should be addressed to the Honorary Secretary, Sir William Hale White, at 11, Chandos-street, London, W.1.

## DEATHS IN THE SERVICES.

A telegram from Aden reports the death of Colonel Jay Gould, I.M.S., C.B.E., formerly Deputy Director-General, I.M.S., Simla. Colonel Jay Gould only recently took up the appointment of A.D.M.S., Aden Forces. He was one of the best-known officers in the I.M.S. Formerly medical officer of the 14th Lancers and Central India Horse, he has been employed as a medical staff officer at Naini Tal and Simla.

## URBAN VITAL STATISTICS.

(Week ended July 12th, 1919.)

*English and Welsh Towns.*—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had been 10.0, 9.6, and 10.0 in the three preceding weeks, further rose to 10.1 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual rate was 10.0 per 1000, and coincided with that recorded in the previous week, while among the remaining towns the rates ranged from 2.8 in Leyton, 4.2 in Edmonton, and 4.7 in Gillingham and in Eastbourne, to 16.3 in Great Yarmouth, 18.5 in Rochdale, and 18.8 in Brighton. The principal epidemic diseases caused 117 deaths, which corresponded to an annual rate of 0.4 per 1000, and included 36 from infantile diarrhoea, 28 from measles, 23 from diphtheria, 15 from scarlet fever, 9 from whooping-cough, 4 from enteric fever, and 2 from small-pox. Measles caused a death-rate of 1.8 in Newcastle-on-Tyne; the 2 fatal cases of small-pox belonged to the metropolitan borough of Woolwich. There were 6 cases of small-pox, 1348 of scarlet fever, and 1068 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 2, 1236, and 980 respectively at the end of the previous week. The causes of 31 deaths in the 96 towns were uncertified, of which 9 were registered in Birmingham, 4 in London, and 3 in Carlisle.

*Scotch Towns.*—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had been 11.0, 11.5, and 9.9 in the three preceding weeks, rose to 11.0 per 1000. The 225 deaths in Glasgow corresponded to an annual rate of 10.5 per 1000, and included 6 from whooping-cough, 3 from measles, 2 from infantile diarrhoea, and 1 each from enteric fever and scarlet fever. The 72 deaths in Edinburgh were equal to a rate of 11.2 per 1000, and included 3 from whooping-cough and 1 each from measles and scarlet fever.

*Irish Towns.*—The 102 deaths in Dublin corresponded to an annual rate of 13.1, or 0.4 per 1000 above that recorded in the previous week, and included 3 fatal cases of infantile diarrhoea. The 90 deaths in Belfast were equal to a rate of 11.7 per 1000, and included 3 from scarlet fever and 1 each from enteric fever and whooping-cough.

## Parliamentary Intelligence.

## HOUSE OF COMMONS.

WEDNESDAY, JULY 9TH.

*Venerable Disease at Hull.*

Mr. ROBERT YOUNG asked the Minister of Health whether he had investigated the circumstances attending the deaths of three men within 10 days after treatment for venereal disease at the Royal Infirmary, Hull; what was the drug used; whether it had the approval of his Department; and whether he could supply any information on these cases.—Dr. ADDISON replied: Yes, sir; the three cases occurred in May, and my Department instituted inquiry forthwith. No drug was used, the deaths in each case following on examination only. Fuller investigation is proceeding, and a report will be received in due course.

*Finances of Irish Hospitals.*

Mr. EDWARD KELLY asked the Chief Secretary to the Lord Lieutenant of Ireland whether the Richmond, Hardwicke, and Whitworth Hospitals, and the Westmoreland Lock Hospital, had hitherto been wholly supported by moneys appropriated by Parliament; whether he was aware that no payment had been made towards the support of these hospitals since April, 1918; that it had been found impossible to finance these institutions on the old grant; that the governors recently resigned; that there was at present no means of paying current maintenance expenses; and if he could say what steps the Irish Government had taken to avoid the necessity of these hospitals having to close down for want of funds.—Mr. MACPHERSON replied: Reference to the Vote for Hospital and Charities (Ireland) shows the estimated income of these hospitals, exclusive of the Parliamentary Grant. In the case of the House of Industry Hospitals, the income, apart from the annual grant of £7600, is estimated at £9206 for the current year. A payment of £3000 on account of this grant was made in April last and a payment of like amount will be made this month. The annual grant of £2600 to the Westmoreland Lock Hospital was paid in April last. Application has been made by the Governors of the House of Industry Hospitals for increased financial assistance from public funds and the Treasury have not seen their way to consent to any increase in the grant of £7600 a year. A further application for assistance has been received from the Board of Superintendence on behalf of the hospitals mentioned in the question and certain other Dublin hospitals that are aided from the Parliamentary Vote. This application is at present before the Treasury. The resignations tendered by the Governors of the House of Industry Hospitals have not been accepted, and the Irish Government has been advised that the responsibility for the management of these hospitals still remains with them.

THURSDAY, JULY 10TH.

*Medical Treatment of Soldiers.*

Lieutenant-Colonel WALTER GUINNESS asked the Pensions Minister whether he was aware that under existing regulations no provision was made for admission to suitable institutions of men discharged from the Army on account of neurasthenia, melancholia, and epilepsy in Ireland; whether melancholia cases brought on by shell shock and amputation of limbs had in consequence been admitted to lunatic asylums in Ireland where they were treated as pauper lunatics; and whether he would take steps to provide maintenance and treatment for such cases in special institutions.—Sir J. CRAIG (Parliamentary Secretary to the Ministry of Pensions) replied: There are two institutions in Ireland available for neurasthenics. As far as I am aware there are no epileptic colonies in Ireland with which arrangements for the reception of discharged men can be made, and it is therefore necessary to bring the few cases of epilepsy to England. Men are only placed in asylums if they are certified under the lunacy laws, and I am now arranging that men so certified shall be treated as Service patients.

Lieutenant-Colonel GUINNESS: What in effect will be the difference between the treatment of Service patients and the ordinary pauper patient?—Sir J. CRAIG: Oh! very great. Special arrangements will be made by the medical officers. There is a distinct difference between the two classes.

*Tuberculous Ex-Soldiers.*

Lord HENRY CAVENDISH-BENTINCK asked the Minister of Health whether he was aware that the East Midlands Joint Disablement Committee had 1282 cases of demobilised soldiers suffering from tuberculosis in their area; and whether, in order to provide concurrent training and treatment on the colony system for these men, they applied in October, 1918, to the Pensions Ministry and later to the Local Government Board for financial assistance, but could get no more satisfactory reply than that both Departments were discussing with each other the question of the



treatment of tuberculous discharged men.—Dr. ADDISON replied: I have no recent information as to the total number of demobilised soldiers suffering from tuberculosis in the particular area referred to in the question, but I may say that the number of such cases in residential institutions on July 1st was 183, and the number on the waiting list was 24. The proposal to provide a colony for the concurrent training and treatment of tuberculous men in this area was first brought to the notice of my Department at the end of May when that particular subject of colony treatment had already been specially referred to the Departmental Committee set up by the Minister of Pensions and myself. Their report will, it is hoped, be issued very shortly, and I will then see that suitable steps are taken as soon as possible.

Lord H. CAVENDISH-BENTINCK: Will adequate and immediate steps be taken to carry out the recommendations of the Committee?—Dr. ADDISON: I must see what the recommendations are first.

FRIDAY, JULY 11TH.

#### *Income Limit under the National Insurance Acts.*

The report of the resolution declaring it expedient to raise the remuneration for exception from insurance under the National Insurance Acts from £160 to £250 a year was agreed to.

MONDAY, JULY 14TH.

#### *Scottish Board of Health.*

Mr. MACQUISTEN asked the Secretary for Scotland if he would state when the Scottish Board of Health was to be constituted in terms of the Act; whether, though unconstituted, it had been acting since July 1st; and whether he would give an assurance that nothing should be done by the Board as at present constituted except routine administration work, and delay all questions of appointments and arrangements for administrative duties until the Board was properly constituted.—Mr. MUNRO replied: I am advised that the Board was duly constituted under Section 1 of the statute, with powers duly exercisable as from July 1st. Its personnel is now complete. Meanwhile only duties of the routine kind referred to by my honourable and learned friend have been discharged.

#### *Tuberculosis Treatment.*

Mr. FOREMAN asked the Minister of Health if he could inform the House of the number of persons in the County of London suffering from tuberculosis known to the authorities to require sanatorium treatment and for whom no accommodation was available, and to see whether steps could be taken to utilise as sanatoriums auxiliary or other war hospitals no longer required for war casualties.—Major ASTOR (Parliamentary Secretary to the Ministry of Health) replied: The figures necessarily vary from week to week. There are approximately, as far as the County of London is concerned, some 1700 persons, including children, in residential sanatoriums 500, of whom more than half are children, awaiting entrance. All possible steps are being taken since the diminution of the difficulties occasioned by war conditions to increase the accommodation, including the adaptation of buildings that were provided for war purposes as far as these can be made suitable.

Dr. DELVIN asked the Pensions Minister whether his attention had been called to the treatment of discharged soldiers suffering from tuberculosis; whether he was aware that these men were unable to procure employment because of the disease they suffered from, as no employer wanted consumptive workmen; and whether he would arrange that these men were therefore allowed the full 100 per cent. disablement pension to help them to exist during the few years they might expect to live.—Sir J. CRAIG (Parliamentary Secretary to the Pensions Ministry) replied: The question of tuberculosis as affecting discharged soldiers has recently been considered in all its aspects by an inter-Departmental Committee. Their report is expected within the next fortnight and will be immediately taken into consideration.

#### *Artificial Limbs.*

Sir DONALD MACLEAN asked the Pensions Minister whether he would consider the advisability of publishing from time to time in the daily press photographs or sketches of the latest improvements in artificial limbs, so that men disabled in the war might have the latest information for the purpose of enabling them to minimise, as far as possible, the effects of their disability.—Sir J. CRAIG replied: My right honourable friend is obliged to the right honourable Member for his suggestion, and will consider how far it is practicable. Arrangements are being made to exhibit at repair depôts the various artificial limbs available, so as to give a choice of limbs within limits approved by the surgeons to the disabled men.

Sir D. MACLEAN: Will the honourable gentleman let me have a letter, or will he publish a list of these repair depôts, so that disabled men can have an opportunity of knowing

where they can go for their information?—Sir J. CRAIG: My right honourable friend is much obliged to the right honourable gentleman for his suggestion, which is quite valuable. In connexion with this and other schemes I am sure he will be only too glad to give the information.

#### *Ad hoc Dental Committee.*

Mr. SEDDON asked the Secretary of State for the Home Department whether the ad hoc Committee recommended by the Departmental Committee on Dentistry had been selected; and whether all existing societies of dental practitioners would be included in the selection.—Mr. SHORTT replied: No consideration has yet been given to the formation of the ad hoc Committee referred to in the honourable Member's question. This is a matter that must obviously be postponed until the legislation that will be necessary to give effect to the recommendations of the Dentists Act Committee is in a fair way of accomplishment.

## Appointments.

*Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BAXTER, C. B., F.R.C.S. Edin., has been appointed Honorary Assistant Surgeon to the Royal Berkshire Hospital.  
 FORSYTH, J. A. CAIRNS, M.Sc., M.B., F.R.C.S., Surgeon to the French Hospital, London.  
 LAKE, NORMAN C., M.D., M.S., D.Sc., F.R.C.S., Assistant Surgeon to Charing Cross Hospital.  
 LEWIS, THOMAS, M.D., F.R.C.P., D.Sc., F.R.S., Honorary Consulting Physician to the Ministry of Pensions.  
 LYONS, W. C., M.B. Edin., D.P.H., Assistant Medical Officer (Venereal Diseases, &c.), County Borough of South Shields.  
 MARTIN, DOUGLAS, M.B. Edin., D.T.M., D.P.H., Assistant Medical Officer (Tuberculosis), County Borough of South Shields.  
 MATHIESON, D. MORLEY, M.D. Edin., Ch.B., D.P.H., Medical Officer of Health, County Borough of Birkenhead.  
 OATES, G. E., M.D., B.S. Lond., D.P.H., Medical Officer of Health to the Metropolitan Borough of Bethnal Green.  
 STILES, Sir HAROLD J., to the Chair of Clinical Surgery in the University of Edinburgh.  
 WEAR, A. W., M.B. Durh., D.P.H., B.Hy., Assistant Medical Officer (Diseases of Children), County Borough of South Shields.  
 WHITE, H. V., M.D. Manch., Honorary Ophthalmic Surgeon to the Salford Royal Hospital.  
 French Hospital, Shaftesbury-avenue.—McCLURE, J. CAMPBELL, M.D., Physician to In-patients; FORSYTH, J. CAIRNS, F.R.C.S., Surgeon to In-patients; CROOKSHANK, F. G., M.D., Physician to Out-patients; BROSSY, JEAN, M.D., Physician to Out-patients; ROWE, ROBERT M., F.R.C.S., Surgeon to Out-patients; McHOL, JAMES, F.R.C.S., Ophthalmic Surgeon to Out-patients; BRAUN, JEAN, M.D., Physician to Out-patients (Genito-urinary Diseases); HERNIMAN-JOHNSON, F., M.D., Radiologist.  
 Certifying Surgeons under the Factory and Workshop Acts: KNOWLES, R. O., M.D. Liverp. (Birkenhead); ROBERTSON, A., L.R.C.P., L.R.C.S. Edin. (Dumbarton).

## Vacancies.

*For further information refer to the advertisement columns.*

Birmingham General Hospital.—Res. M.O. £155. Asst. P. £50. Surgical Registrar. £200.  
 Birmingham, Selly Oak Infirmary and House.—Asst. M.O. £275.  
 Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. £150.  
 Bournemouth, Royal Victoria and West Hants Hospital, Boscombe Branch.—Res. M.O. £250. Also Second Res. M.O. £200.  
 Brighton, Hove, and Preston Dispensary.—Res. M.O. £200.  
 Brighton, Sussex Throat and Ear Hospital, Church-street.—Asst. Hon. S. Bury County Borough.—Asst. M.O.H., Asst. Sch. M.O., and Asst. Tuberc. O. £500.  
 Bury St. Edmund's, West Suffolk General Hospital.—Res. H.S. £175.  
 Cairo, Egyptian Government School of Medicine.—Professors and Lecturers, ££1000 and ££600. Also Radiologist and Lect. in Radiology, ££500. Anaesthetist and Lect. in Anaesthetics, ££500, and Registrar and Tutor, ££600.  
 Canterbury, Kent and Canterbury Hospital.—Jun. Res. M.O. £150.  
 Capetown Free Dispensary.—M.O. £50.  
 Coventry and Warwickshire Hospital.—Hon. Surg. Staff.  
 Devonport, Royal Albert Hospital.—Res. H.S. £200.  
 Dorchester, Dorset County Council.—Asst. M.O. £400.  
 Dundee Corporation.—Asst. Tuberc. O. and Asst. M.O. £300.  
 Eccleall Bierlow Union.—Res. M.O. £600.  
 Edinburgh City.—Clin. M.O. under Venereal Diseases Scheme. £750.  
 Elizabeth Garrett Anderson Hospital, Euston-road.—Female Senior Asst. £200.  
 Exeter, Royal Devon and Exeter Hospital.—Sen. H.S. £250.  
 Gravesend Hospital.—H.S. £200.  
 Great Northern Central Hospital, Holloway, London.—Oph. S.  
 Hospital for Consumption and Diseases of the Chest, Brompton.—H.P.  
 Isleworth Infirmary.—Sec. Asst. to Med. Supt. £300.  
 Khartoum, Wellcome Tropical Research Laboratories.—Assistant Bacteriologist. ££600.  
 Leeds University.—Lect. in Exptl. Phys. £500. Demonstr. in Phys. £250. Demonstr. in Hist. £250.  
 Leicester Royal Infirmary.—Two Hon. Asst. P. and one Hon. Asst. S.



Liverpool, Fazakerley Sanatorium for Tuberculosis.—Asst. Res. M.O. £250.  
 Liverpool School of Tropical Medicine.—Asst. Lect. in Parasitology. £250.  
 Liverpool, Stanley Hospital.—H.P. and H.S.  
 London Hospital, E.—Surgical Registrar. Also First Asst.  
 Manchester, Ancoats Hospital.—H.P. £150. Also Hon. P. and Radiologist.  
 Manchester Northern Hospital for Women and Children, Park-place, Cheetham Hill-road.—Hon. Asst. P.  
 Manchester Royal Eye Hospital.—Jun. H.S. £120.  
 Middlesex Hospital Medical School.—Demonstrator. £200.  
 National Hospital for Diseases of the Heart, Westmoreland-street, W.—R.S. M.O. £100. Also Non-Res. M.O. £50.  
 New Zealand.—Path. and Bact. for Pub. Health Dept., Auckland. £700.  
 Otago University, New Zealand.—Prof. of Syst. Med., Prof. of Clin. Med. and Therap., and Lect. on Clin. Med. £600, £500, and £400 respectively.  
 Plymouth, South Devon and East Cornwall Hospital.—H.P. £140.  
 Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Temp. M.O. 1 guinea per attendance.  
 Queen Mary's Hospital for the East End, Stratford, E.—Hon. Aural S. Two Asst. Hon. P.'s. Also H.S.  
 Rossall School, Fleetwood.—Res. M.O. £250.  
 St. George's Hospital, S.W.—Two Cas. Officers. £150.  
 St. Helens County Borough.—Asst. M.O.H. £500.  
 Sheffield Royal Infirmary.—Asst. H.P. £150.  
 Smyrna Mission and Beaconsfield Memorial Hospital.—Medical Missionary. £250.  
 South London Hospital for Women, South Side, Clapham Common, S.W. Female H.S. £100.  
 Surrey Education Committee.—Sch. Dentist. £400.  
 Taunton, Somerset and Bath Asylum, Gifford.—Asst. M.O. £300.  
 Tingwall, Whitcness, and Wexdale Parish.—M.O. and Pub. Vac. £45.  
 Tottenham Maternity and Child Welfare Committee, Antenatal Clinic.—Female M.O. £11s. 6d. per session.  
 University College Hospital, Gower-street, W.C.—Res. M.O. £150.  
 Victoria Hospital, Tile-street, Chelsea S.W.—H.P. and H.S. £100.  
 West Riding County Council, Treatment of Venereal Diseases.—Asst. £550. Also Sch. Oculist. £450.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Ascot (Berks), Dundee (Forfar), Falkland (Fife), Lavenham (Suffolk), Llantfair Caereinion (Montgomery), Newhaven (Sussex), Nottingham, North (Nottingham), Scarborough (Yorks, North Riding), Tynemouth (Northumberland), Walsend (Northumberland), and Yetholm (Roxburgh).

## Births, Marriages, and Deaths.

### DEATHS.

FINCH WHITE.—On July 8th, after a few days' illness, of pneumonia following influenza, Finch White, M.R.C.S., L.R.C.P., Vanbrugh Park, Blackheath, London, and Killaloe, co. Clare, aged 47 years.  
 HOLDING.—On July 6th, at Hazeldene, Denny-road, Paignton, S. Devon, Charles Holding, L.R.C.P. & S. Edin., aged 48 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

### Communications, Letters, &c., to the Editor have been received from—

A.—Dr. A. Ashkeny, Brockenhurst; Dr. R. W. Allen, Lond.  
 B.—Mrs. C. R. Buxton, Lond.; Dr. A. Balfour, Lond.; Rev. T. P. Brocklehurst, Giggleswick; Surg.-Comm. W. Bastian, R.N.; Bristol University, Registrar of; *British and Colonial Pharmacist*, Editor of; Mr. I. Back, Lond.  
 C.—Dr. H. G. P. Castellain, Lond.; Dr. N. H. Choksy, Bombay; Mr. H. G. Commings, Lond.; Prof. R. P. Cathcart, Lond.; Major T. Cherry, A.A.M.C.; Mr. G. D. H. Cole, Lond.; Dr. F. G. Crookshank, Lond.; Dr. J. Cates, St. Helens; Mr. K. Cumming, Lond.  
 D.—Dublin School of Physic, Registrar of; Prof. S. Delépine, Manchester; Mr. J. Driberg, Lond.; Mr. G. Drage, Lond.; Dr. G. Dundas, Middlesbrough.  
 E.—Sir G. Evans, Lond.; Edinburgh Royal College of Surgeons, Clerk to.  
 F.—Mr. H. A. T. Fairbank, Lond.; Dr. C. E. S. Flemming, Bradford-on-Avon; Mrs. K. Fedarb, Southsea; Mr. R. S. Foss, Lond.; "Fisherman," Torquay.  
 G.—Dr. S. R. Gloyne, Lond.; Mr. J. N. Glaister, Chertsey.  
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 K.—Dr. T. G. Kelly, Desford; Mr. F. Karlsake, Lond.; Prof. A. Keith, Lond.; Dr. A. B. Kingsford, Lond.  
 L.—Mr. E. M. Little, Lond.  
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 N.—National Council for the Unmarried Mother.  
 O.—Mr. S. Otabe, Lond.  
 P.—Dr. B. Pierce, York; Major F. J. W. Porter, R.A.M.C.; Mr. H. C. Palmer, Lond.  
 R.—Royal Medical Benevolent Fund, Sec. of; Mr. W. Roberts, Westgate-on-Sea; Mr. W. E. Rosdall, Maidenhead.  
 S.—Prof. W. Stirling, Manchester; Mr. D. M. Shaw, Lond.  
 T.—Dr. J. Tatham, Oxted; Dr. A. L. Taylor, Liberton; Dr. F. E. Taylor, Lond.; Dr. A. T. Todd, Huddersfield.  
 W.—Dr. F. J. Waldo, Lond.

Communications relating to editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C.2.

## Notes, Short Comments, and Answers to Correspondents.

### THE BATHS OF OLD LONDON.

BY SEPTIMUS SUNDERLAND, M.D. BRUX.

#### PART II.

##### Floating Baths.

The Folly, a "castellated houseboat," was usually anchored opposite Somerset House Gardens soon after the Restoration, and was used as a musical summer-house in part of the seventeenth and eighteenth centuries. Pepys visited this in 1668. It was generally fixed on the south side of the river, near the foot of Cuper's stairs, which led to Cuper's Pleasure Gardens, on part of which the present Royal Waterloo Hospital for Children and Women now stands. During the time of William III. and Mary (1689 to 1702) it was frequented by the fashionable classes, and on one occasion by the Queen. Later it became the resort of a low class of society, was allowed to fall into decay, and was broken up about 1750. It is probable that at one time it was also used as a floating bath.

John Timbs, writing in 1863, mentions the fact that there were two floating baths upon the Thames "in our day," and says that in plan they were somewhat similar to *The Folly*. One of these was situated near Hungerford Bridge, for bathers of both sexes, and contained filtered water.

##### Sweating Baths.

In England in the thirteenth century the hot-air or vapour baths introduced by the Crusaders were given in establishments called "hot-houses" and were much in request, as were similar ones in the large cities of Europe. The hot vapour baths were tried for leprosy, which was prevalent in those days, as well as for syphilis, but with bad results. There were separate baths for lepers. Shakespeare and Ben Johnson mention sweating baths in their writings as "hot-houses." In the old play, "The Puritan," one of the characters, referring to an arduous undertaking, says, "Marry, it will take me much sweat; it were better to go to 16 hot-houses."

In the year 1517, when there was the second epidemic of the "sweating sickness" in England, the English were accused of gross feeding, of much intemperance, and of causing relaxation of their skins by spending so much time in hot-air baths. This shows that these baths remained popular in England at a time when they were beginning to be less used abroad. Later in England there were periods of comparative disuse until the end of the seventeenth century when they reappeared and became popular in London under the Italian name of "bagnios" (place for sweating) or the Arabic name of "humnum" (a warm bath); these were on the principle of the Roman hot-air or vapour baths. The various bagnios or humnums established in London appear to have become of doubtful repute, and frequented by evil characters; these circumstances led, after a time, to the suppression of the institutions. The practice of cupping was prevalent in those days and for a long time afterwards, associated with hot baths.

The Duke's Bath or Bagnio, minutely described in 1633 by Samuel Haworth, M.D., Physician to James II. when Duke of York, as "erected near the west end of Long Acre in that spot of ground called 'Salisbury Stables,'" was a stately oval edifice, paved with marble, and within the wall were ten seats, such as were formerly in the baths at Bath. When the Duke of York came to the throne in 1686 these baths were improved and reopened as the King's Bagnio, and an advertisement then stated "there is no other bagnio in or about London besides this and the Royal Bagnio in the City," the reference to the "Royal Bagnio" being in all probability intended for the bagnio in Bagnio Court, described below.

The Bagnio (the Royal Bagnio) in Bagnio Court (altered to Bath-street in 1843), Newgate-street, was built by Turkish merchants, and first opened in December, 1679, for sweating, hot bathing, and cupping; 4s. was the charge to each person, and certain days were reserved for ladies. Strype wrote: "This bagnio is much resorted unto for sweating, being found very good for aches, &c., and approved of by our physicians." The cupola roof, and walls set with Dutch tiles, were described by Hatton in 1708. It was subsequently used as a cold bath. Dr. Frederick Gervis, of Torquay, informed me that about 1860 he and other medical students of the old St. Thomas's Hospital, Borough, often bathed in this cold plunge bath, which was lined with white marble and was fed by very cold clear water always flowing out of a well-carved white lion's mouth. It was at that time spoken of as the "King's Bath" and was situated in a court on the north side of Newgate-street.



The various bagnios and hummums were again suppressed, but later—namely, in 1765—vapour baths in Cheyne Walk were established by Dominichetti, which were used for a time, medicated with herbs. The Somerset Street Baths, similar to those instituted at Brighton by Mahomed as medicated vapour baths, were in use near the close of the eighteenth century and became popular for years. In "Metropolitan Improvements, or London in the Nineteenth Century," is a print dated 1823, showing the building where the Royal York Baths, Regent's Park, can be seen to this day in York Terrace. They were used until three years ago. The building now contains a fair-sized Turkish bath, with three hot chambers and a shampooing room, which was formerly supplied from a spring, and a rest room. There are also about 12 small bathrooms, with old-fashioned ordinary baths to which pumps are attached. Medicated baths used to be given in these rooms. In 1860 a handsome Turkish bath was erected in Victoria-street, Westminster, but has since been demolished. The Hammam, opened in 1862 in Jermyn-street, St. James's, has been popular for many years and still exists.

*Baths and wash-houses.*—It is permissible to add that baths and wash-houses for the working classes originated in 1844 with "an association for promoting cleanliness among the poor." A bath-house and a laundry were fitted up in Glasshouse Yard, East Smithfield. The association also gave whitewash and lent pails and brushes to those willing to cleanse their own dwellings. This successful experiment led to the passing of an Act of Parliament "to encourage the establishment of baths and wash-houses," of which there are so many at the present day.

(To be concluded.)

#### THE WOMEN'S HOLIDAY FUND.

AN appeal emanating from this fund, issued by the Bishop of London and others, pleads for assistance on behalf of poor women and their babies in need of a holiday but unable to afford to go away from home without help. "Never before, perhaps, in the history of this society," says the appeal, "have holidays been so much needed and desired. The strain and anxieties of the long war and the epidemics of influenza, which have left their mark on hundreds of homes, have brought many a poor hardworking woman very near to breaking point. Already applications have been received from women who have not had a holiday for 20 or 30 years, in some cases from those who have never had one in their lives." In 1913 1240 women and 155 babies were sent away, but during the last five years, owing to the high prices and the heavy railway fares, the work of the society has been much limited. Donations will be acknowledged by Miss Cooper, Secretary, Women's Holiday Fund, 76, Denison House, Vauxhall Bridge-road, London, S.W.1.

#### A PROPHECY OF AVIATION.

To the Editor of THE LANCET.

SIR,—In Henry Maty's "New Review; with Literary Curiosities and Literary Intelligence for the Year 1785" is noticed at some length a book with the title, "Symposia, or Table Talk in the Month of September, 1784, being a Rhapsodical Hodge-podge, containing, among other Things, Balloon Intelligence for the Years 1785, 1786, and 1787." Its publication shows that "flying" had distinctly a vogue in this country nearly a century and a half ago; and Dr. F. J. Poynton's very interesting "details" in THE LANCET of July 5th supports the fact. The following extracts are culled from Maty's "New Review" and taken from the "Table Talk":—

"We are happy to assure our readers that the Air Carriages are found to be of such utility, that they are daily increasing in number throughout the Kingdom: no less than fifty Balloons were at their moorings in the various inns in Reading, in their way from Bath to London."

Then follows a computation that 100,000 horses which had been engaged in town-to-town traffic were displaced by balloons, and consequently the price of grain had fallen considerably. Again, the officers of the packets conveying the "foreign and Irish mails" were petitioning for pensions, their services no longer being necessary. A traveller from India asserts that he had not suffered from heat when over the "burning sands of Arabia," as he could always "chuse an atmosphere agreeable to the heat of the climate." "Till the wild Arabs have adopted Balloons," he says, "this mode of travelling renders people secure from the plunder of those lawless marauders." A "grand Balloon race over Salisbury Plain for 10,000 guineas" is mentioned, as well as a "grand sweep-stake" between certain ladies, the odds being "greatly in favour of Lady —, she having been accustomed to soar above the clouds long before the invention of Balloons." A "Man of Fashion" writes a book of 6 vols. 12mo, entitled "Balloon Tales: Being an Account of a Variety of Intrigues carried on in the Air." Leather goes down in price, saddles, bridles, &c., not being wanted. Ox-beef and mutton touch 2½d. per lb. at Smithfield "owing to the diminution of horses

in this country." In France desertions from the Army are ascribed to the facilities offered by balloons, as also the "easy concealment and escape of villains of all denominations from the hands of justice." The effect of the change upon the medical profession is shown in the following quip:—

"We hear there will be a great sale of carriages belonging to the Physicians, Apothecaries, Surgeons, Corn-Cutters, and Quack-Doctors in this Metropolis, for it seems the Synod in Warwick Lane have come to a resolution, and have given orders accordingly, that all the above denomination of people, shall either walk or visit their patients in Balloons in future, as the rumbling of ebarlots is very afflicting to people in fevers and other disorders which affect the spirits; and moreover, as they will be relieved from the expense of keeping carriages, they are to lower the fee in future to half the present sum. We think the resolution redounds greatly to the honour of the College. Indeed, the fees of the Faculty have, of late years, been so exceedingly high, that few people could afford to be ill, and at the same time to be properly attended."

In a synopsis of the other contents of the book this item is curious: "Meditations on a Balloon, by Cadwallader Crnden, son to the renowned Alexander the Corrector." Search for information respecting Jefferies would be facilitated if Dr. Poynton had given the name in full.

I am, Sir, yours faithfully,

Westgate-on-Sea, July 12th, 1919.

W. R.

#### PEACE CELEBRATIONS AND PRECAUTIONS AGAINST FIRE.

WE are glad to note that the British Fire Prevention Committee of 8, Waterloo-place, Pall Mall, London, S.W.1, have issued a timely warning, pointing out the dangers of inflammable materials such as flags and hunting, celluloid, paper lanterns, and other decorative articles commonly used at a time of rejoicing. The public are well advised to bear these precautions in mind. Copies of the warning are obtainable upon written application at the above address.

#### THE "ADELAIDE" PATENT GARTER.

WE have had submitted to us an ingenious form of garter-suspender, which on the score of economy in material has an advantage over the method of suspending stockings from the shoulder or from the waist. A ribbon of elastic is formed into a figure of 8, the ribbon being kept in place where it crosses by a slotted tab of leather. The two loops having been superimposed they are drawn over the foot and adjusted respectively above and below the knee, the part where the ribbon crosses being placed in the space behind the knee. Means are provided for altering the size of the loops so as to fit the leg. The invention is quite comfortable in use, there is no undue pressure, and the stockings do not wrinkle or get out of place.

#### MEAL SERVICE IN MILITARY HOSPITALS.

THE problem of serving meals in a military hospital is much the same in the United States as in our Army, but in 1918 special attention was given in the United States to the need for avoiding waste of food. It was necessary that every man should have enough, but that no food should be wasted, as every ounce of surplus food was required for the peoples of Europe, hence the remark of Major R. G. Hoskins, "Every garbage can full of wasted food costs at least one human life," which shows how seriously the United States threw itself into the war. The *Military Surgeon* for March, 1919, shows that there are two systems of serving food in U.S. military hospitals, one is similar to our own, the meals being issued to the patients on their tables; the other, called the "cafeteria" system, in which the patients come into the room, pick up their plates, &c., from a table, and pass a counter where they make a selection of the food they desire, in nature and quantity, from the serving dishes, and then pass to the tables where they eat it. This is a copy of the method in those American restaurants called "cafeterias," where there are no waiters, but each patron walks to the counter and selects his "order" for himself. Opinion seems to be divided as to the system which gives the better result. Patients are instructed to leave at the end a "clean plate," and therefore not to take too much on their plates at first, but, if necessary, to come back for a second helping, and thus it is found that rather more food is eaten than if large helpings are given at first, as the plates, less loaded, look more appetising and encouraging. It is noted by Major A. G. Wilde that constant supervision is required in hospitals to secure that food is well cooked and attractively presented, as well as being properly varied. He also notes what everyone in charge of a hospital not rigidly in routine must have observed, that cooks are always anxious to get away and scheme to have the meals issued earlier than they are ordered, and that consequently the meals are apt to be cold when served.

Captain W. C. Stevenson, R.A.M.C., and Colonel A. E. Webb Johnson, D.S.O., have been appointed Knights of Grace in the Order of the Hospital of St. John of Jerusalem in England.



# Ariss and Gale Lecture

ON

## THE INITIATION OF WOUND SHOCK AND ITS RELATION TO SURGICAL SHOCK.

*Delivered before the Royal College of Surgeons of England*

By E. M. COWELL, D.S.O., M.D. LOND., F.R.C.S. ENG.,  
ASSISTANT SURGEON, CROYDON GENERAL HOSPITAL.

### INTRODUCTION.

MR. PRESIDENT AND GENTLEMEN,—The problems of "shock" have occupied the minds of both clinical and laboratory workers for many years, providing always one of the greatest anxieties the operating surgeon has had to face. Much has already been said on this subject and an extensive literature has gradually accumulated. In the present lecture it is my purpose to describe in some detail several observations which I have been able to make on the "initiation," pathogenesis or onset of wound shock in the trenches of the Western front.

The adoption of the idea that no human suffering should, if possible, be allowed to occur in vain; and that every opportunity should be taken by the clinical observer not only to relieve the individual, but also to consider the community at large, has been peculiarly applicable to the particular aspect of war surgery at present under consideration. From the first, in the experience of surgeons on the Western front, the mortality of the wounded from shock has been distressing. The question that occurred to the inquiring medical officer was, first, "What can I do for this case?" and, secondly, "What lines of preventive treatment can I suggest?" Now, we ask ourselves, "How can we apply our knowledge of wound shock to the advantage of civilian surgery?"

*Terminology.*—In order to avoid confusion in speaking of the condition of "shock" in war surgery I have introduced the term "wound shock."<sup>1</sup> This suggestion has been adopted by Professor W. M. Bayliss<sup>1</sup> and other writers, and has so far not been replaced. Lieutenant-Colonel W. B. Cannon rediscovered the Hippocratic term "exæmia," and has used the word as describing the fundamental pathological principle at work in producing the condition—i.e., the body is "drained of blood."<sup>2</sup> From time to time cases of death from pure shock may possibly occur, but in war surgery I believe no case has yet been reported where it was possible to exclude either macroscopic or microscopic anatomical damage in one of the vital organs. In the cases of shock met with in civil surgery there are almost invariably factors of severe tissue trauma, toxæmia, hæmorrhage, or psychical disturbance present, which our study of wound shock has shown to play such an important part in the initiation of the condition. I have had no personal experience of death from pure "nervous shock." Such deaths, I imagine, do not occur unless there is some latent cardiac weakness.

### METHODS OF OBTAINING CLINICAL DATA.

During the past three years many clinical notes with blood-pressure observations have been collected from patients arriving in from 2–24 hours at the operating centre (C.C.S.) after being wounded. As a rule, if they were going to develop, the symptoms of wound shock were present on arrival at the hospital, and nothing was known as to the exact order in which they had supervened. It was decided, therefore, to establish the time relations of the onset of the condition.

A series of observation posts was organised, beginning at the various points in the firing line, where the man might be wounded, back through a series of relay stations, until finally he reached the hands of the surgeon. As he passed through each place notes were made on a card attached to the patient, together with details of the pulse-rate and blood-pressure readings, taken by means of a spring sphygmomanometer. I accompanied some of the most important cases through the whole journey, and made records at frequent intervals. At different points of the firing line studies of normal soldiers were made under varying conditions. Occasionally I was able to follow through a case whose blood pressure I had observed shortly before the wound was

No. 5004.

received. The main result of this work was the classification of the shock cases into primary and secondary, the details of which will be referred to later.

### PHYSIOLOGICAL STUDIES OF THE FIGHTING SOLDIER.

In order to investigate the factors which might be present before the man was wounded, and which might predispose to wound shock, I spent some time living in the trenches, watching the soldier under different circumstances, and taking blood-pressure observations as often as possible. The average maximum systolic pressure was found to be 110–125 mm. of mercury and the diastolic or minimum 75–80 mm. In the unwounded the variations were those of hypertension, and were generally found in men subjected to stress or excitement.

Perhaps one of the most fascinating subjects in physiology is the study of the reaction of the body to excitement. Of the psychical stimuli which result in extensive physiological processes, that of the excitement of battle probably comes first, converting the normal human machine into a fighting mechanism. Cannon,<sup>1</sup> and also Elliott,<sup>2</sup> found that, as the result of excitement in cats, sympathetic stimulation set free adrenalin, which could be detected in the circulation soon after the initial stimulus was applied. The main effects of this circulating adrenalin are to increase the heart-rate, raise the blood pressure, set free glucose from the liver in response to the demand of the muscles for more foodstuff, inhibit the movements of the alimentary canal, and diminish the coagulation time of the blood. The utility of these bodily changes is obvious, enabling the man to do more muscular work, withstand fatigue longer, and, in the event of his being wounded, hastening hæmostasis. As will be shown later, it is possible, however, that the secretion of adrenalin over a prolonged period may be harmful, and that prolonged excitement may prove to be one of the factors in the initiation of wound shock. The observations I have been able to make on the effects of excitement on soldiers show that a stimulus such as exposure to the danger of enemy fire, produces a reaction which, as might be expected, varies greatly according to the individual. Intellectual development, temperament, habitual exposure to danger in war or civilian occupation, and fatigue, all have a bearing on the physiological reaction as estimated by the sphygmomanometer. The effect of temperament is shown in the following cases.

At 2 A.M. on a dark night in the autumn I was able to collect records from sick men in a battle aid-post situated in a well-known sector of the line. (Fig. 1.) The men under observation were all slightly wounded and had just dropped back into the trench after having "gone over the top" on a raid. The artillery and machine-gun fire to which they had been exposed was severe. The men were, in civil life, farm labourers of particularly phlegmatic temperament.

No. 1.—A slight wound of the face. The man took everything as a matter of course, and sat quiet without speaking. Pulse 76. B.P. 115 mm.

No. 2.—Bullet wound of the hand; some pain. This man was talkative; later sang and showed signs of mild excitement. Pulse 126. B.P. 130.

The other four men had all come in at the double and were panting when first seen. Pulses and respirations slowed quickly on resting.

No. 3.—Slight wound of chin. R. 36. P. 144. B.P. 115.

No. 4.—Perforating bullet wound of arm. This man was rather pale, but was quite cheerful, and had not lost blood. Pulse 120. B.P. 120.

No. 5.—Slight bomb wound of the buttock. P. 124. B.P. 115.

No. 6.—Slight wound of the face. This man was of less robust physique than the others and looked in a bad way, with a pale face and weak voice. He wanted to lie down, having given in completely. There was no serious wound to account for this. P. 112. B.P. 120.

### *Observations on Garrison of a Detached Outpost.*

A few weeks later I was able to take advantage of the full moon to collect blood-pressure records of a garrison of a detached outpost situated in a new part of the line that was somewhat exposed. The men were organised into a series of posts, where they had been on duty for four nights and four days, with only brief snatches of sleep in the daytime. The nights were cold, and although the men were well fed, the water ration was only 10–15 oz. per man per diem. The following figures were written down in the order in which the readings were made. When the enemy fire came within a few yards a note was made as shown on the chart. (Fig. 2.)



Post.	B.P.	Remarks.	Post.	B.P.	Remarks.
1	118-80 126-90 116-80	Quiet.	6	136-85 120-80 120-80 140-80 120-75 130-80 110-60 120-65	Quiet. Several Very lights.
2	120-80 116-75 140-80	Fairly quiet.	7	110-80 (c) 120-60	(e) Two years in the line.
3	150-90 150-90 150-80 140-70 140-70 150-90 (a) 140-90 (a)	In sap leading to enemy's lines. (a) Two last men just knocked down.	8	138-80 130-75 120-85 130-90 130-80 124-70 (f) 136-70	Important M.G. position. (f) Very cold.
4	118-70 140-90 140-80 150-90 (b) 130-90 130-90 140-90 120-90 (c)	Quiet, but not very far away from 3. (b) N.O.O. in charge. (c) O.C. on his round.	9	140-90 130-80 110-60 120-90	Slightly active.
5	120-80 120-80 120-90 126-76 128-75 130-90 (d)	Quiet. (d) Sergeant.	10	160-90 150-90 120-70 104-70 (g)	Sentries at Coy. Hqrs. (g) Two years in the line.
			11	118-80 130-90 116-60	Stretcher-bearers and guide.
			12	130-90 140-90 118-80 140-90	Patrol party after 1½ hours march in the trenches.

The evidence provided by these readings seems to afford clinical support to the experimental observations of Cannon and Elliott, already referred to. It will be seen on examining the chart that at the posts where there was special danger there the men were found to show the greatest reaction. A large number of blood-pressure observations were taken of men of all ages and regiments in different parts of the forward areas in quiet times. The average was found to be 125-110, or even lower occasionally. For the sake of comparison I have picked out at random the blood pressures of 12 groups of men and plotted them. (Fig. 3.)

#### BLOOD PRESSURE IN THE WOUNDED.

At the present I am dealing only with observations made in the line, as soon as possible after the man was hit. For readings made on later cases I must refer to the paper written by Fraser and myself in 1917. In the trivial wounds, while transient psychical disturbances sometimes result and the man becomes momentarily faint, the hypotension does not exist long enough to be measured. On the other hand, in slight wounds the pressure is more often raised. For example, a strong healthy young gunner was slightly wounded with a few shell splinters. He walked to the dressing-station and was seen half an hour later. His face was flushed and his pressure was 180-100. Twenty minutes later it was 160-90, an hour later 126-80. His colour was now normal and he was sleepy. (Fig. 4.) Examination of large numbers of wounded make it possible to divide wound shock into primary and secondary varieties.

#### Primary Wound Shock.

Serious wounds do not always produce shock. Where, however, the damage sustained by the body is such that anatomical death must supervene unless surgical intervention is possible or available, the pressure falls with great rapidity and the symptoms of wound shock are found to have become established as soon as the patient is seen. In war surgery, at any rate, it is doubtful if such a state of affairs ever occurs apart from hemorrhage. To this class of case I have given the name "primary wound shock." It is an unavoidable condition, but one which in favourable cases may be kept from progressing and later terminate in recovery.

The following illustrative cases of primary wound shock may be quoted:—

(1) An ambulance driver, as he stepped off his car on arrival at the dressing-station one bright sunny morning, was hit in the abdomen by a shell fragment. He fell down, was carried in, and put on the dressing-table at once. As he was being attended to he drew the attention of the medical officer to his profuse sweating. I saw him 30 minutes later as he passed the next relay post on his way to the operating centre. He then complained of severe

pain, looked pale, and was still sweating profusely. His hands were cold and clammy, pulse 96, pressure 100-70. On arrival at the clearing station an hour later his pulse was only 100, but the pressure had further dropped to 82-70. Operation was immediately performed, hemorrhage stopped, and ten rents in the bowel repaired. The man's condition was serious for some hours, but he responded to treatment and eventually recovered. (Fig. 5.)

(2) On a cold, wet, muddy night a man was seriously wounded by a shell while digging a new trench. He was brought to the advanced dressing-station 50 minutes later and found to have sustained severe multiple wounds, including compound fractures of femur and humerus. The exposed lacerated muscle looked like dead tissue, there were no vessels of any size bleeding, and hardly any capillary oozing. The blood pressure was 40 mm. Mentally the patient was quite bright and responsive, so that the medical officer in charge of the case remarked how wonderfully fit he was. The man was dead, however, within the hour. (Fig. 6.)

#### Secondary Wound Shock.

In a large proportion of the serious wounds symptoms of shock supervene after the lapse of some hours. Early observations showed no alteration in pulse-rate or blood pressure level. During the next few hours, however, in the presence of certain factors, the pressure was found to fall, the pulse-rate to rise, and the state of shock to become established. To these cases I have given the name "secondary wound shock." I will first describe two cases where wound shock did not develop, although its onset might have been expected.

(1) One dark night the driver of a gun team was hit in the abdomen by a small shell fragment. He got off his horse to make inquiries for the dressing-station, and then rode nearly a mile before being seen by the medical officer. He was then quite fit, with a blood pressure of 120, which did not drop either before or after admission to hospital. At the operation two small rents in the small bowel were found and sewn up.

(2) One evening a man on a ration party was hit in the thigh by a shell fragment at the moment he was passing the entrance of the aid-post. He was carried down a few seconds later and found to have sustained a compound fracture of the femur. I found his pressure 120-80 and pulse-rate 72. He was immediately splinted and sent on to the dressing-station, where he remained under observation for six hours, and finally reached the casualty clearing station without at any time showing hypertension. (Fig. 7.)

In the next two cases the wounds were by no means serious in themselves, but secondary wound shock developed.

(3) A man belonging to the garrison, whose pressures are recorded in Fig. 2, was wounded by a bomb which partly shattered the forepart of his foot and sprinkled his neck and shoulder with tiny fragments. His chin, standing by his side, was killed. The blood pressure, which was 110-70 a short while previously, was still the same immediately after he was wounded. It was a cold night, with a chilly wind, and as the man was carried shoulder high along shallow trenches winding over a hill he became colder and colder. At this time, too, there was occasional enemy activity. By the time he reached the aid-post, an hour and a half later, he was pulseless. Two hours later, when examined at the next post, he was still pulseless and a serious view was taken of his condition. He was hurried on to the casualty clearing station, where he arrived with a pressure of 80-65 and no palpable pulse. After being warmed up in bed the pulse soon returned and the shock passed off in the absence of any heroic measures of treatment. (Fig. 8.)

(4) Early one night in October a young soldier on a wiring party sustained two simple perforating machine-gun bullet wounds through the fleshy part of the thigh. There was no extensive laceration of the muscles and no hemorrhage. After a two hours' carry in the cold I saw him at the aid-post. His condition appeared grave, his face was pale and cold, with blue lips and anxious expression. He complained greatly of thirst, presented a small, thready pulse and a blood pressure of 70-50. He was given a hot drink, well wrapped up, and sent on. In the next hour, while continuing his journey under these conditions, he recovered so well that the medical officer who made the next observations could not understand why I had been so anxious about the patient. By this time the pressure had risen to 120-80 and did not fall again. (Fig. 9.)

The following cases deal with amputation of limbs by gunshot wounds and the question of toxæmia playing a part in the onset of shock.

(5) When going down a communication trench about two o'clock one morning, I met a stretcher party carrying a man with his leg blown off. At the aid-post the patient was found to be a strong burly lance-corporal with some reputation as



a boxer in the battalion. He had been wounded about an hour before by a trench mortar, which had carried away his left leg a hand's-breadth below the knee, and at the same time severely injured the right tarsus. He lay quite calmly on his stretcher, and answered questions readily. The pulse was 96, and the systolic pressure 115. None of the symptoms or signs of shock were present; what little hæmorrhage there had been had stopped. The man was warmed, given as much cold water as he wanted, had his wounds dressed, was well wrapped up, and then sent on his journey. I followed him for the next three hours and took frequent pressure readings. When I left him his face had become flushed and the pulse-rate had crept up to 120, but the pressure remained level at 114-70. On arrival at the casualty clearing station an hour later his pressure had fallen to 88-62 and the pulse-rate risen to 144. The muscles of the stump were found to show signs of gas gangrene. After reamputation his condition improved, and he eventually recovered. (Fig. 10.)

This case I regarded at the time as an example of bacterial toxæmia. McNee<sup>9</sup> and others have drawn attention to the speed at which anaerobic infections may become established and produce their potent effects. Recent work by Bayliss and Cannon,<sup>1</sup> which will be discussed in detail later, introduces

the possibility of a new factor, that of absorption of the toxic products resulting from disintegration of muscle tissue apart from infection. In this, if immediate amputation had been performed, or at any rate a ligature tied round the stump to prevent absorption, the secondary wound shock would in all probability have been averted. In the next case this principle of treatment was adopted with success.

(6) A strong muscular soldier received a severe shell wound of the left arm, shattering the humerus. Within a

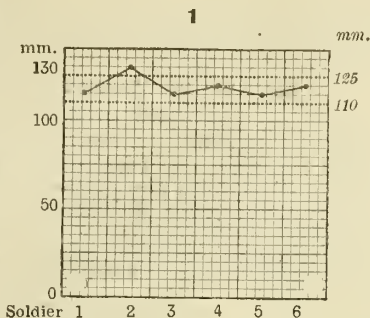


Chart of blood pressure of six phlegmatic soldiers after a trench raid.

Note.—The dotted lines on each chart at 110 and 125 mm. indicate the normal limits of blood pressure.

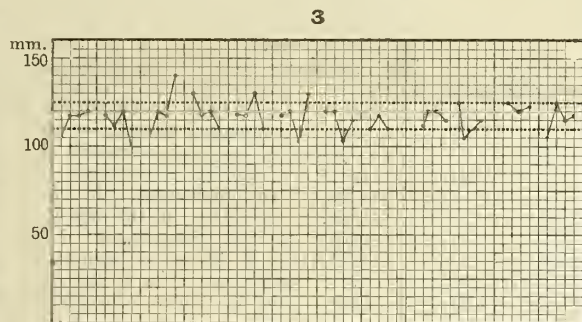
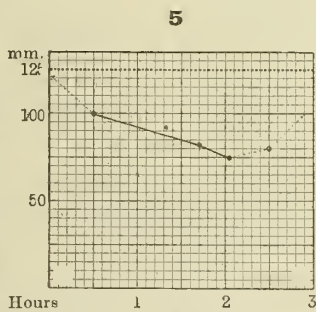
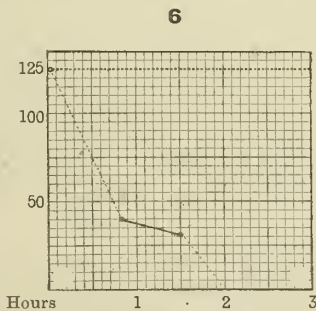


Chart showing blood pressure of soldiers at rest, in groups picked out at random.



Primary wound shock, Case 1, ambulance driver.



Primary wound shock, Case 2, severe multiple wounds.

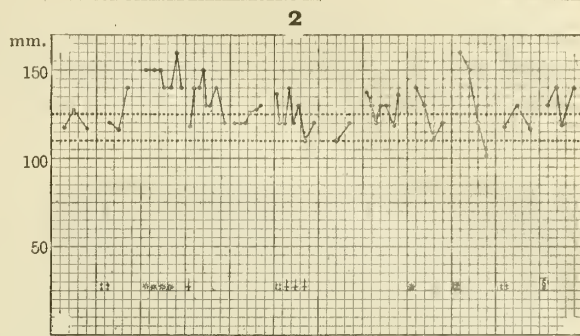
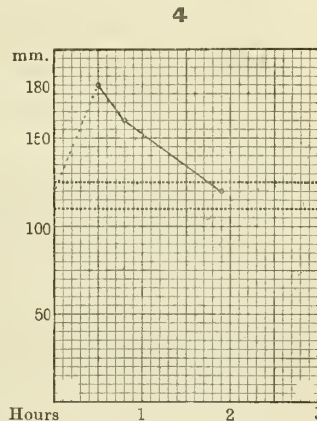
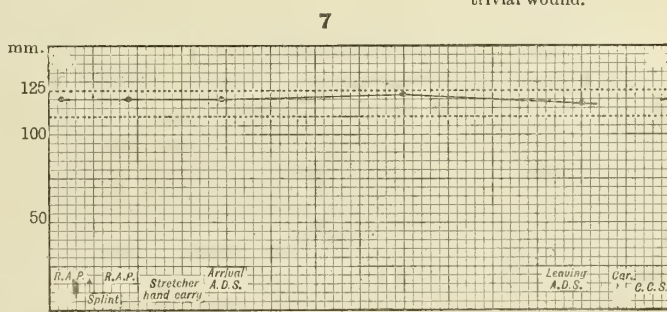


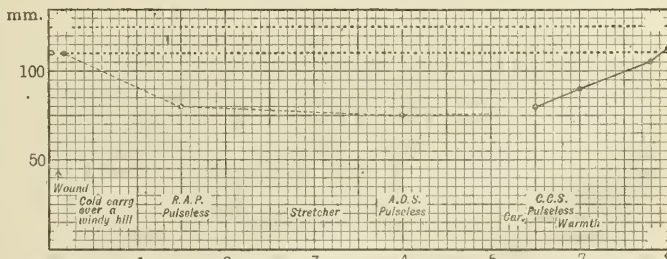
Chart showing blood pressure records under stress. † Machine gun bullets. \* Rifle grenades. ‡ Very lights. § Shell.



Hypertension following a trivial wound.



Compound fracture of the femur caused by shell fragment. Absence of wound shock.



Secondary wound shock, Case 3, bomb wound of neck and foot, not severe.

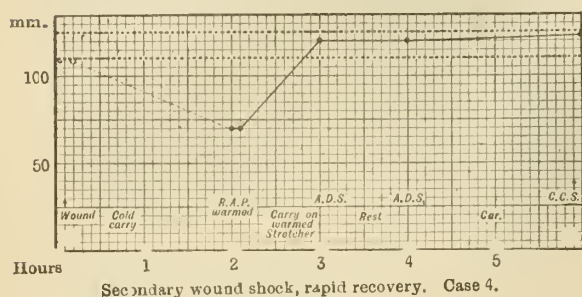
short time the medical officer in the trenches, who was familiar with the view expressed in the preceding paragraph, saw the man and performed immediate amputation under an anæsthetic, thereby removing all the traumatised tissue. Four hours later I saw the patient at the next relay post. He was pale but quite fit, with a maximum blood pressure of 140 and a pulse-rate of 90.

It has been frequently noted clinically that a patient under operation for removal of a shattered limb would show an increase in pulse-rate and respiration with lowering of

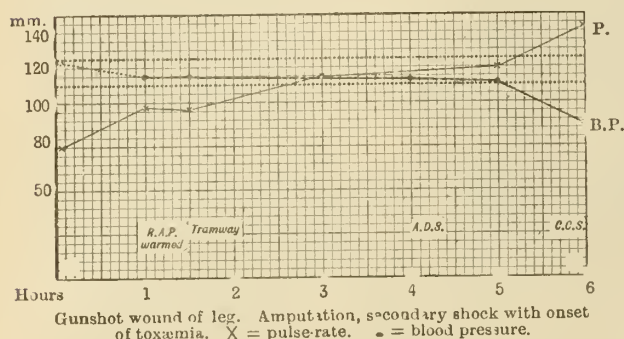


the blood pressure a few minutes after the tourniquet had been relaxed. Latterly we have taught that in cases where the application of a tourniquet was necessary the medical officer should apply it as near to the damaged tissue as possible, so as to allow of amputation with the original tourniquet in situ.

9



10



#### Relation of Primary to Secondary Shock.

Fig. 11<sup>a</sup> shows diagrammatically the possibilities in a case of primary wound shock. From a practical point of view the importance of closely watching the patient during the period immediately subsequent to the onset of shock cannot be too urgently insisted on. Otherwise the favourable moment, B, will be missed, and the primary merge into secondary shock without the patient being given the benefit or opportunity of surgical intervention. The behaviour of the blood pressure in secondary wound shock is charted diagrammatically. (Fig. 12.)

#### Aggravation of Wound Shock by Surgical Operation and Other Factors.

Marshall has published records of the blood pressure in the wounded during operation.<sup>10</sup> Here are a few illustrative charts from my own cases.

(a) This patient came into the hospital within 20 hours of receiving a gunshot wound with fracture of the right fibula. On admission the maximum pressure was 130, which fell to 120 at the end of the first operation. Next day gas gangrene developed, necessitating the amputation of the limb. After operation the pressure had fallen to 80. It was recognised that the cause of toxæmia was now removed, and that there was no hæmorrhage to treat. The patient was kept warm, given plenty of fluids, and in a few hours the blood pressure had completely regained its former level. (Fig. 13.)

(b) S. Major — was admitted 12 hours after sustaining a shell wound of the thigh. At the operation the fragment was found to have torn the femoral vein, and the patient lost a certain amount of blood before the vein could be sufficiently exposed to be sutured. The pressure fell from 118 to 90 mm., and in this case was immediately restored by an intravenous injection of gum saline. Fifteen hours later the shock-like condition, so often associated with the presence of gas gangrene infection, was observed. This necessitated excision of the affected muscle (sartorius) and a further intravenous injection of the gum saline. (Fig. 14.)

(c) During operation in gunshot wounds of the abdomen a fall of blood pressure may be produced by one of three conditions, as Marshall has pointed out.<sup>10</sup> 1. Manipulation of gut or omentum outside the abdominal cavity. 2. Occurrence of copious hæmorrhage. 3. Change of posture at the

end of operation from dorsal to lateral. Reference to Fig. 15 illustrates the last-named cause of sudden drop in pressure. This observation was made before I was aware of the possibility of such an occurrence.

#### SUMMARY OF RECENT INVESTIGATIONS.

##### Clinical Observations.

From the early clinical studies, which have already been described in detail, the factors which predominate in the pathogenesis of wound shock are:—

- (1) Pre-wound factors of fatigue, exposure, lack of fluids, and presence of excitement.
- (2) Post-wound factors of pain, hæmorrhage, cold, and absorption of bacterial or tissue toxins.

##### Pathological Studies.

The idea that the origin of shock was entirely due to the action of unknown psychical disturbances and vague nervous influences producing vaso-motor disturbances, which required to be controlled by such measures as the wearing of pneumatic suits, is now replaced by a more definite pathological picture. Recent investigation shows that in addition to arterial hypotension the following series of definite facts may be demonstrated in an established case of shock. 1. Capillary stasis and increased permeability of the vessel walls. 2. Reduction of the blood volume following hæmorrhage and factor (1). 3. Absorption of toxic products from infected or damaged tissues, or both combined. Possibly also toxæmia from hypersecretion of adrenalin. 4. Diminution of intracellular oxygenation, leading to irrecoverable damage of the finer nerve cells. 5. Presence of acidosis in the blood (reduction of the alkali reserve). 6. Profound lowering of body temperature. 7. Toxic action of certain anaesthetics. 8. Effects of hæmorrhage. The above factors form a symptom-complex of the nature of a vicious circle, rendering the condition once established extremely difficult to combat.

Examination of the body after death has revealed little of importance. The observations that are of value have been made by laboratory workers, who have been able to keep in close touch with the operating theatre, resuscitation, and post-operative wards.

(1) *Capillary stasis and permeability.*—Sherrington and Monkton, in 1893,<sup>11</sup> observed the concentration of the blood in shock by measuring the specific gravity and finding it increased. Marshall, in 1916, found that the hæmoglobin percentage was increased in the blood in cases of shock. Cannon and Fraser confirmed this in 1917, and found evidence of concentration of both systemic and capillary blood. The curve shown in Fig. 16 illustrates how quickly the pressure drops as fluid leaves the circulation in established shock.

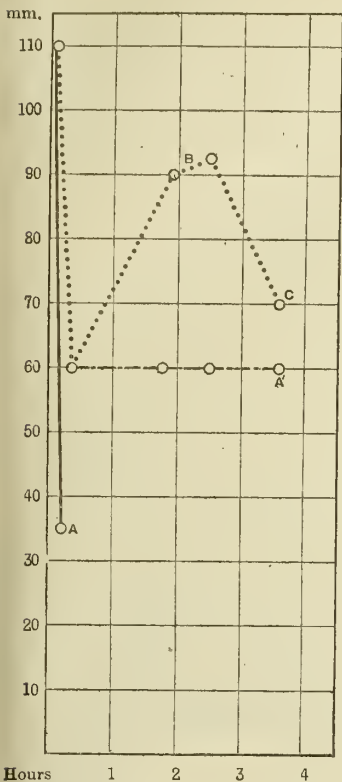
(2) *Reduction of blood volume.*—N. M. Keith, and later O. H. Robertson, measured the blood volume directly by the vital red method, and have been able to construct curves of concentration and subsequent dilution of the blood during the period of recovery. This work has brought forward evidence as to the way in which fluid is best absorbed by a patient with a low pressure. "Forced fluids" given by mouth or rectum (O. H. Robertson) are often as efficacious as when administered intravenously. It is doubtful, in cases of shock with low pressure, whether subcutaneous saline is absorbed at all unless the condition is not severe or the patient is already recovering. This work solves the problem of the lost blood in shock. At any rate, in an established case the blood is not "pooled" in the splanchnic area, but is diminished in quantity because of its concentration.

(3) *Various toxic causes of shock.*—Clinical evidence for the support of the adrenalin theory has already been produced. (Fig. 2.) Experimentally Cannon and also Elliott<sup>4,5</sup> have demonstrated the presence of adrenalin in the circulating blood of animals under emotional stress. Bedford<sup>7</sup> has been able to show the presence of adrenalin in the blood of animals suffering from experimental shock. Bainbridge and Trevan<sup>6</sup> found that intravenous injection of small doses of adrenalin into an animal after 20 minutes induces the same concentration of the blood already described.

Dale's "histamine shock" opens up a large field of thought. Dale and his co-workers found that suitable doses of histamine (10 mgm. for a large cat) produce a profound drop in blood pressure, with capillary stasis and

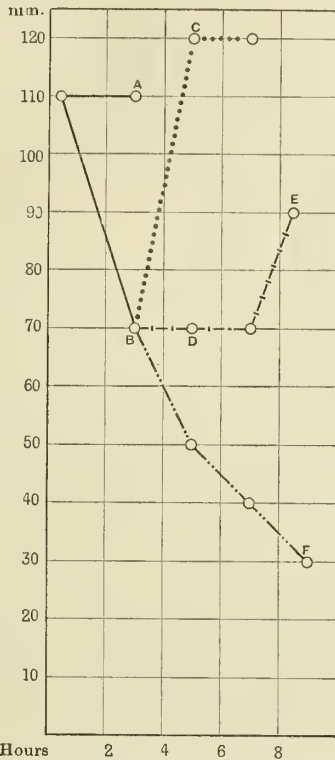


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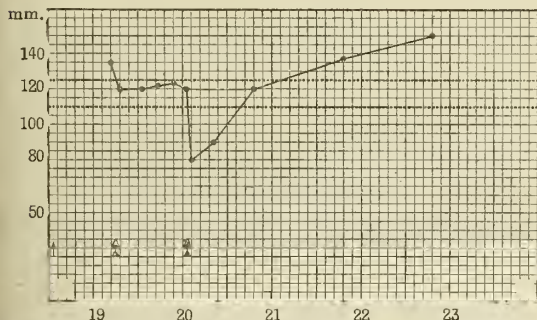
Primary wound shock curves (diagrammatic). Following a severe anatomical injury, instant wound shock may develop, which may be fatal in a shorter or longer time, as shown at A or A'. Under favourable circumstances the pressure may rise to B, dropping later to C. At this point the primary has merged into secondary wound shock.

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Secondary shock curves (diagrammatic). In many of the cases of moderately severe wounds the pressure will remain level at A. In others it falls with the establishment of secondary wound shock, B. At this point the patient may react quickly to treatment, C, or after more prolonged treatment at D, to E. In the absence of favourable circumstances, the pressure goes steadily down, and the case terminates fatally in from 12-24 hours, F.

13



Primary surgical shock, spontaneous recovery. The arrow indicates receipt of wound, and the other signs (1) operation and (2) amputation for gas gangrene.

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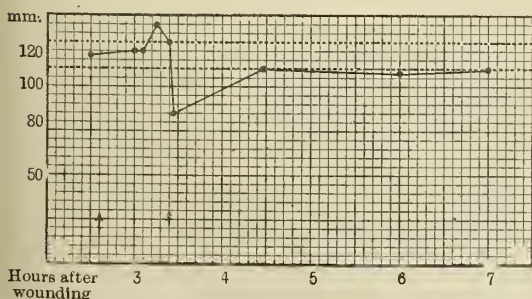
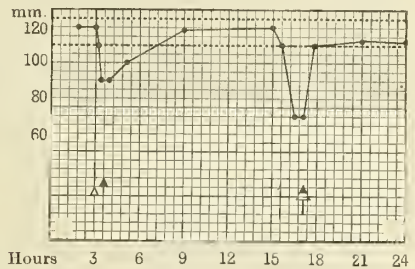


Chart showing sudden drop in blood pressure on change of posture, denoted by second arrow. Operation indicated by first arrow.

subsequent concentration of the circulating blood. Smaller doses produce a vaso-dilation, for which evidence is produced to show that it is capillary in origin.<sup>15</sup> This work deserves consideration in conjunction with Bayliss's investigations on muscle trauma. Bayliss and Cannon<sup>1</sup> found that within an hour after producing a compound fracture of the femur in an anaesthetised cat signs appeared similar to those seen in secondary wound shock. The pressure gradually went down, pulse-rate and respiration increased, the blood became concentrated, and finally the animal died. This occurred just as rapidly when the limb was isolated from

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Hypotension associated with (1) haemorrhage, (2) toxæmia. The triangle indicates operation, haemorrhage; the next sign, injection of gum saline. The arrow denotes onset of gas gangrene; following sign, operation + gum saline.

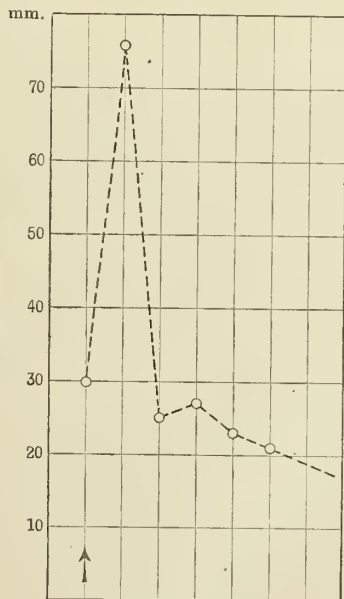
the central nervous system, so that the possibility of its being due to the transmission of harmful afferent stimuli was negated. When, however, the returning blood stream was interrupted no lowering of the pressure resulted, and the animal remained in good condition until the clips on the vessels were removed.

As soon as the returning blood reached the body, down came the blood pressure. It is probable that some tissue poison is set free from the traumatic myolysis which has resulted, producing effects like histamine. This experimental work confirms the clinical observations made on the human subject. Two years ago I tried, unsuccessfully, to stop the onset of shock by inducing regional anaesthesia (nerve blocking).

#### (4) Intracellular suboxygenation.

—Mott<sup>17</sup> has examined the brains of cases of fatal wound shock, and found evidence of early cytolysis of certain of the cells of the cortex and basal nuclei. These, however, he considers secondary to the low blood pressure

16



Time A.M. 1.30 2.30 3.30 4.30  
Chart showing blood pressure on admission (denoted by arrow); immediate administration of two pints of normal saline followed by rise and rapid fall of blood pressure, death at 4.30 A.M.



and not of primary origin. From clinical experience after the maximum pressure has remained at 60-70 mm. for from 4-6 hours, the patient cannot, as a rule, be resuscitated, even by blood transfusion. The damage to the finer cells from lack of tissue oxygen has been too great; in other words, the process of tissue death has advanced too far for recovery to take place. Haldane has suggested pushing the oxygen treatment. But even if pure oxygen were breathed the plasma will only carry 2 per cent. more oxygen than normally. Practically the treatment with oxygen has not been successful. Morphia, by depressing the respiration, increases cyanosis, especially in patients after hæmorrhage. Experience has shown that such cyanotic shock cases react extremely badly to ordinary methods of treatment, and the only possible way of increasing the oxygenation of the body is to give more oxygen-carrying material in the shape of hæmoglobin by blood transfusion.

(5) *Acidosis (acidemia Wright)*.—In 1917 a number of observations were made by Cannon,<sup>2</sup> using the v. Slyke apparatus, on the alkaline reserve of the blood in the wounded with low blood pressures. These findings were confirmed by others on cases of experimental shock. Since the alkali reserve was found reduced in direct relation to the drop in pressure, the question immediately arose as to whether this might not be one of the primary causal factors. While this was being decided experimentally, alkaline intravenous therapy was practised, undoubtedly with benefit in certain cases. This important question has now been settled and is fully discussed in Report No. 7 of the Shock Committee.<sup>13</sup> The results of the various sets of experiments may here be summarised.

(i) "Simple acidosis" in the sense of a reduction of the alkali reserve of the blood, even though it be severe and prolonged, does not cause shock, or indeed, any perceptible impairment of the circulation or other vital organs in the otherwise normal animal at rest.

(ii) In the case of animals subjected to hæmorrhage, histamine shock, injection of adrenalin or peptone, there was no evidence of the symptoms being modified by acidosis.

(iii) Experimentally in dogs it has been found (Cannon) that the pressure could be kept at 80 mm. for an hour without a reduction in the alkali reserve. Below 60, however, a reduction always occurred. After a 20 per cent. hæmorrhage a pressure of 80 mm. in an hour reduces the alkali reserve—i.e., produces acidosis. This evidence agrees with clinical observations already quoted.

(iv) Evidence is adduced by Wright and others<sup>13</sup> showing that the toxæmia of gas gangrene is accompanied by an acidosis.

Therefore, from a practical point of view, the acidosis is merely to be regarded as a symptom of the lowered blood pressure and defective circulation. If steps are taken to improve these the acidosis disappears. The benefits claimed clinically from hypertonic alkaline treatment would probably have been more striking if gum-saline had been used instead.

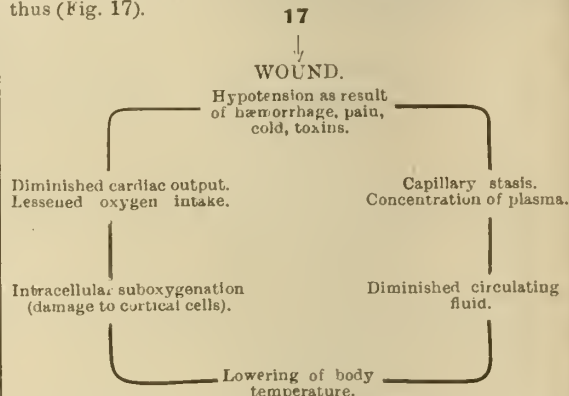
(6) *The body temperature in shock*.—Sufficient emphasis has been laid on the ill effects of cold. During a surgical operation, not only is the quantity of heat lost by the surface of the body increased, but the heat production itself is diminished. In a series of wounded presenting low blood pressures, the temperature taken of the interior of the thigh muscles was found to be as far below the normal as 94° F. and even occasionally lower. In this connexion it is interesting to note that Peter Lowe, writing on shock early in the seventeenth century, describes the condition as being due to loss of "vital heat."<sup>20</sup>

(7) *The toxic action of certain anæsthetics in shock*.—In the light of what has already been said on the lack of sufficient circulating fluid and deficient oxygenation of the tissues, it is obvious that the greatest care must be taken to avoid further depression of external or internal respiration. Buckmaster<sup>21</sup> concludes that chloroform combines with the corpuscles and directly interferes with their function of transporting oxygen from the lungs. One would expect a similar action with ether, but I believe this has not yet been worked out. Gas and oxygen anæsthesia, as advocated by Crile, Boyle, Lockhart-Mummery, Marshall, and others, does not possess this disadvantage, and either by itself or combined with some form of nerve blocking, is the only anæsthetic justifiable in all cases where hypotension exists.

(3) *Effects of hæmorrhage*.—Enough has already been said to show how serious is this factor. The circulating fluid in

shock is becoming diminished all the time and any further loss is not only felt directly, but speeds up the concentration process. O. H. Robertson considers that with a total hæmoglobin reduced to 25 per cent., transfusion (of blood) is indicated.

Any one of the above-mentioned factors may become the starting point of a vicious circle—expressed diagrammatically thus (Fig. 17).



*Gas*.—There is a condition which clinically and pathologically closely resembles that seen in shock—i.e., that found in men suffering from the effects of poisoning by a gas such as phosgene. Here the man is prostrated, blue and cold, with a weak pulse and low pressure. The same phenomena of blood concentration and increased viscosity are also present. A few of the cases of wound shock are undoubtedly complicated by gas poisoning; but for the most part gas does not play a practical part in the causation of shock.

#### COMPARISON OF WOUND SHOCK AND SURGICAL SHOCK.

Just as wound shock may be produced in a few minutes (primary wound shock), so in certain rare instances surgical shock may develop as the result of a sudden nerve stimulus, with or without hæmorrhage, or in an operation probably in association with an unsatisfactory state of anæsthesia. These instances are uncommon, and show themselves as cases of cardiac weakness or inhibition, demanding special treatment, such as cardiac massage.

The bulk of the cases of surgical shock, however, correspond to the common variety of wound shock—i.e., the secondary shock—the pressure falling towards the end of operation or even after the patient has been returned to bed. Undue anxiety, chilling, pre-existing bacterial toxæmia, or hæmorrhage are all pre-operative factors to be taken into consideration. During the operation further loss of heat, the amount and nature of the anæsthetic employed, the question of hæmorrhage, and, most important, the amount of trauma to which muscle tissue is subjected, all play a part in the production of secondary surgical shock.

With regard to tissue trauma, as Major-General Wallace has pointed out, the amount of shock resulting from a fore-quarter amputation, where the limb is removed along tissue planes, and where only a small muscular mass is divided, is, as a rule, small compared with the amputation through the hip-joint, where large muscular masses are traumatised. The beneficial effect of regional or spinal anæsthesia may, perhaps, be explained on these lines. There is complete relaxation, permitting of the handling and retraction of the muscle substance with the least amount of bruising and damage. The handling of the more important organs does not in itself necessarily produce shock. I have taken continuous pressure readings while the lung was being "externalised" and the hilum dragged on, without being able to detect any tendency to hypotension.

*Asphyxia pallida neonatorum*.—Buried under the obscurity of this ancient term is a variety of surgical or traumatic shock, to which very little attention has been paid. Here, for example, after being half-crushed and severely bruised in a case of difficult labour, the little patient is pale and flabby, with weak heart-beats and a failing circulation. In fatal cases hæmorrhages may be demonstrated in the muscles as well as in the viscera, all pointing to tissue trauma (Spencer). It would be interesting to know what changes are present in the circulating blood. Clinically such case



react well to warmth, the application of which in the form of a hot bath has been customary for many generations. In addition, in severe cases I found in 1910 that even normal saline injected intravenously often produced a rapid improvement. It is possible that Bayliss's gum saline, cautiously given in small doses, may prove of even greater value. The technique of intravenous medication in the new-born is simplified by the fact that the umbilical vein is patent and available, at any rate for the first half-hour of life. This method of treatment is probably widely practised, but I have been unable to find it referred to in the literature.

#### PRESENT CONCEPTION OF SHOCK.

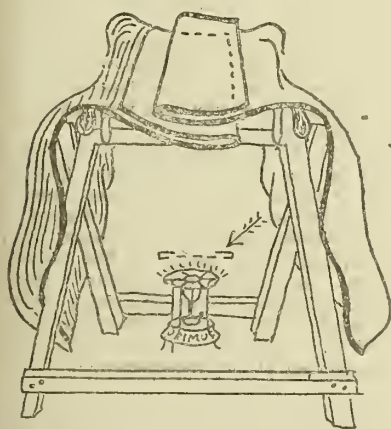
J. P. Lockhart-Mummery, in his Hunterian lectures, 1905,<sup>20</sup> defined shock as a condition "resulting from a fall in general blood pressure due to exhaustion of the vaso-motor centre," and distinguished shock from collapse, where the "fall in general blood pressure is due to inhibition of the vaso-motor centre or loss of circulating fluid." In addition to the confusion arising from such a distinction there is no physiological evidence upon which such theories can even be based. If any difference in meaning is made use of between shock and collapse it should be one of time relationship rather than anything else. At the present time the term "collapse" is used to describe the symptom-complex resulting from the effects of more or less prolonged

rectum. If the pressure does not quickly rise gum saline is given intravenously. When it is thought that actual loss of blood is the chief factor, then transfusion of whole blood should be carried out with as little delay as possible. By these means the patient's condition can be sufficiently improved to allow of the surgeon performing anatomical repair and getting rid of toxic material.

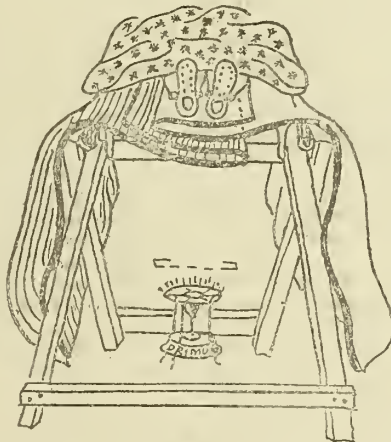
3. During operation in such cases, or where the anatomical interference contemplated is at all extensive, the surgeon should insist on gas and oxygen either alone or combined with regional anaesthesia. During the operation a falling pressure may be counteracted by giving 500-1000 c.cm. 6 per cent. gum solution in normal saline. There is no evidence of any permanent benefit following the injection of pituitrin, adrenalin, ergot preparations, atropine, caffeine, camphor, strychnine, or any of the numerous drugs recommended from time to time.

[Drawings and diagrams were here shown illustrating some of the methods of treating the early stages of wound shock, as interesting some who have not had the privilege of treating the soldier in the trenches or on the battlefield.] (Fig. 18.) The greatest interest has been displayed by officers and other ranks of the R.A.M.C. since the commencement of the antishock campaign. In the latter days of trench warfare it was not possible to go into any well-established dressing-station, whether it was a converted

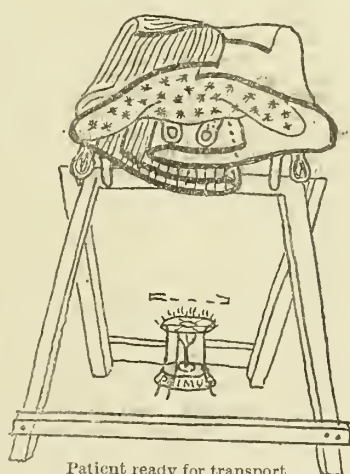
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Blankets and stretcher heated ready for patient.  
Arrow indicates kettle or iron plate.



Patient heating up.



Patient ready for transport.

Diagrams illustrating method of applying warmth.

low blood pressure (Bayliss). Any vaso-motor disturbances that may be detected are transitory and of infinitely less value than the loss and concentration of circulating fluid. I would suggest from the practical standpoint the view that, with given causal factors, while primary shock is generally inevitable, secondary shock is mainly preventable. Reference to Fig. 18 will explain diagrammatically the present conception of shock and explain the symptom-complex.

#### General Management of the Case.

It was said in criticism of the papers by Cannon, Fraser, and myself<sup>3</sup> that the discussion of treatment was meagre when compared with the chapters devoted to clinical and pathological study. But once our knowledge of a morbid process is brought on to a sound clinical and pathological basis the application of therapeutic principles follows as a matter of course.

From what has been previously said, the surgeon in treating shock should bear in mind the following points.

1. The psychological aspect of the case. Any undue apprehension or excitement should be allayed by quiet persuasion, suggestion, or by the use of small doses of morphia if necessary.

2. The loss of circulating fluid and body heat. In preparing a case of shock for operation what has come to be known in war surgery as "resuscitation" is carried out. Warmth is applied by the most suitable means at hand, while the patient is made as comfortable as possible and allowed to rest. Fluids are freely supplied by mouth or

"pill-box," brewery cellar, or deep dug-out, without finding a well-organised method of combating wound shock.

In conclusion, I have to thank the authorities of the Royal Army Medical Corps for their ready assistance in making it possible for me to carry out these observations. Major-General Sir Cuthbert Wallace, K.C.M.G., C.B., Professor Bayliss, Dr. Dale, and the members of the Shock Committee, I wish to thank for their helpful advice. To Major-General Sir H. N. Thompson, K.C.M.G., C.B., D.S.O., I wish to express my gratitude for his sympathy and courtesy in giving the greatest possible help. Finally, I wish to thank the President and Council of the College for the honour of allowing me to have brought before you a subject so largely of interest to the military surgeon.

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JAUNDICE AMONG THE BRITISH TROOPS  
IN NORTHERN ITALY.

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LATE CAPTAIN, R.A.M.C.*Note by H. H. T.*

In August, 1918, I saw with Captain H. G. Broadbridge, R.A.M.C., who was in charge of the "Signal Schools" Hospital at Valsanzibio, about 25 km. south of Vicenza, a group of ten cases from the signal schools camp in the mountains close by. They presented many features in common, as follows:—

Onset sudden without rigor, so sudden that the exact hour of the first symptom could be given in most cases. The first symptoms were "dizziness," a general feeling of illness, and headache, at first slight but growing in severity during the succeeding two or three days; this symptom was common to all. These men were admitted on the day of onset with temperatures of between 101° and 105°, and this fever was maintained with irregular fluctuations, but rarely falling to 100°, for 6-8 days, except in one fatal case in which it fell during the fourth day to 97.6°, and on the sixth and seventh, the day of death, to 96.6°. The pulse as a rule was not commensurate with the temperature; for instance, in one case the readings are T. 103.6°, P. 100, R. 30, and similar readings might be multiplied. The rapid respiration rate is suggestive of pulmonary complication, but I found no signs in those I examined. Pains general, or in the legs or back, occurred in eight. In nearly all suffusion of the conjunctivæ was noted as an early symptom, and in half of them soreness or redness of the fauces, and three showed herpes labialis. Of this group only one developed moderate catarrhal lung symptoms. In no case was the spleen or liver enlarged.

In addition to these cases Captain Broadbridge writes that shortly after this 18 more were admitted from the same source, and these he considered to be cases of so-called "epidemic pyrexia."

Taken as a whole, these two groups, totalling 28 cases, from one camp presented a general symptomatic similarity to the type of influenza which had been rife among the troops and civil population for some months previously. But among them, and in their onset and symptoms indistinguishable from the rest, were six cases (21.4 per cent.) which developed jaundice, and as jaundice was very common at that time they seem worthy of special notice. This jaundice appeared on about the sixth or seventh day of the illness, except in the fatal case in which it occurred on the fourth. Two of these I saw on my visit, and the others developed after it, but unfortunately I was prevented by illness from following them further.

Sapper G. H. D., aged 26, suddenly became "dizzy" and chilly at 6 P.M. on July 24th. He was admitted the same evening, with T. 101°, P. 102, and R. 22, headache and pains in the calves, and suffusion of the conjunctivæ appeared the next day. The fever was maintained at between 101° and 102.6° for four days, fell to 100° on the sixth, on which day he was jaundiced without any additional symptoms except for a crop of slightly raised purpuric blotches about the left loin and abdomen. With the fall of temperature the pulse-rate became abnormally slow, 46-66. He was transferred to No. 9 C.C.S. and from there evacuated to the base. No further notes are forthcoming, but from our experience we should suspect a continuance of low-grade fever.

Driver J. H., aged 20. Sudden onset with "giddiness" at 9 A.M. on July 26th, slight sore-throat and general pains. Admitted same day with a temperature of 102.4°, rising to 103.6°, falling suddenly to 97.8° on the morning of the third day, but rising again the same day to 101.6°. On the fourth day jaundice appeared and the temperature fell from 102° to 97.6°, and finally to 96.6°. The pulse-rate was 100 when the fever was at its highest, and respirations 30 without pulmonary signs. The jaundice became very intense, the tongue thickly coated white, and he suffered from repeated vomiting, intermittent headache, and severe general illness. No physical signs referable to heart, lungs, liver, or spleen were found at any time. He died in No. 9 C.C.S. on the seventh day of his illness. The post-mortem report is as follows:—"Acute pancreatitis. All tissues and organs deeply stained. The pancreas was swollen and hæmorrhagic. Inflammatory swelling around the orifice of the bile-duct, and also adhesion at the foramen of Winslow. No free fluid in the lesser sac. Liver, spleen, kidneys, and other organs apparently healthy except for bile-staining."

Most unfortunately no microscopical or bacteriological report on these organs has come from the laboratory owing to a change of pathologists at that time, and an important link which might have thrown light on this and the other milder cases is thus lost.

We have here, then, a group of 28 cases having common characters in the early stages, as to onset and symptoms and from the same place. Some of them develop jaundice, and, judged by the course of other cases to be detailed later by E. G. P., probably ran a long course of low fever. Others, the majority, are non-icteric. The icteric forms resemble clinically the spirochætal type. Have the non-icteric cases the same infective origin? Or are all influenzal, as one at first thought, with catarrhal jaundice as a complication. If so, why should such a simple complication so materially change and lengthen the further course of the disease? Or, lastly, have we two epidemic diseases occurring coincidentally?

I have but little information as to the later stages of this group, except inferential. One icteric case returned to duty in 18 days, an unusually short course. One died as reported above. Four were evacuated to the base or to France, and of these 1 only came under our observation subsequently. Of the non-icteric cases, 3 were evacuated to the base; of 12 there is no information. The remaining 7 were returned to duty from the local schools hospital or the C.C.S. after varying periods of stay in hospital—namely, 2 for three days only, 2 for 17 days, 3 for 18, 21, and 42 days respectively—an average stay of 17 days. Most of these periods are long for the type of uncomplicating influenza then prevalent.

The special interest to us in this group lies in the first-hand information at the earliest of a type of jaundice of which we saw a considerable number of instances in the later stages at the base, cases in which this information was very meagrely recorded on the field medical card.

In order to obtain some collective information on points such as are discussed in the following analysis, Colonel Howell, A.D.M.S., L. of C., caused reports on all cases of jaundice to be returned by medical officers of all units on L. of C. and base area during the months of September, October, and November, which also include a few in July, August, and December. As might be expected, these returns are very variable in value, but an analysis of them brings out some information after all reservation has been made. 128 returns of cases of jaundice came to hand, of these 17 were rejected, leaving 111 for consideration.

*Analysis of Returns.*

*Seasonal incidence.*—The greater number of cases occurred in the months of September and October, 58 and 38, respectively, 96 in all. In August 16, in July 3, in November 5, and in December 3, totalling 123 returns in which a date was given.

*Regional incidence.*—The greater number of returns are of cases occurring in the forward area—i.e., in the front line 12, or just behind it 16, the remainder being between this and Vicenza 21, and south of Vicenza 23, 2 from Padua. Thirteen came from places which cannot be identified on the map but were certainly in one of these regions, so that 92 came from the forward area (90 per cent.). Ten only came as isolated cases from places on the L. of C.

"Catarrhal" cases, 84 returns.—These are cases which are stated to have had no fever at any time, but included among them are three which had a very slight short rise above normal. The symptoms at onset in 41 are abdominal pain in the epigastrium and indisposition, nausea 7, general malaise 5, diarrhœa 2 only, headache and vomiting 13, vomiting 4, 72 in all.

Onset of jaundice from the first day of illness. Fifty-eight returns are available for this point. Fifty cases developed jaundice on various days from the first to the eighth, and of these 37 up to the fourth day, in 16 jaundice was practically the first symptom. Of these 58 cases the average day of onset was the fourth.

Where a record of the first appearance of bile in the urine is made this symptom, as might be expected, precedes the disappearance of the skin colouration by two or three days.

Date of reappearance of bile in the stools. This was noted in only 29 cases, and it is a very variable one, from the third to the twenty-first day. The average day is the twelfth, and that is probably an outside time.

Date of disappearance of icteric tinge from skin and conjunctivæ. This is a small point, but as a return was made



in 31 the figures may be mentioned. The largest number, 20, fell between the eighteenth and twenty-seventh days. The shortest period was 8 days from the onset of jaundice, the longest 31 days, the average being 21.

*Albuminuria* was recorded in 25 cases and absent in 42 in the 67 cases in which an examination was made. 44 returns are silent on this point. *Spirochaetes* negative, microscopically by inoculation in 2.

These returns of catarrhal jaundice are given for what they are worth. They came from all parts of the war area, but mainly from the more active forward area. They present elusive clinical features contrasting in this respect with the pyrexial group now to be analysed.

#### *Analysis of Pyrexial Group.*

*Jaundice with a definite pyrexial onset.*—A comparatively small but important group of 27 cases (24 per cent. of the whole number), it includes the cases referred to in E. G. P.'s note (*infra*), but not those of H. H. T.'s group in the first part of this article. The onset is noted as sudden in at least 14 of them, probably in all. In 17 the temperature is recorded as from 99° to 104°, and in those in which it was not recorded on the field medical card the symptoms were such that a high temperature was practically certain. Among the symptoms at onset were returned: abdominal pain, mostly epigastric, general pains, headache, epistaxis, sore-throat, vomiting, diarrhoea only in two.

Initial fall in temperature. This was noted in 17 cases, in 11 of which the fall took place on the fourth to the ninth day, the shortest period being the fourth, the longest the fourteenth day from the onset of the illness, giving as an average day the eighth. The fall of temperature, which generally marks the onset of the jaundice is followed by a short apyrexial period. This is returned in 14 cases, in 9 of which it lasted for from 2 to 6 days, the average period from these figures is 5·7 days, which is probably an outside estimation. The apyrexial interval is followed by a variable, but generally prolonged, period of irregular low grade fever, as described below by E. G. P., 19 returns give information on this point, but in some the temperature had not become normal at the time of the return, so that the average made is probably somewhat within the truth. The shortest period of secondary fever is given as 8 days and the longest is 57, the average being 33 days.

*Onset of jaundice.*—This was noted in all the 27 returns. In 20 of them the day of onset was from the third to the eighth, 10 being the third or fourth. The appearance of jaundice tends to precede that of the initial fall in the temperature, but that particular point is made in fewer cases. The average day of onset is the sixth (strictly 5·9). In the catarrhal group this day would appear to be earlier—i.e., fourth, average.

Reappearance of bile in the faeces dated from the onset of jaundice. As this is an indication of the duration of obstruction it is a fact of some importance, and a return was made in 19 cases, but unfortunately in about half of these the early note is defective, and it is only stated that at the time of admission to the unit in the base area the stools contained bile. The obstruction period is therefore certainly less than the figures at our command would warrant. It is disappointing that an observation so simple, and yet so interesting, should have been made in so few cases. With this reservation, in 15 the faeces were said to be bile-coloured in from 6 to 12 days after the appearance of the jaundice. An average of 8 days of obstruction for the 19 cases is probably too long, and 6 days is likely to be nearer the truth.

Disappearance of bile from the urine, noted in 16 returns to occur at all periods from the eighth to the forty-sixth day, gives an average day as the twenty-first.

Disappearance of icteric tinge in skin and conjunctivæ, mentioned in 21 returns, was complete in the average by the thirty-fifth day.

*Albuminuria.*—A note on the urine is made in 25 returns, information having been required as to the presence of albumin, casts, and spirochaetes. Albumin is definitely stated to be present in 12 cases, and casts in 5 of them. The remainder were returned as negative. As to spirochaetes there is no evidence that they were specially searched for except in E. G. P.'s returns, and he records a negative result in all the cases examined microscopically—i.e., 12, in 4 of which also inoculation of guinea-pigs was performed without effect.

#### *Note by E. G. P.*

This note is based upon 29 cases of jaundice under observation at a stationary hospital at the base during the months of August, September, and October, 1918. The cases were drawn from the front line, intermediate, and base areas.

They fell naturally into two divisions: 1. The catarrhal type, in which fever was entirely absent or very slight—that is, not over 100° F.—during the first few days of illness. Of these, there were 17, and in two cases only a record of any fever. 2. The pyrexial type, which again divided itself into two classes: (a) initial fever followed by a long-continued low grade of fever, in all seven cases; (b) initial fever, followed by a secondary rise of limited duration, five cases.

All the 29 cases fell within these divisions, and so far as is known there was no case which presented a high grade of initial fever which was not followed by the long-continued low grade of fever or by fever of a relapsing type. Of the 29 cases only two originated at the base itself, and these were of true catarrhal type. The others originated either in the front line itself or in the advanced lines of communication. Except for the two catarrhal cases mentioned above these cases did not arrive at the base until ten days or more had elapsed from the commencement of the illness, and therefore one had to depend upon the information to be obtained from the field cards or from the patients themselves, guided by the records on the field cards.

Although the pyrexial type is that which presents the most interesting features, it will be useful to give a description of the catarrhal cases, as it will serve as a useful contrast to the pyrexial cases, and will also be a record of catarrhal cases occurring in Northern Italy.

The *catarrhal cases*, then, were as a rule distinguished by a gradual onset, by absence of or only slight fever at the onset, by the tendency to early onset of jaundice, by the presence of clay-coloured stools, by the symptoms being mostly referable to the intestinal tract rather than generalised, by the rapid onset of convalescence after the disappearance of the jaundice, and by the absence of tachycardia as a sequela. The cases varied in severity from a very slight illness to one of a moderate grade of intensity. General symptoms, such as headache, dizziness, giddiness, pains in the back and limbs, cough, may be present, but they do not form the prominent features of the illness. These were referable to the intestinal tract and abdomen, and in addition to the jaundice consisted of loss of appetite, furring of the tongue, thirst, abdominal pains, nausea or vomiting, constipation or diarrhoea. Some abdominal pain was always present, but it varied very much in severity from the ordinary epigastric pain of indigestion and irregular gripping abdominal pains without abdominal tenderness to constant severe pain with distension and a general abdominal tenderness, but this latter was unusual. The position of the pain or tenderness in these cases is of importance, as only five of them referred it to the region of the gall-bladder or right costal margin, the others referring it to either the epigastrium or generally to the abdomen. In addition to the symptoms mentioned above, others occasionally noted were insomnia, general weakness, pains in the chest, drowsiness. One patient had a fine petechial rash on the chest and abdomen on the tenth day of illness, and one said that at the beginning of the illness there were streaks of blood in the vomit. None complained of itching of the skin and none had epistaxis or herpes.

The jaundice was characterised by a tendency to appear early in the course of the case. In the two cases which were local admissions the jaundice was present in both on the first day, but taking the whole 17 cases, in 11 the jaundice appeared during the first five days of the illness. The early onset of the jaundice was accompanied by a correspondingly early appearance of bile in the urine and disappearance of bile from the stools, these events generally showing themselves on the same day or the day after the appearance of the jaundice. The bile reappeared in the stools in two-thirds of the cases within two weeks, and in all within three weeks, of the onset of the illness. But disappearance of the bile from the urine was of later date, in two-thirds within three weeks and in all within four weeks.

The skin was normal in all but one within a month and was either coincident with, or followed in a few days, the disappearance of bile from the urine, but the conjunctivæ showed a tendency to remain coloured for a distinctly longer time than the skin, but only in one case for over a week.



In all the cases when bile was present in the urine albumin was also present, and in all when the bile disappeared the albumin also disappeared. In 2 cases casts were present in the urine; in one they were hyaline in character, in the other granular.

The spleen was enlarged to percussion in 9 cases, and in two of these instances was palpable. The liver was enlarged to percussion in 6 cases, but was never palpable.

The position of the apex beat of the heart was noted in every case, as it is of importance with relation to

on the sixth day of the illness. With the onset of jaundice there was a rapid decline of the fever, but although the patient generally felt better there was usually some drowsiness, apathy, very foul tongue, and had appetite, perhaps epistaxis or a petechial rash. The jaundice rapidly became very marked and very gradually died away, but bile was absent from the urine in all the cases at least three weeks before the fever entirely died away. With the disappearance of the jaundice the skin assumed the lemon tint, and anæmia was marked in all. The lemon tint made it

extremely difficult to say when the jaundice had really disappeared, as the two merged into one another. By the end of the second week the continued fever had generally started on its long and tedious course, during which it often stayed monotonously about 99° for some weeks. With regard to the abdominal conditions, the local symptoms did not compare in intensity with the more general ones, but the abdomen was usually tender, sometimes swollen, and the tenderness and pain showed a marked preference for the region of the gall-bladder and the right lower costal margin rather than the epigastrium. The condition of the bowels was at the onset of the illness either one of constipation or of diarrhoea, generally the former. One patient had herpes which developed on the sixth day with the jaundice, and one had swelling of the glands of the neck accompanying his sore-throat. Two had sore-throat which was of a severe character, but in neither was it the initial symptom. All the cases were extremely tedious in their convalescence, the fever not abating in the least severe until six weeks had elapsed from the beginning of the illness, and one had fever lasting ten weeks. After the fifth week there was a marked tendency to tachycardia.

There were five cases with the second type of pyrexia. Two of these presented the same sudden onset and symptoms as the first group. A short synopsis of their symptoms is appended. These two men belonged to the same battalion and were both stationed at Arzignano. The one was taken ill a day previous to the other. They were not companions, nor was there any apparent connexion between them in their duties. Their temperature charts show a remarkable similarity; the clinical picture of their cases was also similar.

enlargement of the liver, and in 5 of the cases where the liver was enlarged to percussion the apex heart was found in the fourth left interspace. The pulse-rate in 13 of the 17 cases was abnormally slow. Two cases showed reduplication of the heart sounds.

The examination of the stools showed in 3 cases out of the 17 the presence of the ova of *Trichocephalus dispar*, but as these ova were very commonly found in Italy in the stools of patients of all sorts, surgical and medical, it cannot be said that they should be regarded as a cause of the jaundice when present in this proportion.

One of the cases was a convalescent dysentery, and in another the jaundice appeared while the patient was in hospital suffering from a boil of the thigh.

All cases except one were convalescent within one month of the onset of the disease.

The pyrexial cases now claim our consideration, and they fall into two classes according to the type of fever. Those with: (1) an initial fever of about seven to ten days with an interval of five to seven days, in which the temperature remains about the normal, followed by a long-continued low grade of fever which lasts from about 30 to 60 days. (Chart 1.) (2) An initial fever of about seven to ten days with an interval of five to seven days, in which the temperature remains about the normal, followed by a secondary rise of about seven days' duration, and that again sometimes followed by a short tertiary rise, after which the temperature tends to settle to the normal in distinctly less time on the average than in the first class of case. (Chart 2.)

Of the 12 pyrexial cases, there were seven in the first class and five in the second class, and apart from the type of fever and perhaps a marked lemon tinge of the skin in the first class there was very little, if any, difference in the symptoms in the two classes, although in the second class there was not the same uniformity of severity as in the first.

The seven cases with a continued fever were all acute in onset, and the attack severe and prolonged. The symptoms were those which mark the onset of an acute pyrexial attack—viz., shivering and chill, high fever, sudden malaise, aching of the head, body, and limbs, thirst, marked weakness, sore-throat or injection of fauces, giddiness and dizziness, photophobia, suffusion of eyes, stiffness of neck muscles, accompanied by or followed in the course of a day or two by abdominal symptoms, pains in the stomach, vomiting, constipation or diarrhoea, jaundice appearing between the fourth and seventh days, commonly

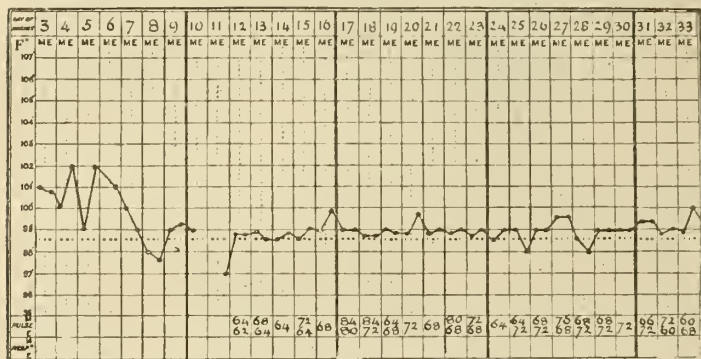


CHART 1.—Pyrexial Type 1. Gr. P. Initial fever followed by long-continued low grade fever. This chart was continued to the 60th day, with irregular daily variations of temperature from normal to 99.8°.

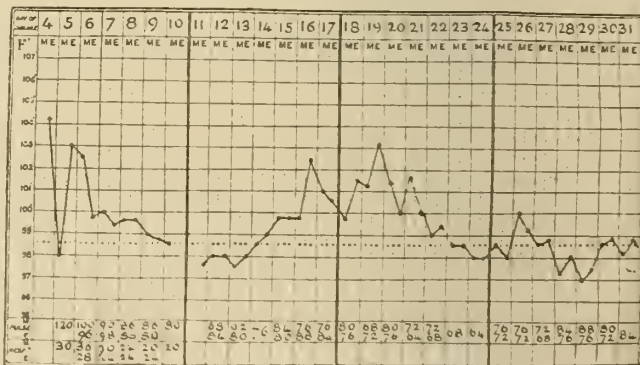


CHART 2.—Pyrexial Type 2. Case 2, Pte. D. Initial fever followed by secondary rise of limited duration.

CASE 1.—Pte. L. Date of onset, 31.7.18. Onset very sudden, with sickness, diarrhoea, pains all over the body, headache and fever, pains in the stomach, and cough. 2.8.18: Jaundice and herpes. 5.8.18: Jaundice very marked, cough, headache, pains in the stomach. 11.8.18: Tongue very dirty, liver enlarged and tender, but not palpable. 14.8.18: Pain in the splenic region, with a fine friction over the spleen. No evidence of splenic enlargement. 26.9.18: Alveolar abscess. 29.9.18: Pleural friction at the right base, back and front, of a coarse character.

CASE 2.—Pte. D. Date of onset, 1.8.18. Onset very sudden, with pains in the head, fever, and shivering. 2.8.18: Slight epistaxis. 3.8.18: Haemoptysis and great weakness. 4.8.18: Temperature 104.2°; jaundice. 5.8.18: Jaundice marked and pains in the stomach. 6.8.18: Herpes of lips and left cheek. 11.8.18: Deep jaundice, erythematous and urticarial



rash of forearms, chest, and abdomen. Lower liver edge tender but not palpable. Spleen not enlarged. 13.8.18: Some small petechiæ in rash. 15.8.18: Rash almost disappeared. 16.8.18: Temperature 102.4°; apathetic. 19.8.18: Temperature 103.2°; vomiting and severe pains in the back; liver and spleen not enlarged. 23.8.18: Fever gone and patient rapidly improving in general condition.

Both showed a tendency to tachycardia after the fifth week.

The other three cases included in this group did not show the same severity of symptoms, and their fever was neither so high nor so prolonged, but they all had an initial fever followed by a secondary fever of limited duration.

The question then arises, Do these two groups of pyrexial cases own the same cause? As their symptoms are so much alike and their only difference appears to be the type of fever, it seems that this question must be answered in the affirmative.

Taking, then, these pyrexial cases as one group, in the 12 cases observed, the earliest appearance of jaundice was on the third day, in 2 the jaundice appeared on the fourth, and in the remainder between the fifth and tenth days, the commonest day being the sixth. Bile appeared in the urine shortly after the onset of the jaundice, but with regard to the stools there was nothing like the same constancy of disappearance of the bile from the stools, as in the catarrhal cases. Sometimes the stools were clay-coloured, but very often some amount of bile persisted in the stools throughout the illness. Bile was present in the urine in most instances up to the fourth or fifth week. Another feature with regard to the severe types was that the jaundice improved in spite of the persistence of the fever, and in most instances the temperature was still febrile after the bile had entirely disappeared from the urine.

The skin and conjunctivæ were not generally normal until the fifth to the eighth week, and the skin and conjunctivæ both seemed to approach to the normal at the same time, but owing to the lemon-tinted skin in the majority of cases it was difficult to say when the bile exactly disappeared from the skin. Casts were found in the urine in 5 cases out of the 12. In 1 hyaline, in 2 granular, and in the other 2 hyaline, granular, and epithelial. Epithelial casts were not found in the catarrhal forms. Albumin was present in the urine in all cases when bile was present. The spleen was enlarged to percussion in 5 cases, and in one of these it was palpable, this proportion not differing greatly from that found in the catarrhal cases. The liver was enlarged to percussion in 9 cases, in one of which it was palpable, the proportion here being much greater than in the catarrhal forms. The position of the apex beat of the heart was in the fourth space in 6 out of the 8 cases in which it was noted, and the liver was not enlarged in the 2 cases where it was in the normal position. The maximum point of pain or tenderness in the abdomen was in the position of the gall-bladder or under the right costal margin in 6 cases out of 11, in the epigastrium in 3, in the splenic region in 1, and in the left side of the abdomen in 1. This tendency for the pain to be situated in the right hypochondrium is doubtless in correlation with the greater proportion of cases of hepatic enlargement in these cases as compared with the catarrhal ones. The pulse-rate at the commencement of the illness seemed to vary, in some cases being slow in comparison with the temperature, in others commensurate with the fever, but with the onset of the jaundice it became abnormally slow in comparison with the fever, the lowest pulse-rate noted being 32.

The examination of the stools of these 12 cases disclosed the presence of the ova of parasitic worms in 6 of the 12, the ova of *Trichocephalus dispar* only in 3, the ova of *Ascaris lumbricoides* only in 1, the ova of *Trichocephalus dispar* and *ascaris* in 1, and the ova of *Trichocephalus dispar* and an adult *ascaris* in 1. As has been observed previously, these ova were quite commonly found amongst the troops in Italy, but the proportion found in these cases seemed to be above the average.

A blood count taken from Pte. D. on the seventeenth day of the disease during the secondary rise of temperature showed 4,096,000 red cells and 7000 white cells with nothing distinctive in the differential count. Blood pressure estimations showed nothing abnormal.

Five of the pyrexial cases were examined as to the presence of the enteric group of organisms in urine and faeces, three of the first group and two of the second. In all of these enteric group organisms were absent.

Blood cultures were taken from Pte. D. and Pte. L., the first being negative and the second showing a growth of *Staphylococcus aureus*, probably a contamination.

Investigations were undertaken as to the presence of the *Spirochaeta icterohaemorrhagiae*. In four of the cases, two of each group of the pyrexial types, a guinea-pig was inoculated but without result. All cases, both pyrexial and catarrhal, had a microscopical examination made of the urine, but the spirochaete was never found. Nevertheless, in spite of these negative results as to the presence of the spirochaete, it is felt that this may be a possible cause of the pyrexial cases, as they agree in their clinical character with the disease so well described by Dawson, Hume, and Bedson in their paper on spirochaetal jaundice, although they do not specifically describe cases with low continued fever. There were no deaths among these 29 cases.

*Conclusion.*—During the months of August, September, and October, 1918, there were prevalent amongst British troops in Northern Italy two types of jaundice—namely, catarrhal and pyrexial. The pyrexial cases again were subdivided into two groups, those with initial fever followed by a long low continued fever, and those with initial fever followed by a secondary fever of limited duration. These pyrexial cases apart from the temperature presented the same clinical features and showed a great resemblance to cases of spirochaetal jaundice, but there was no bacteriological evidence to support this view.

I must add my indebtedness to Lieutenant-Colonel C. Bramhall, R.A.M.C., for allowing these cases to be under my care, and to Major W. Broadbent, R.A.M.C., for his suggestions and interest in these cases.

#### *Concluding Remarks.*

We regret that by the force of circumstances the clinical facts in this communication are not supported by more bacteriological evidence. The bacteriological examinations were made by Captain W. Broughton-Alcock and Captain A. N. Smith, to whom we are much indebted, and whose technique is beyond question. The inoculations on guinea-pigs were made on the sixteenth, seventeenth, eighteenth, and twenty-seventh days of the disease, respectively, and therefore within the recognised limit of 28 days, but were all negative as to spirochaetal infection.

We are forced, therefore, to suspect that there may be some infection other than spirochaetal, though clinically similar to it, and that, if so, all these cases, with or without jaundice, may have this infection as a common causal factor. Nevertheless, we do not feel able to exclude dogmatically the spirochaetal factor, in spite of negative bacteriological results, in the face of the clinical resemblance of our cases to those published by the Japanese and British observers.

Although jaundice may occur as a complication of influenza, it is certainly not common in most civil epidemics, yet it is striking that in our first group these icteric cases should be so intimately associated in origin with, and so similar in their early symptomatology to, what seem to be "epidemic pyrexial" cases, and this circumstance gives an added interest to epidemic fever or influenza which raged in Italy from the early months and onwards of 1918.

We conclude with offering our thanks to the A.D.M.S., L. of C., Colonel Howell, for coöperation in obtaining returns, and the medical officers of all units for furnishing them.

**LIVINGSTONE COLLEGE.**—Dr. T. Jays, who has worked in different capacities with the Church Missionary Society and the Student Christian Movement, has become vice-principal at Livingstone College, and with his wife will reside in the College. In addition to helping the principal, Dr. Jays will take the lectures previously delivered by Colonel G. B. Price, who is now working with the Ministry of Pensions. Before the College reopens on Oct. 1st a short course of 15 lectures on Personal Care of Health in the Tropics will be given from Sept. 22nd–25th by the principal, vice-principal, and probably Colonel Price. These lectures are open to men and women, and are intended for those who expect to reside or travel in the tropics. They would be of use to missionaries, nurses, explorers, members of the services, Government officials, commercial men, &c. Application for terms and conditions of attendance should be made previous to the lectures to the Principal, Livingstone College, Leyton, E.10, who will be pleased to answer any questions with reference to these lectures or concerning the full nine months' course at Livingstone College, which will commence on Wednesday, Oct. 1st, 1919.



## THE EFFECTS OF ARTIFICIAL PNEUMOTHORAX.

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THIS article is based upon the experience gained from 21 patients with severe pulmonary tuberculosis whose pneumothorax I induced artificially, except in one case (No. 19), between August, 1910, and December, 1916. The exception had developed a spontaneous hydro-pneumothorax which I converted into a controlled pneumothorax.

### *Striking Results of Artificial Pneumothorax.*

This series includes all those so treated by me during this period in whom the pneumothorax obtained was complete or nearly complete. Eleven of the 21 are alive, and all save two of these are enjoying good health and following their usual vocation.

No.	Sex and age.	Date of induction of pneumothorax.	Side.	Whether fluid present.	Whether fluid tapped.	Date of last (or latest) injection of gas.	Interval between most recent refills of gas.	Amount of gas taken at most recent refills.	Present state.
1	M., 34	13/8/10	R	+	+	Sept., 1911	4 w.	c.cm.	Died Jan., 1915.
2	M., 30	23/5/11	L	+	+	Feb., 1919	7 w.	600	Well; working.
3	M., 42	14/11/11	R	+	+	June, 1917	about 2 y.	350	Died July, 1918.
4	F., 22	20/11/11	L	+	+	Dec., 1912	2½ w.	180	Died March, 1913.
5	F., 17	1/1/12	R	-	-	Mar., 1914	6 w.	500	Died June, 1916.
6	F., 17	28/2/12	L	-	-	May, 1913	4 w.	700	Died Feb., 1915.
7	M., 24	13/1/13	L	+	+	Feb., 1915	6 w.	900	Well; working; about to marry.
8	M., 23	21/3/13	L	+	-	Feb., 1919	3½ m.	375	Well; working.
9	M., 34	7/7/13	R	+	+	May, 1917	2½ m.	400	"
10	M., 21	2/11/13	L	-	-	Feb., 1919	5 w.	1100	"
11	M., 38	5/11/13	R	-	-	Apr., 1914	2 w.	600	Died April, 1914.
12	F., 33	17/11/13	R	+	+	May, 1915	3 w.	120	Died August, 1915.
13	M., 35	3/1/14	R	-	-	Feb., 1914	10 d.	650	Died Feb., 1914.
14	M., 40	7/1/14	L	+	-	Jan., 1919	3 m.	900	Well; working.
15	F., 39	8/8/14	L	+	+	Feb., 1915	2 w.	200	Died March, 1915.
16	M., 46	8/9/14	R	+	+	May, 1918	12 m.	700	See below (a).
17	M., 26	2/12/14	L	-	-	Sept., 1918	2 m.	600	See below (b).
18	F., 21	4/6/15	R	+	+	Jan., 1919	6 w.	630	Well; working; married in 1918.
19	M., 53	28/4/16	R	+	-	Feb., 1918	1 m.	300	Died March, 1918.
20	M., 23	21/7/16	R	+	+	Feb., 1919	2 m.	500	Invalid.
21	F., 35	11/9/16	L	+	-	Dec., 1918	2½ m.	1000	Well; working.

y, years; m, months; w, weeks; d, days.

(a) Breathing apparatus good, but somewhat incapacitated by bone tuberculosis; (b) Fairly well, free from symptoms, but not capable of much work.

Nearly all of the ten who have died had their symptoms much alleviated and their lives materially prolonged, in several instances by years, during which they enjoyed fairly good health and followed their occupations. The restoration to health and activity of most of the 11 is wonderfully complete.

For example, No. 10 writes (January, 1919): "I have no trouble, enjoy good health, and I am quite unconscious of the fact that I am only using one lung. I feel a perfectly normal individual."

No. 7's doctor wrote (December, 1918): "He feels in perfect health. Can walk up hills better than his sister, who is a strong, healthy girl."

And No. 14, a doctor working regularly as a sanatorium physician for the past four years, now cycles occasionally 15 to 20 miles in a day, or does a quiet half day's shooting.

These results can justifiably be called remarkable when it is observed that they are obtained for people whose state was generally of such a nature that only a few months of serious invalidism could have been anticipated under the ordinary régime. The history of most of them is well exemplified by that of Nos. 2, 7, and 12.

No. 2 had been to two or three sanatoriums during the years before admission to Mundesley; he had had laryngeal as well as severe pulmonary lesions.

No. 7 had been under sanatorium treatment without avail in Devonshire and Mundesley for nearly two years before the induction of the pneumothorax, and had had serious symptoms for longer than this.

No. 12 had been ill for 3½ years before compression therapy was started; she had been unable to take exercise on account of fever for 15 months; she had half a mugful of muco-purulent expectoration containing tubercle bacilli.

Every case in the series had expectoration containing tubercle bacilli. But the nature and severity of the condition of these cases can be judged by reference to my previous writings on this subject.<sup>1</sup> The gist of the matter is that in nearly every case a situation had been reached which was quite hopeless apart from artificial pneumothorax.

A striking contrast to these results is to be found by following up the after-history of those patients for whom artificial pneumothorax was attempted unsuccessfully because of adhesions, including under this head those in whose cases pneumothorax treatment was abandoned at an early date because of the ineffectual, partial nature of the pneumothorax produced. During the same period (August, 1910, to December, 1916) I tried to induce a pneumothorax but failed completely on account of adhesions in six cases, and I induced only an ineffective, partial pneumothorax soon abandoned in seven other cases. All save one of these patients are dead. The one still alive does not enjoy good health and is unable to follow his occupation. The average length of life of the twelve who died, from the date of the attempt to induce a pneumothorax, was probably considerably under two years (I have not all the data for arriving at this average). Whereas the average length of life of those who died in spite of the artificial pneumothorax treatment was 2½ years, though the number includes 3 who only lived 1½, 4½, and 6 months respectively. And in the case of those with an effective pneumothorax who are still alive the average time to present date from the date of the induction of the artificial pneumothorax amounts to 4½ years, the longest time (No. 2) being 7½ years and the shortest (No. 21) 2½ years.

### *Factors affecting the Course of Treatment.*

In the rest of this article I shall deal with the results and complications of artificial pneumothorax as they affect the course of the treatment. As usual, difficulties, failures, and mistakes have taught me more in the course of the last 8½ years than all the routine management of those cases which have gone forward smoothly. As usual, too, in reviewing one's experience one finds that set rules are hard to lay down. Circumstances vary widely. Each factor at any particular juncture must be taken on its merits and weighed before a step is taken. But a few useful conclusions may be enunciated none the less.

(a) In the earlier stages of the treatment, say up to about 18 months, I believe there is greater likelihood of making a mistake by injecting gas too seldom and taking the pressures too high rather than erring in the opposite directions.

(b) I am convinced that abandonment of the injections of gas in a successful case after too short a period is a far worse error than the continuance of refills for too long. I believe No. 6 might have maintained perfectly good health had the treatment not been abandoned too soon, I may add, through no fault of the patient or of mine. About 18 months after starting the pneumothorax and about three months after stopping it, having been in apparent perfect health for nearly the whole of this time, she was looking upon herself as a perfectly normal individual, and was allowed to work eight hours a day studying at a college. Relapse set in about six months later, the pneumothorax could not be re-established, and the disease spread far. In the case of No. 5, too, whose subsequent history was somewhat similar, I am much inclined to think from subsequent experience that a further year of refills—i.e., 3½ years instead of 2½—might have produced a permanently good result.

<sup>1</sup> E.g., to articles in *The Practitioner* (September, 1911) on "The Choice of the Patient for Artificial Pneumothorax," and in the *British Medical Journal* (Oct. 12th, 1912), where further details and a more ample history of several of the patients can be found. In the present series, Nos. 1 and 2 are Nos. 1 and 4 in the first article, and Nos. 3, 4, 5, and 6 are Nos. 3, 2, 4, and 5, respectively, in the second paper.



(c) It is by no means an invariable rule for the pleural surfaces to become adherent after injections have been given up. A patient not included in this series because not originally "blown up" by me consulted me five years ago. It was decided to attempt to give an injection of gas, though no refill had been given for just over two years. Rather to our surprise several hundred c.cm. of nitrogen were injected without difficulty. This patient's artificial pneumothorax was started abroad ten years ago. He has been earning his living for the last 8½ years. Again, No. 2 in this series once went about 15 months without a refill. He then met with a street accident, and a few weeks later, feeling uncomfortable, consulted me. I withdrew two and a half pints of deeply blood-stained fluid from his left chest and gave 1400 c.cm. of nitrogen. This was on April 24th, 1915. Since then he has continued to have occasional refills, because he felt better with them than during the many months of their abandonment. No. 3, too, once went two years between injections, but then he had an appreciable amount of fluid in the chest probably throughout this time. I shall make further reference to his case below.

(d) Every endeavour should be made to keep the pneumothorax cavity always a closed one. The only excuse for disregard of this rule seems to me to be the presence of secondary micro-organisms. In none of my cases has this happened. In passing I may mention that after careful search tubercle bacilli can be found in the purulent sediment from the fluid in many of these cases, I should think in about 75 per cent. of those with fluid. If once a tube is put into a tuberculous pyothorax cavity the chances are that a permanent sinus persists, requiring all the bother of dressings at least once a day, and bringing every likelihood of secondary infection, however much care is taken to avoid it. Case No. 1 suffered from at least one of these disabilities for several years, and they might in all probability have been avoided.

(e) Those cases which develop fluid at any time in the course of the treatment want watching with special care. It is amongst these patients that sequelæ requiring careful handling are particularly likely to occur. Under this head there are many important points, and they demand several paragraphs. But before dealing with them I will describe briefly some other peculiarities which are met in the later periods of the treatment, say after the second year. These can be classified under the heads of anatomical and physiological.

#### *Anatomical Considerations.*

It is surprising how small the visible deformity of the chest is in these cases. Little difference is observable on casual inspection, sometimes only very slight inclination to the "barrel-shaped" type of thorax, and to diminished movement on one side. Case No. 7 was passed for military service in August, 1914, only to have his schemes thwarted by his practitioner. But in 1915 he attested under the Derby scheme and was passed Class A.

None the less in many cases the ribs come very close together by degrees, and in most the inflated side of the thorax comes to be partly filled by much displaced mediastinal and subdiaphragmatic organs. On the left side, e.g., the heart may come to be quite 3 in. outside the nipple line and displaced upwards considerably as well, while the stomach comes quite high in the chest. My impression is that great displacements are commoner on the left side than on the right. Occasionally the mobility of the mediastinum and its contents, which varies in different individuals, is largely lost, and the heart becomes more or less anchored, displaced to the side with the compressed lung. But more frequently the displacement is altered in amount by a refill, even years after the starting of the pneumothorax. Seldom, however, does a refill really late in the course of the treatment lead to any considerable displacement of organs away from the side of the compressed lung.

Considerable thickening of the pleura, especially of the parietal pleura, occurs in a moderate number of patients by about the third year. The practised hand can usually feel and gauge this at the time when the needle is inserted for a refill, and the golden rule must be observed of never giving any gas unless the appropriate oscillations are present. My needle once got into the pericardium, and I found well-marked negative oscillations, but synchronous with the heart beat. Naturally I withdrew the needle, afterwards giving an ordinary refill. There was no untoward result.

On another occasion, on introducing the needle rather deeply to get through a thick pleura in a high position rather far back in the axilla of a patient who had been having refills for several years at three-monthly intervals, a soft sibilant squeak was audible at the very end of each inspiration referred to the chest by the patient. The pressure, as shown by the manometer, was much below zero, but the oscillations were not free. When I withdrew the needle a little the squeak stopped, the negative pressure became more pronounced, and the oscillations much greater. I concluded I had wounded the lung a trifle. An ordinary refill took place and no adverse symptom whatsoever arose.

#### *Physiological Peculiarities.*

Under the head of physiological peculiarities, belonging more especially to the late stages of the treatment, the low pressure readings are important, because before starting the refill of gas preparations for the low negative pressures must be made. These are, of course, prone to occur, especially when the intervals between refills are long—two or more months. Under such circumstances it is necessary to see that there are about 7 to 10 cm. or more for some cases of a negative pressure in the gas bottle just before starting, and to take care that the bulb at the top of the negative stem of the manometer is large enough—a state of affairs not, I fear, usually to be found in the apparatus hailing from the instrument-makers. As an illustration of such readings (when below -34 approximate only) I append the following from Case 14:—

Date of refill.	Starting pressures.	Amount of gas given.	Ending pressures.
25/8/17	-32 -12	800	-8 -2
29/11/17	-44 -20	925	-13 -6
22/2/18	-42 -22	800	-13 -6
27/4/18	-40 -16	930	-9 -5

Another fairly common physiological peculiarity worth mentioning, a fortunate one, but one which needs vigilance and guardianship, is the restoration to health of a person accustomed to severe illness, possibly for years. He may on this account be disinclined to continue the refills of gas for a reasonable time; and he may get careless about his health. Such carelessness, in accordance with all the general principles applicable to such a class of case, simply courts relapse, disaster, and death. In this connexion, too, those who absorb the gas comparatively quickly should be especially cautious to refer regularly, at not too long intervals, to their doctors, lest undesired premature re-expansion of the lung accompanied by adherence of its surface set in through leading too strenuous a life. At the other extreme amongst the restored is to be found occasionally one who is over-reluctant to abandon the refills, or to reduce their frequency to a sufficient moderation. But, as I have already indicated, this is an error on the safe side.

#### *The Presence of Fluid.*

Now with regard to cases in which fluid arises, and it must be borne in mind that this includes about 70 per cent. of all cases, the course of the treatment is nearly always rather more complicated than when there is no fluid. Not invariably though, because sometimes effusion occurs and then dries up again spontaneously without disturbing events materially. Even in such circumstances, however, there is commonly some interference with the spacing of the injections of gas. But this subject has been fairly adequately dealt with in the previous literature on artificial pneumothorax, so I will pass on to further points. In reference to the incidence of fluid in these cases (see above table) two points must be observed, viz: The + sign indicates the presence of fluid in the course of the treatment, extending over years in many cases, even when the amount of the fluid has been small, and its interference with the health and comfort of the patient inappreciable. Secondly, the + sign in the next column may mean only one aspiration or several.

Occasionally it may happen that it is a little difficult to distinguish between fluid in the stomach and in the chest, more particularly on the left side, of course. It must be remembered that the stomach gets into a high position, and that some patients are apt to anticipate a pleural splash. I



have had three or four doctors amongst these patients, and one of these even raised the question, quite justifiably, as to whether a curious little flapping splash was not due to pericardial fluid. The occurrence of this splash only bothered the patient in one position and it synchronised with the heart beat. But we were able by careful examination, though not quite easily, to localise the fluid to a displaced and slightly dilated stomach. When fluid was present in this organ and a certain position was taken up the heart jogged it and a slight splash reverberated through there being a sounding-box, so to speak, just above it in the shape of a small, old-established pneumothorax cavity. It is usually quite easy to localise the fluid by means of percussion, x ray examination, to a small extent by the sensations of the patient, and especially by noticing the peculiarly metallic, ringing nature of the splash when the fluid is within the chest as compared with its duller resonance to the ear, applied by stethoscope or held close to the patient when shaken, if the fluid is only a stomach splash.

*Cases Illustrating Points in Relation to Presence of Fluid.*

A partial account of events in the cases of two patients (Nos. 3 and 12) will best serve to bring out certain other difficulties and pitfalls connected with the presence of fluid during the late stages of the treatment.

First, a few facts regarding fluid withdrawals in Case No. 3. But these do not include all such facts about him, as during the course of his 7½ years of life after the first "blowing up" he consulted many physicians at home and abroad, and on one or two occasions other than those noted here I believe he had fluid withdrawn and replaced by gas.

Date.	Pressures.		Fluid withdrawn.	Gas given.	Ending pressures.
	At starting.	During operation.			
27.3.12	+ 3 + 6	...	c.cm. 400	...	...
3.4.12	...	...	2420	2600	+18 +23
18.5.12	+10 +15	...	475	800	+ 6 +12
12.9.12	...	-16 -20	3650	1200	- 4 + 1
4.12.12	0 + 6	...	...	125	+ 8 +13
5.12.12	...	-30 -22"	...	...	...
8.12.12	...	...	2150	1900	+ 8 +16
3.5.17	...	-12†	550	350	+ 8 +12
6.6.17	+ 8 +12	...	...	100	+19 +25
8.6.17	...	...	550‡	...	...

\* After ½ pint of fluid had been withdrawn.

† After 550 c.cm. of fluid had been withdrawn.

‡ After much pus had been coughed up.

I should mention incidentally that this patient did not lead a very invalid life most of the 7½ years. He held a prominent place both in public life and in the business world. Though in 1912 he returned for a time to his public duties he wisely gave these up after a few months. He maintained the supervision of his big business and of his private concerns fairly intimately until about 14 months before his death, though taking a few months' holiday every now and then, and generally spending such periods in a sanatorium in England or abroad. I believe his death was accelerated by the complications which arose in connexion with the fluid in the right chest. During 1915 and 1916, when on the continent, he consulted one or two prominent foreign specialists—i.e., Professor Saugmann—at whose sanatorium he stayed for a short time, and Dr. L. Spengler. They advised leaving the fluid alone as it appeared to have become limited, stationary in amount, and turbid in consistence. When I saw the patient again after a long interval at the end of December, 1916, I concurred in this view, though finding considerable dullness, &c. I ascribed some of the dullness to thickened pleura. The patient stopped rather over two months in the Mundesley Sanatorium at this juncture, and left in a fairly good state. About two months later he became feverish and ill, and on readmission on May 25th, 1917, his state was unsatisfactory. The upper half of the right lung presented signs at first taken by myself and colleague for massive consolidation. Over the front of the fifth rib anteriorly was a swelling mistaken at first for a cold abscess connected with tuberculous disease of the rib. Sub-

sequently the true state of affairs, a pyothorax pointing anteriorly, was diagnosed, but not until early June. The withdrawal of 550 c.cm. of fluid on May 31st had been deceptive. Dr. M. F. Squire, my assistant, and I thought we had got most of the semi-purulent fluid out; but we had not, evidently being balked by its flakiness, though we did use a fairly large aspirating needle. Again, we probably made a mistake in raising the pressures to a maximum of + 25 cm. of water on June 6th. Unfortunately, our plans for a further and, if possible, a complete aspiration of fluid, were anticipated by an hour by the bursting of the pyothorax internally through the lung. The withdrawal after this of what fluid we could get out by aspiration, in the hope of the hole in the lung healing, was of no avail. Later, on account of the weakening effects of distressing cough and copious purulent expectoration, it seemed best to introduce a tube. This was accordingly done on August 7th, 1917, by Mr. Lawrie McGavin under copious injection of a local anæsthetic. The general condition of the patient, and the, by this time, moderate tuberculous infiltration of the left lung, put a general anæsthetic out of court. The operation was well stood and did much good, and the patient was able to get about a little for a good many months.

The history of Case 12 is very similar to the case just described. She first developed fluid one year after the initial injection (given Nov. 17th, 1913). It was first tapped six months later—namely, on June 5th, 1914. After about three tapplings during the next nine months it had become turbid and seemed to show no great inclination to reaccumulate. The ribs got very close together. Restoration of health, though gratifying for a time, never became complete, and about May, 1915, the disease in the sounder left lung had advanced a good deal. Difficulties arose in maintaining the pneumothorax and in regard to the fluid. These difficulties were due to incomplete collapse and re-expansion of the lung with formation of adhesions at the top of the chest posteriorly, to the turbidity of the fluid and the purulent flakes in it, and to the great proximity of the ribs in the only region where it was convenient and suitable to try to inject gas. These difficulties, combined with the other circumstances of the case at this juncture, decided Dr. C. Lillingston, under whose care the patient then was, in consultation with myself, to abandon further attempts at injecting gas or withdrawing fluid. This decision was arrived at on June 1st, 1915. Three months later the patient had a sudden severe fit of coughing and every indication that the fluid in the pleural cavity had burst through into the lung. She died a few days later. In the middle of the previous April I had made the following note in the form of a question:—

"How far is each of the following factors responsible for the present unsatisfactory condition: (1) Activity of disease in the sounder lung; (2) activity of disease in uncompressed part of the right lung; and (3) pleurisy and fluid on compressed side?" I have no doubt now that I underestimated the third factor, and that had we made a bold and successful effort to withdraw fluid again and replace by gas the condition of the patient would have been bettered and in all probability her life prolonged.

*Further Points in Regard to Fluid.*

Besides the lessons already indicated in the course of describing the events which occurred to these two patients one or two further morals can be drawn from experience with these and other patients. Fluid generally, especially in the early stages of the treatment, tends to keep intrapleural pressures up. It is more likely to be followed by thickened pleura and adhesions, possibly sudden ones, than when there is no fluid. Hence, it is customary to keep pressures rather higher in such cases than in those not developing fluid, particularly because a moderate degree of pressure is thought to keep fluid from accumulating too readily. It is a good rule not to interfere with fluid unless obliged to through the chest becoming very full or for some similar reason. But both these rules can be followed too closely in the late stages of the treatment. In such stages—e.g., during the fourth year after the initial induction—in cases of fluid where an effective pneumothorax has been produced, it is as well sometimes not to be too readily deterred from continuing the treatment by such difficulties as fluid getting into the gas needle or pus flakes into the fluid needle. The remedy for each of these troubles is obvious—namely, withdrawal of fluid and reduction of



pleural pressures thereby before attempting to give a refill of gas in the one case, and the use of a larger bored needle or trocar and cannula for aspiration in the other. In connexion, however, with the latter means of overcoming difficulty in withdrawal of fluid, the possibility of leaving a sinus must be mentioned: to be avoided by preventing too big an accumulation of fluid and too high a pressure, and by appropriate manipulation of the skin and of the insertion and extraction of the instrument. Local anæsthesia is helpful and generally advisable for fluid aspiration. With its aid chest punctures need not be too charily undertaken.

One further point in connexion with fluid is illustrated by reference to Case 14, some of whose pressure readings at refills in the fourth year of treatment are given above as an example of low pressures. In this case no fluid arose until April, 1917—i.e., 39 months from the commencement of treatment—by which time the intervals between refills extended to seven weeks, and minimum pressures of  $-18$  and  $-24$  were found just before beginning an injection. At no time since then has fluid had to be withdrawn, nor has it become in any way more than a trifling nuisance. It seems obvious that in this case fluid has arisen in response to nature's abhorrence of a vacuum. Since the lung in his case, as sometimes happens, shows little inclination to re-expand, the obvious course of treatment is to give an occasional dose of gas to meet nature's demands in a more comfortable, controllable, safe, and convenient manner than is done by the effusion of fluid.

#### *Indications for Cessation of Treatment: Spacing of Doses.*

This leads me to one or two final matters for consideration, the most important of which is: What are the indications for stopping the treatment? If I myself had to have resort to an artificial pneumothorax I should like to have it kept up for at least three years, provided it was an effective one and this was possible. And under the three following circumstances I advise continuing with an occasional injection for at least  $4\frac{1}{2}$  years—namely (1) if the patient is over 33 years and has lost the resilience and recuperative powers of youth; (2) if the compressed lung was a fairly useless one before the initial injection, and if, in addition, it was producing chronic poisoning; and (3) if things are going well during the maintenance of the compression.

Compression may have to be maintained indefinitely—e.g., in Cases 2, 8, 10, and 14—either because the patient's state is more comfortable and he feels surer of himself with periodic refills, or because the compressed lung does not re-expand. On the other hand, compression with an effective pneumothorax may have to be abandoned prematurely because of activity of disease in the sounder lung or because of re-expansion of the compressed lung and adhesions. But in the first case most probably this is due to an error in the choice of the patient for this method of treatment, and in the second case most probably carelessness in not watching the patient and giving refills sufficiently often is the cause of re-expansion and adhesions.

Occasionally the treatment has to be abandoned after a long time, because a day comes when it is found very difficult, or even impossible, to continue it. In giving details above about Case 12 I have indicated the sort of combination of circumstance which may lead to this, though admitting that in this particular case we were too easily deterred from persevering by the difficulties encountered. But more usually, if the pneumothorax cavity cannot be found, it is in the case of a patient in good health who has been having treatment for four or five years; under such circumstances it does not matter much. It is better, however, to choose the time of leaving off injections voluntarily by persuading the patient not to let too long elapse before he sees his doctor about his condition and about a possible refill.

No hard-and-fast rules can be laid down respecting the spacing of doses in the late stages of the treatment, nor respecting the pressures. Compare, for example, Case 10 with Case 8. No. 10, whose present satisfactory condition I have already referred to, does not like to let his pressures go below a minimum of  $-14$  or thereabouts, nor to prolong the interval appreciably beyond five weeks. Whereas No. 8, starting a pneumothorax only about seven months earlier—namely, in March, 1913—is quite happy to allow four months between refills; his pressures do not fall much below No. 10's, however, and probably this slower absorption accounts for the difference between them. Both lead quite active and more or less normal lives.

#### *Causes of Death.*

One or two more notes giving a few further details of interest regarding the patients of this series seem desirable. Most of those who died succumbed to the advance of the pulmonary tuberculosis. In Case 11 death took place six hours after a refill, and may possibly afford an exception to the rule holding good throughout this series, comprising many hundreds of injections—namely, that no unfortunate effect ever arises from injecting gas into the thorax when the necessary simple precautions are taken. This patient felt perfectly all right for two hours after his refill. He dressed and came down to dinner, when he was seized with sudden dyspnoea. This was not relieved by letting gas out again, a procedure which revealed the fact that no hole in the compressed lung had developed. Suspicions fell on a spontaneous pneumothorax on the opposite side of the chest, the occurrence of which accident accounted for death in Case 19. Unfortunately, no necropsy was possible. In Case 13 the condition was of South African mining origin, and this probably augmented its hopelessness. No. 15 died of tuberculous meningitis. No. 9 nearly died some months after the induction of the artificial pneumothorax, but eventually his health became well restored. Once he got for a few days disconcerting mediastinal interstitial emphysema—the only instance I have experienced of this complication.

In conclusion, I may mention that the following physicians, amongst others, have aided me with their advice or have participated in the treatment at some juncture or other in the course of events in one or more of the cases in this series, and I herewith acknowledge their help with much gratitude: A. Latham, T. D. Lister, Hector Mackenzie, J. J. Perkins, A. G. Phear, Clive Riviere, Jane Walker, R. A. Young, F. W. Burton-Fanning, C. Lillingston, John Hay, A. C. Inman, A. de W. Snowden, A. Lewthwaite, M. F. Squire, L. Whittaker Sharp, Esther Carling, E. G. Colville, C. V. Knight, H. H. Brown, and J. D. McKelvie.

## OUTBREAKS OF CEREBRO-SPINAL FEVER IN RELATION TO ATMOSPHERIC HUMIDITY:

INFLUENCE OF THE HUMIDITY OF OVERCROWDING.

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CEREBRO-SPINAL fever, as a disease, being supposed to be comparatively rare in Egypt, some investigation of the question appeared desirable in view of obtaining if confirmed helpful sidelights on prevention for our own more temperate climate.

Moreover, having as the result of previous work<sup>1</sup> in the Dorset District (England) developed the hypothesis that: atmospheric humidity—more especially indoor humidity,<sup>2</sup> operating through overcrowding and insufficient ventilation—was a climatic factor which favoured outbreaks of the disease, when the meningococcus was about, it became important to test this hypothesis for a country like Egypt, where at times a very moist atmosphere prevails.<sup>3</sup> If the observation in regard to comparative rarity of the disease in that country were exact, and our humidity hypothesis otherwise stood unassailed, the explanation could practically a priori only be: comparative absence of the meningococcus in Egypt. And that explanation appeared the more probable in view of the abundant sunshine of Egypt: it being well known that "carrier rates" in England are lowest during summer months, when sunshine is at its maximum.

#### *Scope of Investigation.*

To test these various ideas was the principal object of the work with which this paper deals, and for the purpose of

<sup>1</sup> Arthur Compton: Jour. R.A.M.C., November, 1915, 546-570; Comptes rendus, 1915, cli., 472; THE LANCET, 1916, i., 255.

<sup>2</sup> Arthur Compton: Third Report to the War Office on C.S.F. in the Dorset District, Nov. 1st, 1917 (not yet published).

<sup>3</sup> "Alexandria ..... is quite unsuited as a residence for invalids, its climate being damp and windy; and under these circumstances alternations of heat and cold are extremely trying." Huggard: A Handbook of Climatic Treatment, London, 1906, 189.



the investigation use has been made of a small outbreak of the disease, some 10 cases in all, which occurred in the Alexandria District, E.E.F., during February and March, 1918, just prior to my arrival in Egypt.

In the necessarily brief investigation which it was possible for me to make, for I was limited by military necessity to a three weeks' time-limit, four main points were set out to be investigated: (1) To what extent the Alexandria District was affected by the disease (Studies in Statistics); (2) the relation of the cases in the above-mentioned outbreak to atmospheric humidity (Studies in Outdoor Humidity); (3) to what degree humidity was high indoors—evidence of "overcrowding" and insufficient ventilation—in the sleeping quarters where the cases had occurred (Studies in Ventilation); (4) to what extent the meningococcus was about (Studies in "Carrier rates").

For the investigation I am indebted to Lieutenant-Colonel M. H. Gordon, R.A.M.C., and Major T. G. M. Hine, R.A.M.C., for a small supply of Central Laboratory medium (pea-flour-agar and serum), agglutinating sera of the four defined epidemiological types of meningococci, and West's naso-pharyngeal swabs. In all respects, therefore, the work was comparable, in so far as medium and technique<sup>4</sup> were concerned, with previous work in England.

#### Statistical Study.

Table I. gives the number of cases (military) of the disease occurring in the Alexandria District for the three years 1915-16, 1916-17, and 1917-18, as compiled from the official "weekly returns" in the A.D.M.S. Office, Alexandria; and for comparison I have given the corresponding numbers dealt with by the Dorset District Military Bacteriological Laboratory during the same periods, the military populations of both areas being approximately the same.

A glance at Table I. reveals that the disease has been rarer in the Alexandria District (Egypt) in the proportion of  $40/117=1/2.9=1/3$  approx., as compared with the Dorset District (England), for the three years in question. The

TABLE I.—Cases of Cerebro-spinal Fever.

Year.	Alexandria District (Egypt).	Dorset District (England).
July, 1915-June, 1916 ... ..	22 cases.	55 cases.
July, 1916-June, 1917 ... ..	3 "	49 "
July, 1917-June, 1918 ... ..	15 "	13 "
—	40 "	117 "

observation, therefore, in regard to comparative rarity of the disease in Egypt would, from this analysis, appear to be more or less borne out. But, although this is so, it is evident that Egypt is far from being exempt from the disease.

When the Alexandria District numbers are rearranged in terms of station (camps, hospitals, &c.) the above table becomes instructive. This has been done in Table II.

TABLE II.—Incidence at Various Stations.

Year.	Sidi Bishr.	Mex.	Metras.	Mustapha.	Aboukir.	"A" Camp.	Transports and hospital ships.	Hospitals.
1915-1916 ...	3	9	1	—	—	—	4	2
1916-1917 ...	1	—	1	1	—	—	—	—
1917-1918 ...	—	10	—	1	1	2	—	1

Table II. shows that Mex Camp is the centre in the area which has given rise to most cases of the disease, except that in 1916-17 it entirely escaped. But, as will already

have been noticed in Table I., during that year only three cases in all are recorded as having occurred in the area. Whether it may afford an explanation or not, it is interesting to note that during eight weeks (July 2nd till August 28th) Mex Camp was quite unoccupied. This camp is ordinarily occupied by British West India troops, among whom during February and March, 1918, the 10 cases of 1917-1918 (Table II.) occurred. It is with these 10 cases that this investigation primarily deals.

#### Studies in Out-door Humidity.

Of the 10 Mex Camp cases of February and March, 1918, Fig. 1 gives their approximate distribution on an "out-of-doors" 8 A.M. Alexandria humidity chart (from the meteorological readings of Mr. H. Sherif, Kom-el-Nadura Observatory).

As it has not been possible to ascertain the exact date of onset of the disease for these cases (see Appendix), this has had to be allowed for. The position of each name on the chart (Fig. 1) is, therefore, that of the day before the date given in official records when the patient was admitted to

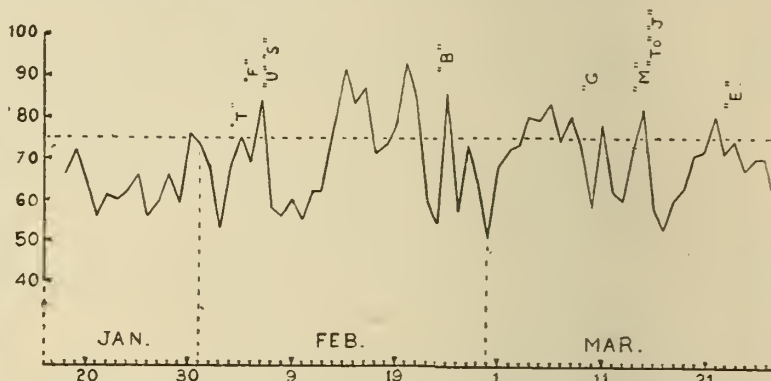


FIG. 1.—Distribution of the 10 Mex Camp cases of cerebro-spinal fever shown on an out-of-doors percentage humidity chart.

hospital. Considering an out-of-doors relative humidity of over 75 per cent. as constituting a moist atmosphere, it will be seen that the cases practically all occur in connexion with periods when such a standard out-of-doors was exceeded. What it was indoors in the men's tents, where presumably they took ill—which is what we should like to know—is not revealed by Fig. 1, but some idea of what it probably was, will appear presently, when Fig. 2 comes to be studied. Suffice it in passing, then, to note that this small outbreak at Mex Camp, Alexandria, in no way conflicts with, but, on the contrary, fully bears out, our hypothesis connecting the disease with a high degree of atmospheric humidity.

#### Indoor Humidity and Ventilation Studies.

Having previously shown that indoor relative humidity readings taken at "lights out" and at "réveillé," compared with outdoor morning readings, may be utilised as a simple method<sup>2</sup>—which, so far as I am aware, is original—to gauge the efficiency, or otherwise, of ventilation in sleeping-quarters, from the point of view of overcrowding, I have had such readings taken from a particular tent at Mex Camp pointed out to me as where several of the recent cases had taken ill. As suitable controls, corresponding readings were taken simultaneously in a tent and in a hut at No. 21 General Hospital, Alexandria.

That overcrowding and insufficient ventilation, as evidenced by their effects on indoor humidity, may be the better appreciated in what follows, the following additional details in regard to these three sites where hygrometers were installed will be of interest:—

(1) Tent Mex Camp. "Bell" model, of approximately 600 c.ft. capacity in D Co. "lines," 5 men of the British West India Regiment occupying the tent during the investigation.

(2) Tent No. 21 General Hospital. "Bell" model, of the same capacity, occupied during the investigation by 5 R.A.M.C. orderlies, but presumably better ventilated in that the flaps of the tent were always kept well open at night.

<sup>4</sup> See War Office Memorandum on Cerebro spinal Fever. 24 Gen. No. 3595 A.M.D. 2.



(3) Hut No. 21 General Hospital. Hut No. 9 officers' quarters, of approximately 2000 c.ft. capacity (22 x 10 x 9), occupied by one person, the hut having two windows facing the sea practically always open.

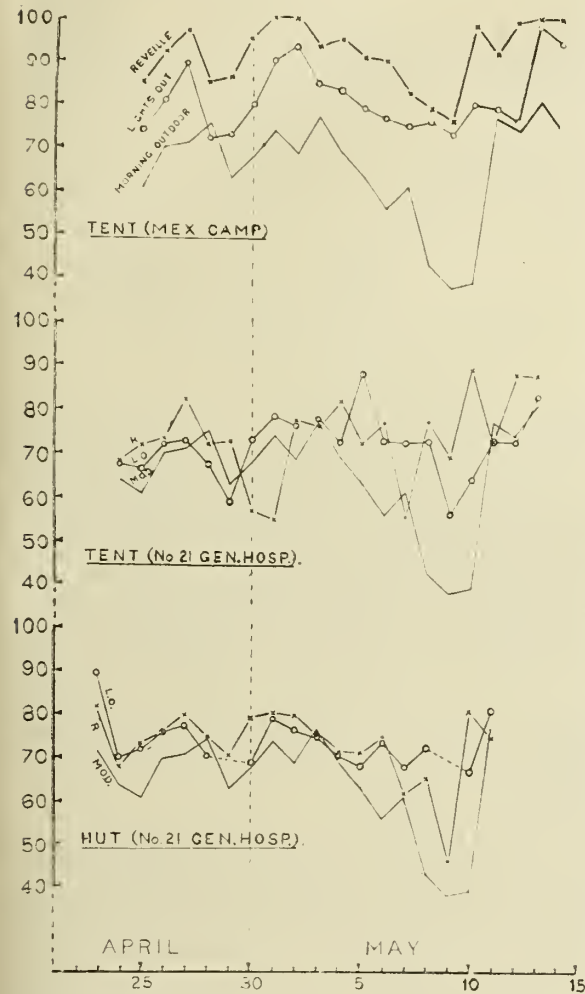


Fig. 2.—Giving a graphic representation of percentage relative humidity in three neighbouring quarters, for the same period.

Fig. 2 gives the graphical representations of the readings taken in the quarters (1), (2), and (3) respectively. To estimate the efficiency, or otherwise, of ventilation from such graphs, the following differential table (No. III.), which is a résumé of data established by us in a previous work,<sup>2</sup> will be required for reference.

TABLE III.

GOOD VENTILATION.		BAD VENTILATION.	
1. Relative Positions of the Three Curves.			
"Morning out-of-doors" highest, "réveillé" intermediate, "lights out" lowest.		"Réveillé" highest, "lights out" intermediate, "morning out-of-doors" lowest.	
2. Displacement Between the "Réveillé" and "Lights Out" Curves.			
The displacement is usually small, the two curves being, as it were, packed together throughout their course.		The two curves are more or less widely separated.	
3. Relation of the "Réveillé" Curve to the Other Two.			
Its position being intermediate to the other two it generally follows a course related to them more or less mathematically as a mean to two extremes.		Rising to a higher level than the other two, being often situated in the region of complete saturation, it follows a more or less independent course.	
4. Relation of the "Morning Out-of-doors" Curve to the Other Two.			
In good ventilation the other two curves being relatively lower, while the "morning out-of-doors" curve is in a sense constant, causes the latter curve to appear comparatively higher: as, indeed, it usually is actually.		In bad ventilation the other two curves being relatively higher causes the level of the "morning out-of-doors" curve to appear comparatively much lower.	

Judged by the criteria of Table III., it will be seen that the curves appertaining to the hut (No. 21 General Hospital) portray a better ventilation than those of the tent (No. 21 General Hospital), and these latter a better ventilation than those of the tent (Mex Camp). In other words, the ventilation in the B.W.I. tent at Mex Camp is shown to be worse than that of the R.A.M.C. orderlies' tent at the No. 21 General Hospital, and that of the officers' hut at No. 21 General Hospital best of all. The importance of this finding will be evident. It points, I think, to insufficiency of ventilation, to deal with the excessive indoor humidity consecutive on the overcrowding present in the Mex tent, as responsible for the outbreak in that camp of February and March, 1918, the meningococcus being about. Indeed, as the "réveillé" curve for Mex Camp (see top diagram, Fig. 2) indicates, as a rule, a high morning humidity bordering on saturation—between 80 and 100 per cent.—it will be obvious, on our humidity hypothesis, that a "carrier" sleeping in such a tent would run a greater risk of developing the disease than if he slept in a tent of the No. 21 General Hospital standard of ventilation and humidity; for, theoretically, as has been emphasised by me elsewhere,<sup>5</sup> good ventilation, by counter-acting the effects of indoor humidity, means diminished risk of the "carrier" infecting his comrades and of the "carrier" himself becoming a case.

Studies in "Carrier Rates."<sup>6</sup>

The object in view being to determine to what extent the meningococcus was about, as many men were swabbed in the district as it was possible to handle with the small supply of special medium at disposal and the limited time available. Some 310 non-contacts (from Mex and Mustapha Camps, and Nos. 19 and 21 General Hospitals) were thus swabbed; also, some 24 direct and indirect "contacts" of an actual case, Pte. G. (see Appendix), readmitted to hospital as a case of relapse on April 25th at the time this investigation was in progress.

From two lumbar punctures of April 25th and 26th respectively, a Type III. (Gordon) meningococcus was grown from the cerebro-spinal fluid of the case (G.) showing perfect agglutination up to a serum dilution of 1:400 after 24 hours at 55° C., being quite untouched by Types I., II., and IV. sera.

Contacts.—Of the above case (G.) there were 8 contacts who had inhabited the same marquee with him during two days (April 23rd to 25th) at Mustapha Camp. These were swabbed on April 26th, and all gave negative results. In addition, there were at Mex Camp 5 men who were doubtful contacts, in the sense that they had been in contact with G. some time previously, and 11 other men who had been in contact with these 5. The 16 were swabbed on April 27th; 15 were negative, and 1 gave a meningococcus-like organism, which subsequently by the agglutination test proved to be non-agglutinable and was reported as negative.

It is not without interest that one of the five Mustapha contacts, Pte. B., was a recovered case, having had the disease in February, 1918 (see Appendix).

TABLE IV.

Date.	Station.	No. swabbed.	(A)	(B)
25.4.18	Mex.	50	5	2
27.4.18	"	31	2	0
30.4.18	Mustapha.	50	4	0
2.5.18	"	52	2	1
5.5.18	No. 21 Gen. Hosp., Alex.	55	3	0
7.5.18	No. 19 .. ..	12	0	0
8.5.18	No. 21 .. ..	60	3	0
Totals .. ..		310	19	3

(A) Number giving meningococcus-like organisms (cult. app. and micros. app.).

(B) Number giving epidemiological meningococci (Gordon)—i.e., meningococcus-like organisms agglutinated by one of the four types of antisera.

<sup>5</sup> Arthur Compton: Comptes rendus, 1917, clxv., 75; Ann. Inst. Past., 1918, xxxii., 130.

<sup>6</sup> I desire here to thank Staff-Sergeant J.W.J. Leighton, B.Sc. Lond., R.A.M.C. (T.), for his valuable assistance in this work.



*Non-contacts.*—Table IV. summarises the findings with regard to the naso-pharyngeal swabs taken from non-contacts at various centres in the district. The 3 "agglutinable" meningococci found all belonged to Type II. strain; and while 1 agglutinated up to a dilution of 1:400, the remaining 2 only agglutinated up to a dilution of 1:100. Of the 19 meningococcus-like organisms met with in the naso-pharynx during the course of the investigation, the fermentation reactions of 10 of them which survived subculture were determined; as also those of the meningococcus G. isolated from the cerebro-spinal fluid. Table V. gives a summary of these fermentation tests:—

TABLE V.

Lab. No.	If agglutinable. Type.	Fermentation reactions.			Lab. No.	If agglutinable. Type.	Fermentation reactions.		
		Gluc.	Malt.	Sacc.			Gluc.	Malt.	Sacc.
62	—	+	+	—	238	—	+	+	—
89	—	+	+	—	316	—	+	+	—
107	—	+	+	—	326	—	+	+	—
116	—	+	+	—	328	—	+	+	—
140	II.	+	+	—	G.	III.	+	+	—
158	—	+	+	—					

Gluc., glucose. Malt., maltose. Sacc., saccharose.

As will be seen, both the epidemiological ("agglutinable") and the other ("non-agglutinable") meningococci found during the course of the investigation all give the same fermentation reactions. This corresponds with previous experience.

As a practical Army measure, however, only "agglutinable" meningococci are recognised as constituting true "carriers." This is based on the teaching of the Central Cerebro-Spinal Fever Laboratory, London, which holds that only men harbouring meningococci agglutinating with standard type sera up to a dilution of at least 1:200, after 24 hours at 55°C., as against controls, are to be considered as constituting an immediate source of danger. Meningococci from cerebro-spinal fluids show agglutination up to this titre and, as a rule, beyond.

In the present investigation, in order to standardise results, complete macroscopic agglutination, after 24 hours at 55°C., in one or more of the dilutions usually put up 1:100, 1:200, and 1:400, as against the normal serum control, has been recognised as constituting a positive result; this standard having been adopted by me in previous work.

It will thus be seen from the summary of results given in Table IV. that "sample swabbing" in the Alexandria District (Egypt) has only yielded 3 "carriers" among 310 non-contacts swabbed—i.e., a "carrier rate" of only 1 per cent. The standard of the Central Cerebro-Spinal Fever Laboratory, London, being adopted, this "carrier rate" would be lower still.

#### General Conclusions.

The foregoing studies of cerebro-spinal meningitis in Egypt add little that is new to our knowledge of the disease and its prevention. But, they afford a striking confirmation of the hypothesis previously advanced by us associating outbreaks with a high degree of atmospheric humidity when the meningococcus is about.

A "carrier rate" of only 1 per cent. among "non-contacts" taken at random in the Alexandria District (Egypt), and constituting therefore a fairly good "sample"—as against a rate 10 or even 20 times as high in England under similar circumstances, i.e., working with the same medium and technique—suggests an explanation of the comparative immunity of Egypt from the disease. With the meningococcus so little about, atmospheric humidity in Egypt gets little chance to precipitate outbreaks.

We have indicated by ventilation studies, based on the hygrometric state of the atmosphere met with indoors in occupied quarters during sleeping hours, how the greatest attention requires to be paid to ventilation as a corrective to overcrowding, in view of keeping the indoor humidity as low as possible,—considering the part attributed by us to atmospheric humidity in the aetiology of cerebro-spinal fever.

#### APPENDIX.

*Cases of Cerebro-spinal Fever at Mex Camp during February and March, 1918.*

Name and Reg. No.	Regiment.	Date of admission to hospital.	Name and Reg. No.	Regiment.	Date of admission to hospital.
T., 68687	5th B.W.I.	5.2.18	G., 9054	5th B.W.I.	11.3.18
F., 6791	" "	6.2.18	M., 6485	" "	16.3.18
U., 6505	" "	8.2.18	To., 6714	" "	17.3.18
S., 6548	2nd W.I.R. (att. B.W.I.).	8.2.18	J., 6954	" "	17.3.18
B., 6771	5th B.W.I.	25.2.18	E., 6788	" "	25.3.18

## MALARIA FROM THE SURGEON'S STANDPOINT.<sup>1</sup>

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THE only type of malaria to be considered from the surgeon's standpoint is the subtertian or malignant tertian. In the quartan type the *Plasmodium malariae* goes through the entire process of reproduction in the circulating blood, and does not especially accumulate in any one organ or produce special effects. The tertian type, produced by the *Plasmodium vivax*, also goes through its life-cycle in the blood, and although the tertian sporulating forms are found in the internal organs, such as the spleen, they do not tend to accumulate in these organs or produce special effects. The third type, the subtertian or malignant tertian, caused by the æstivo-autumnal parasite, sporulates almost entirely in the internal organs, attacking any organ and producing symptoms peculiar to the disease of that organ: on the heart causing endocarditis or myocarditis, on the lung a pneumonia, on the spleen a splenitis and perisplenitis, on the pancreas an acute hæmorrhagic pancreatitis, on the liver a hepatitis, &c. Castellani and Chalmers, in writing of subtertian malaria, say:—

"These parasites seem to affect the red corpuscles so profoundly that they are liable to adhere to the walls of the capillaries, in which the parasite sporulates: hence it may produce severe local symptoms, due to the mechanical blocking of capillaries and the intense local action of the toxin; thus it is associated with what is called the malignant fevers—i.e., the fevers which produce local effects on one or more organs."<sup>2</sup>

In two and a half years on the island with the British Expeditionary Forces the number of cases I have seen in which malaria has proved to be the direct cause of surgical ailments referable to one organ have been comparatively small and with a very small mortality. Malaria as a complication in surgical cases and malaria simulating certain diseases are far more common, especially the first, where all the symptoms may indicate some other illness, for instance, after a gunshot wound of the head (and this is frequent) the symptoms may all point to a cerebral abscess, but under quinine therapy the urgent symptoms disappear and recovery is uninterrupted.

The classification is only made for the purpose of descriptive surgical pathology. Clinically, it is all malaria, and the treatment spells quinine and quinine only. In some of the sequelæ of malaria surgery may have to be resorted to, as in cases of ruptured spleen or the splenomegaly of chronic malaria, drainage of the abdomen in malarial cirrhosis, &c. Decapsulation of the kidney has also been done for suppression of urine in cases of blackwater fever on the island.

#### Reports and Discussion of Cases.

A number of cases were recorded, but, space does not permit of all being printed.

CASE 2. *Acute hæmorrhagic pancreatitis due to malaria.*—Patient, aged 26, invalided for malaria and admitted with this complaint. He was in hospital about six weeks; he had three slight attacks of malaria (subtertian), rings and crescents found in blood. The clinical findings were nil, except a palpable spleen, temperature in each attack not

<sup>1</sup> Paper read before the Conference of Medical Officers, Malta.

<sup>2</sup> Text-book on Tropical Medicine, by Castellani and Chalmers.



higher than 102 F.; patient recovered rapidly from attacks. General health excellent; sent to convalescent camp and a few weeks later to active service camp. After about a week at the latter he was readmitted as a surgical case. While on duty, he was suddenly seized with a severe pain in upper abdomen; carried to his tent. He was sent to hospital immediately.

On admission he was very collapsed, sweating profusely; pulse 120, weak and intermittent; abdomen distended and rigid, with marked resistance in epigastrium; drawn anxious look; temperature 98°; a few hours later 101°; appeared very ill. At laparotomy a few hours later there was some free bloody fluid in the abdomen; pancreas was enlarged and congested; small petechial hæmorrhages and fat-necrosis in surrounding tissues and mesentery. Appendix normal; liver and spleen slightly enlarged and congested. The abdomen was closed without drainage; intramuscular quinine gr. 10. During the first 24 hours after operation he collapsed twice; stimulants, artificial respiration, and oxygen. Next day he was much better, but sweating profusely. After this, under quinine, recovery was rapid and uninterrupted. He was allowed up at end of second week. Temperature became normal on the third day and remained so as long as patient was in hospital.

I have seen one other case on the island in which the diagnosis was made of acute pancreatitis, which cleared up rapidly under quinine. Surgical interference is contra-indicated, as the pancreatitis is due to a capillary thrombosis formed by the massing of the parasites and pigment.

These malarial abdominal infections are always due to the subtertian parasites, and if the parasites attack one particular organ there will be symptoms referable to that disease. In this case the pancreas was the principal organ to be attacked, and the symptoms were those of an acute pancreatitis from other causes. This explains the rapid recovery of these patients under quinine therapy if promptly and efficiently given, otherwise they rapidly die, or the organ becomes so damaged that it is unable to perform its function.

*Pseudo-appendicitis.*—I have seen many of these cases on the island due to malaria, which cleared up rapidly under intramuscular quinine. If the diagnosis is made surgical interference is not necessary. The cause of the pain on the right side is, I believe, a referred pain due to an acute splenitis, which, in my own observations, has always been present, although in some cases it may be due to the localisation of the parasite in the intestinal mucosa.

I have had many cases of appendicitis, both catarrhal and suppurative, in malarial patients and the only point in the differential diagnosis, as far as I have been able to observe, is the white cell count. In both classes of cases all Murphy's symptom-complex are present except leucocytosis—i.e., pain, vomiting, a little temperature, and rigidity of the right rectus. In pseudo-appendicitis or pseudo-cholecystitis due to malaria one finds a marked leucopenia, with a decrease in the polymorphs and a high mononuclear count. In true cases of appendicitis complicated with malaria one finds a relative leucocytosis, with an increase in the polymorphs. The non-discovery of the malarial parasites in the peripheral blood is of no account in the diagnosis.

*Malarial attack following operation.*—The following explains why an operation brings on an attack, and often of a very severe nature, and nearly always atypical in persons who have never previously suffered from one.

"It is a well-known fact that the plasmodium can exist in the spleen of persons who show no signs of fever or malaria cachexia, and go through their life-cycle there, but it would appear that they are restrained from invading the circulation by the action of some antitoxin and, therefore, do not increase to such numbers as to cause toxic symptoms. Thus it is obvious if the restraining influences which conduce to the condition of latent malaria are removed, an attack of malaria will follow."<sup>3</sup>

It is practically always the condition of latent malaria in patients which is the most annoying, though rarely fatal, complication in surgical cases. These patients give no history of having had malaria, and usually a history of perfect health up to the time they were wounded. The surgeon operates quite confidently that everything will be all right, then 24 to 48 hours after operation an impending attack of malaria is often foreshadowed by these symptoms, and I have noticed this especially in bone and joint cases. The patient complains of severe pain in the wound; the

latter looks unhealthy; joints often become very swollen and exquisitely painful, the least movement causing much pain. The temperature at this time is subnormal, but in a few hours rises to 105° or 106°, without a rigor. If I happen to see the patient at this stage, I give immediately quinine gr. 15, intramuscularly.

I have had a number of these cases under my care, and have found that the impending attack cannot be prevented by giving quinine at this stage, although it may be considerably shortened, and by giving another dose, also intramuscularly, the next day a second attack is rare.

Delayed wound healing is also a feature in this type of case. Wounds look unhealthy, granulate over, only to break down again in a few days. Some of them resemble syphilitic sores, and often it is only with a negative Wassermann and response to quinine therapy one becomes convinced that malaria is the ætiological factor.

I have never seen these conditions in known treated cases of malaria. As a prophylaxis against post-operative attacks of malaria I have found 15 gr. of quinine intramuscularly the night before operation extremely valuable.

*CASE 7. Camouflaged malaria.*—Patient aged 21. Service 3½ years. Had been in Salonika one year. Admitted to St. Elmo Hospital on diagnosis of gunshot wound of right elbow-joint. No history of malaria or dysentery; had felt well up to time he was wounded. On admission temperature 102°, pulse 118. Patient very weak and anæmic; great pain in arm; headache, dizziness, and ringing in ears. Examination revealed very little apart from the wounded arm, which was swollen, cyanotic, and tender from shoulder to fingertips. Elbow especially swollen; pus streaming out of a pin-point opening on anterior side just over brachial artery. Glands in the axilla were enlarged and tender. Day after admission severe headache; face very flushed. He had several fainting attacks; proposed operation for drainage of elbow-joint postponed. Temperature 102°; pulse 130, very weak and intermittent. Strychnine and digitalis were given during the day.

Next day his general condition had improved somewhat, and under ether anaesthesia the elbow-joint was drained; no attempt at resection on account of serious condition. During the next two days he improved greatly. Temperature not above 99° and pulse 100; ate well and slept well; complained of nothing but a feeling of giddiness, which he said he had had for some weeks before he was wounded.

On the evening of the second day following his operation, without any warning, and while talking, he had three severe epileptiform convulsions, became very violent, and relapsed into unconsciousness. Next morning, as he was still unconscious, a lumbar puncture was done; spinal fluid under greatly increased pressure, but clear. A white blood count was made and film taken for malaria; catheterised specimen of urine showed a faint trace of albumen, but no casts. The bacteriological report of spinal fluid negative; sugar reaction present. Films negative to malaria. White blood count was 8600; polymorphs, 60 percent.; lymphocytes, 29 percent.; large mononuclears, 5 percent. Patellar reflexes were absent; Babinsky and Kernig signs absent; some slight retraction of head. Major W. H. Kiep examined the eyes; report negative.

During the next 24 hours patient still remained unconscious; temperature, 102°; pulse, 130; involuntary urination and defecation. Lumbar puncture; fluid still under greatly increased pressure, but clear; bacteriological report as before; films again negative to malaria. The arm looked unhealthy and the edges of the wound gangrenous, with a very offensive odour; amputation was discussed, but decided to try intravenous quinine first. Quinine hydrochlor., gr. 15, in 10 oz. normal saline given; another lumbar puncture at same time. Two hours after the injection he commenced to perspire profusely; 16 hours later perfectly conscious; temperature, 98°; pulse, 90; patient very weak.

From this time recovery was uninterrupted, quinine hydrochlor., gr. 15, was given daily intramuscularly for a week, then twice a week for four weeks. The arm cleared up rapidly. During the next ten weeks in hospital he had no further rise of temperature and was sent to England as a walking case. Malaria parasites were never found in the blood, and the spleen was only just palpable.

This was a case of camouflaged malaria, where all symptoms indicated some other illness. The septic condition of the arm followed by the sudden coma pointed to an extension of the infected foci to the brain, with a resulting cerebral abscess, especially with the negative history of malaria and the absence of parasites in the blood. The white cell count and the absence of any localisation symptoms were the only two factors in the probable diagnosis of a cerebral malaria. Later the prompt response to quinine therapy and the rapid recovery left no doubt as to the diagnosis.

<sup>3</sup> From Text-book of Castellani and Chalmers.



The complications of camouflaged malaria are the most fatal in surgical cases, as they are usually rapidly fatal, and while one is trying to make a diagnosis the patient dies. Castellani, in writing of cerebral malaria, says:—

"No diagnosis of hemiplegia or of any brain or spinal disease without such obvious cause as traumatism should be made in malarious districts without first examining the blood to see whether the subtertian parasite is present."

I do not think he goes far enough in this statement, as in the most serious and fatal of my cases parasites have never been found in the peripheral blood. Splenic punctures have not been made, or the parasite would undoubtedly have been found there, but I have relied on the white cell count, especially in the presence of suppuration and the large spleen, and corroborated it by the final test of the response to quinine therapy.

A case (No. 8) was recorded of *purpura hæmorrhagica* due to malaria, or, as Castellani calls it, hæmorrhagic pernicious fever. Fortunately this very fatal complication is rare. The hæmorrhages appear during the attacks but never during the intermission. Untreated it rapidly produces severe anæmia, with thread pulse, delirium, and death; often all treatment is of no avail. Operations on these patients are absolutely contraindicated unless it is the question of the life of the patient, and then every precaution should be taken to guard against and prevent hæmorrhage. Even the extraction of a tooth has led to fatal results in these cases.

The relation of quinine to hæmorrhages is still a debated question. My own experience tends towards the view that the quinine has very little, if anything, to do with it. Where I have observed a tendency to hæmorrhage in malarial patients post-operative or otherwise I always give quinine hydrochlor. in small doses, with large doses of calcium lactate and, if necessary, horse serum.

The last case recorded (No. 9) was one of amputation of the leg. The most interesting thing about this case is that for nearly two years under certainly not the most ideal conditions in Salonika the patient had no relapse of malaria in a known subtertian infection. I mention the case especially as it proves that the parasite may remain dormant for years in the system and the patient in perfect health. Suddenly it may light up when the vitality of the body is lowered and produce an attack of a very serious nature. Also the sudden acute dilatation of the heart in these cases is very common, often proving fatal.

#### Conclusions.

These surgical manifestations, complications, and sequelæ usually result from a neglected and undiagnosed malaria or from a malaria inefficiently treated with quinine. The fact that there have been so few on the island speaks well for the promptness and efficiency of the treatment and the correctness of diagnosis.

There is no difficulty in recognising the quartan and the simple tertian variety, as the attacks are usually typical and parasites can always be found in the peripheral blood if films are taken at the proper time. The difficulty in diagnosis is the subtertian, with its many masks and innumerable sequelæ, and it is this type which is most often untreated because undiagnosed.

It is to be doubted whether any of us realise sufficiently what a protean disease malaria is, and the points to be emphasised are:—

1. That an operation often brings on an attack of malaria of a very severe nature, and an acute dilatation of the heart during or following an operation is very frequent, often proving fatal, and the utmost precautions should be used in regard to anæsthetics for these malarial patients. Ether given by the Vernon Harcourt method is the safest; chloroform, in my opinion, is absolutely contraindicated.
2. That the malarial parasites of subtertian malaria may attack any organ, giving all clinical symptoms of disease of that organ, as the surgeon who has no experience of malaria will find to his cost.
3. That the negative history of malaria and the absence of parasites in the blood is of no account in the diagnosis of a positive malaria.
4. That in a malarial patient convulsions and coma occur in an apparently healthy man without any warning, and that it is not uncommon for a man with acute cerebral malaria to be arrested for drunkenness; and that in every case of brain or spinal disease, or other obscure complaints occurring in men who have been East, malaria is one of the first things that should be considered by the surgeon.

5. That the subtertian malaria may simulate almost any disease, surgical, mental, or medical. It may produce such insidious symptoms that when the patient feels ill enough to see a doctor treatment is of little avail.

6. In the acute attacks there may or there may not be a chill, and parasites may or may not be found in the blood in this type.

The patient may have no idea himself that he has malaria, and herein lies the danger. A man with a subtertian infection is always in danger of his life, and too much importance cannot be attached to the question as to the care of these malarial victims in England after they return to their homes. As Professor Osler wrote some years ago: "There is no other disease which compares with it, except perhaps tuberculosis, in the extent of its distribution and its importance as a killing and disabling disease."

## Clinical Notes.

### MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

#### A CASE OF MULTIPLE EPULIDES.

BY W. WARWICK JAMES, F.R.C.S. ENG., L.D.S.,  
DENTAL SURGEON, ROYAL DENTAL HOSPITAL; ASSISTANT DENTAL  
SURGEON, MIDDLESEX HOSPITAL, ETC.

IN the following case the growth of a fibrous epulis (to be more definite, hypertrophy of the fibrous tissue of the gingival muco-periosteum) has been associated with each tooth of the temporary and permanent series which has erupted.

#### Account of Case.

The patient, a girl now aged 11, was admitted into hospital in May, 1912, when a portion of the tissue was examined microscopically. Some uncertainty existed as to its nature. A further section showed it to be purely fibromatous.<sup>1</sup> The gingival margins were considerably enlarged and nodular. The tissue particularly involved was apparently the gum margin and the neighbouring portion, but not the greater part of that covering the roots. As the result of treatment it would seem that the periodontal membrane is also involved, the bone is not involved; X ray photographs showed no changes. The growth had extended round the crowns, in parts even reaching to the top of the teeth, and also in thickness. In the early stages it appears markedly vascular and somewhat denuded, but later it seems less vascular and is mottled with faintly yellowish-brown patches. There was no tendency in the tissue to break down except where injured by opposing teeth. Growth is slow, the increase being marked by months rather than weeks. Patient suffered no pain; general health seemed affected, probably owing to difficulty in eating. The growth superficially resembles a simple fibrous epulis, but is sessile, while the simple epulis is nearly always pedunculated.

Of particular interest is the effect of treatment, and this coincides with the records of other cases, and of that of a simple fibrous epulis. Seven separate operations have been performed and an attempt was made to save the teeth, but recurrence followed. All the temporary and eight of the permanent ones have been extracted, the growth completely excised, and the margins of the alveolus removed. The stages of the operations were as follows: All the temporary incisors and the first temporary molars were extracted and the growth removed, whilst the abnormal tissue was cut away freely down to the bone margin round the remaining eight teeth. Where the teeth remained the growth recurred and in July, 1912, the four molars were removed as being less accessible than the canines, and the tissue again pared away round the latter. In October, 1912, the canine teeth were similarly treated. The child was now nearly 5 years old.

No change took place for about two years, nor was there any sign of a similar growth until after the first permanent molars appeared, when the condition recurred in about a year and the previous operation was repeated. In October, 1917, the maxillary incisors had erupted, with recurrence of the condition, and although it was suggested upon the lower incisors it was not marked. An operation removing the tissue around the upper incisors without the teeth was unsuccessful and the teeth were removed in November.

The present condition shows the lower canines involved, also the left lower second premolar, which is erupting into the socket of the first permanent molar. The same change



is taking place with regard to the right upper premolar, which is erupting into the socket of the first permanent molar. The gum presents the reddish, somewhat denuded appearance described, which seems the first indication of the growth, although in parts it is reaching the nodular stage. The patient has been wearing a vulcanite block to bite upon; the pressure from this seems to have arrested the development of the condition in one part.

#### Remarks.

The child has been strong and healthy from birth, except for whooping-cough and an attack of what the mother describes as "dry eczema" prior to the appearance of the mouth condition at the age of 3 years. No rickets. She was not nursed for more than a few weeks.

She is not a mouth-breather, a fact of interest, as much hypertrophy of the gingival tissues is frequently seen in the front part of the mouth in such patients. Such a condition is of an infective nature, and the changes are in marked contrast to those in the present case. In mouth-breathers the swelling of the tissues conforms accurately to the line of contact with the lips, so that when the lips are pulled back there is no hesitation in saying that mouth-breathing exists. In cases of hypertrophy the lips may be apart on account of the bulk of the growth. The condition in this patient would probably be described as hypertrophy, and although a certain number of cases have been recorded, they are undoubtedly rare.

The hypertrophy seen in adults is generally due to chronic infection, and involves the bone as well as the gingival tissue. Perhaps the commonest type is a marked thickening of the bone and the gum in the region of the maxillary molars, although several cases have been recorded where the whole of the alveolar margin has been involved, but the maxilla appears to be affected more often than the mandible in children.

Christopher Heath has described a similar case to the one now reported. Cases mentioned by him occurred at the ages of 8, 2½, 7, 4, and 2 years, the three latter in one family. In all the cases recorded the mental condition was defective. In another case recorded, very similar to the present one, the child was 4½ years old and healthy. After describing this case, he says, "In conclusion I should say that nothing less than complete removal of the affected alveolus seems to offer any hope of alleviating these cases." As far as I can ascertain, the length of history of this particular case is greater than that of any recorded cases.

As it is difficult definitely to classify these cases, the term *epulides* is used in its widest sense, but if they were allotted to a definite class, it is probable that hypertrophy would be the correct description. It seems a very drastic procedure to remove every tooth and so render the child edentulous. It is true we can provide an artificial substitute, if nothing short of extraction can be accomplished.

#### A CASE OF HERMAPHRODISM.

BY W. DANNE, L.R.C.P. EDIN., L.R.C.S. IREL.

THE following case is described on account of its rarity. The only similar one I can find is in the 1891 edition of "Diseases of Women" by Gaillard Thomas, but in his case there were both scrotum and testicles. It would be interesting to learn if anyone else in this country has seen a similar instance.

Quite lately a woman with well-developed breasts and nothing characteristic of a male in her voice or general appearance was brought to me. She was 40 years of age and was going to be married soon, but as she had a "lump in the privates" she wished me to remove it. On examination there was no trace of a vagina and the "lump" proved to be a small, well-formed penis, with prepuce, which could be retracted and the glans exposed. This penis was capable of erection, and per urethram she menstruated regularly every month as well as micturated. Also she appeared to have nocturnal emissions at intervals, with sexual feeling. Per rectum the anterior rectal wall was very thin, and through it, lying towards the left, could be felt a modified uterus of a fair size, but with only one cornu. I could find neither ovaries nor testicles, and no evidence of a scrotum.

I told her nothing could be done to fit her for marriage, and this opinion was confirmed by Mr. D. C. Rayner. As she still was anxious that something should be done I sent her to Dr. James Oliver, who agreed that it was a case for which no operation was possible.

Bristol.

## Reviews and Notices of Books.

*The Early Diagnosis of Tubercle.* (Oxford Medical Publications.) By CLIVE RIVIERE, M.D., F.R.C.P. Second edition. London: Henry Frowde; Hodder and Stoughton. 1919. Pp. 314. 10s. 6d.

THE second edition of Dr. Riviere's book on the early diagnosis of tuberculosis is quite a bulky volume for a work limited to a single aspect of one disease. The author in his preface notes that the present edition has been revised and expanded, and that, for the first time, a fairly adequate description is given of hilus tuberculosis in the adult. This book is excellent, but it is impossible to read it without coming to the conclusion that the author has evolved a machinery so complicated that many of his readers will feel baffled as well as helped by it. As he says: "..... Many of the older methods have been amplified and improved, and valuable new ones have been introduced." Would that he had been more willing to "scrap" as well as to amplify and improve! The author is an enthusiastic "percussionist," and he attaches far more importance to percussion than to auscultation of the chest. There can be no doubt that he has reduced, or let us rather say exalted, percussion to a fine art. Take the following sentence for example:—

"Gentle percussion is of two kinds: (a) One in which the soft stroke is 'carried through,' whereby the depths of the lung are reached more truly than by heavy percussion; (b) what may be called light, 'flipping' percussion directed to the discovery of surface changes, and whereby a thickened pleura may, perhaps, be distinguished from impairment due to underlying lung."

It is clear that the author has not only assimilated all the available teachings of the art of percussion; he has added to it himself. But there is surely as little hope of his readers gaining the same skill in percussion as of Paderewski turning out pianistic replicas of himself by writing a text-book on his art. The author's praise of the X rays is measured, and he has found that in most cases they are superfluous. Having damned them with a halting testimonial, he proceeds to give an excellent account of their interpretation in disease of the lungs—an account which is the more concise, objective, and detached for being given by an agnostic. The chapter dealing with tuberculin reveals the author's wide knowledge of a subject obscured by the prodigious output of mediocre workers; and he has reduced his encyclopædic raw material to an eminently readable and concise finished product. But in the chapter on the temperature he has edited his sources of information with less discrimination, and instead of confining himself to the best monographs on the subject, he quotes over a score of writers, leaving the reader to pick out what he likes best. Part II. deals with tuberculosis in children and represents about one-third of the book. Here the author contributes much useful information, full measure, pressed down.

This book is first-class matter from a first-class source; its chief fault in this age of haste is a surfeit of information, and it is to be hoped that the third edition, which will no doubt soon be called for, may show more signs of condensation than of expansion.

*Dental Surgery and Pathology.* By J. F. COLYER, F.R.C.S., L.D.S., Dental Surgeon to Charing Cross Hospital and the Royal Dental Hospital; Examiner in Dental Surgery, Royal College of Surgeons of England. Fourth edition. With illustrations. London: Longmans, Green, and Co. 1919. Pp. 899. 32s. net.

THE importance of a knowledge of pathology to the dental surgeon can hardly be over-estimated; for now it is becoming universally recognised that the gravest results may follow septic processes in the mouth, and that many general diseases are to be attributed directly to infection proceeding from this source. It is clear, therefore, that we must look to the dental surgeon for the recognition of the existence at an early stage of those septic conditions which may, if neglected, prove to be the forerunners of very serious morbid conditions. Dental students, therefore, are fortunate to be in a position to possess such a work as this in which the true principles of pathology in relation to the teeth are fully expounded and clearly enunciated. The ideal principle of dental treatment



should ever be the prevention of sepsis, and the ideal of dentistry will only be attained when preventable diseases associated with the teeth shall have ceased to exist.

Mr. Colyer has described fully all the abnormalities to which teeth are subject, and the methods by which these abnormalities may be remedied; he has discussed very thoroughly all the theories as to the nature and causes of caries, and he comes to the conclusion that the prevalence of caries in modern races is due to the soft character of the food and the increase in the use of carbohydrates which undergo rapid fermentation. The importance of periodontitis is fully recognised, and the author finds that the evidence points to the disease being started by injury of the gingival margin from food débris or by the local action of toxins as seen in the marginal gingivitis of mouth-breathers; and the prevalence of the disease at the present day he attributes to the character of modern diet, for much of our food is prepared in such a way that it accumulates readily round the teeth and is of a nature easily to undergo fermentation. The chapter on fractures of the jaw is adequate, and no excess of space is devoted to gunshot fractures, for in civil practice such fractures are very rare.

There are two points in this work that deserve special mention. One of these is the very full provision of illustrations—a sufficient number of illustrations goes far to assist the student in the thorough comprehension of a subject. The other point is the very complete index. A work like this should prove of interest not only to dental students and dental surgeons, but also to very many members of the medical profession who have nothing directly to do with dentistry; from it they will learn much that will be of value in the treatment of patients suffering from many diseases, and they will appreciate more fully than many do now the importance of early attention to morbid conditions of the teeth in the treatment of disease in other parts of the body.

#### JOURNALS.

*The British Journal of Children's Diseases.* Vol. XVI., April-June. Edited by J. D. ROLLESTON, M.D.—Dr. Edmund Cautley contributes an article on Duodenal Stenosis, in which he reviews the literature and reports a personal case in a male infant aged 12 months. He states that the characteristic feature of the condition is vomiting, with the usual signs of obstruction. It may occur even if no food is given by mouth, the stomach becoming distended by normal secretion. Bilious vomiting occurs in about 90 per cent. of the cases, and if the obstruction is above the entrance of the common duct is probably due to an aberrant branch opening into the dilated first part of the duodenum. Hæmatemesis is not uncommon. Inanition, wasting, and constipation naturally develop. If food is taken and life prolonged, as in some cases in which adult life and even middle age have been reached, the stomach and first part of the duodenum become dilated and hypertrophied, and there is marked gastric peristalsis. The symptoms are practically the same as those of congenital hypertrophic stenosis of the pylorus, unless bilious vomiting is also present. A dilated first part of the duodenum gives the sensation of a pyloric tumour, but it is neither so hard nor so defined as in pyloric hypertrophy. No medical treatment is of real benefit, but life has been saved in isolated cases by early operation. Many of the infants are premature. In Dr. Cautley's case an exploratory operation was made, but the state of the child did not warrant gastro-enterostomy and death took place a week later. At the autopsy the stomach was found to be dilated and hypertrophied, and the pylorus widely dilated. The first part of the duodenum was dilated into a more or less spherical sac over 2 in. in diameter. The second part for a distance of an inch was extremely stenosed, merely admitting the passage of a probe, and the duct entered about the middle of the stenosed portion. There were no other abnormalities.—In a paper on Catarrhal Jaundice in Children, Dr. E. Bronson reports a number of cases of catarrhal jaundice associated with influenza in children, and classifies them under the following groups: (1) those in which jaundice followed exposure to influenza, but which did not develop influenza in the ordinary sense; (2) cases which developed jaundice as a sequel to an attack of influenza; (3) doubtful cases in which there was no known exposure to influenza.—In a Note on Influenza in Infants, Dr. C. Achard, of Paris, states that though one of the peculiarities of the present epidemic has been the rarity of the disease at this age, he has had the opportunity of observing 32 cases under 2 years of age in the crèche at the Hôpital Necker. In six cases the disease was uncomplicated and recovery took place, in 12 there was bronchitis or slight pulmonary congestion with one

death, and in 13 broncho-pneumonia developed with seven deaths. Achard concludes that influenza in the infant is by no means exceptional, and that the form and gravity of the disease may vary. The infant does not possess any real immunity but is merely less exposed to contagion from without, the infection being chiefly contracted from the mother.—Mr. Ralph Thompson records a case of Ectopia Vesicæ, in which he performed a successful operation in the fifth month of life. In his discussion of the anatomy of the condition he comes to the following conclusion: (1) Ectopia vesicæ is a body cleft due to the formation of a groove in the allantois, which secondarily affects the cloaca; (2) epispadias is not analogous to hypospadias, but is evidence of a bifid or double genital eminence being formed from the cloaca which is cleft secondary to the allantois; (3) the cause of the deformity must be above rather than below.—A case of Urethrocele is described by Mr. Pybus in a male child, aged 3 years. The penis was considerably enlarged, measuring  $3\frac{1}{2}$  inches in length, and became ballooned during micturition. The urine was ammoniacal and contained pus. Death took place a week after an operation at which the redundant portion of the urethra was removed. The autopsy showed considerable hypertrophy of the bladder, marked dilatation of the ureters, and of a less degree of the renal pelvis, one of which was inflamed.—Dr. Parkes Weber and Mr. T. H. Gunewardine report a new case of Lipodystrophia Progressiva in a girl aged 12½, in whom the disease had set in five years previously.—Dr. John Thomson contributes a note on a case of Myasthenia Gravis in a girl aged 11½ years, which proved fatal in nine months' time.—Mr. Haldin Davis gives an account of the Willesden Ringworm Clinic, which he established in the spring of 1913, since when 441 cases had been submitted to X ray treatment. No instances of X ray burn or permanent alopecia occurred. Owing to the speed with which cases can be cured by X rays, Mr. Davis states that the cost of treatment is nearly defrayed by the additional grant earned from the Board of Education and by the saving of school time which would have been lost under the older, slower methods of treatment.—A Retrospect of Otolology, 1918, is contributed by Mr. Macleod Yearsley.—The abstracts from current literature are devoted to acute infectious diseases, disorders of metabolism, diseases of the urogenital system, dermatology and syphilis, and otology, rhinology, and laryngology.

In the *Military Surgeon* (Washington, D.C., U.S.A.) for April Colonel Qualls and Captain Meylackson give an account of a large venereal clinic in Maryland. The clinic received about 50 fresh cases daily; some 85 per cent. of the infections were contracted in civil life, 9 per cent. of whites and 39 per cent. of negroes being found infected on entry. Details of the organisation required to deal rapidly and effectively with this mass of cases are given, and should be read by all interested. In 13,159 persons treated by prophylaxis 126 cases developed, but only 11 amongst those who took the treatment within an hour of exposure.—Captain L. C. Frost insists that cases of shell shock must be treated at once by experts within the battle area.—Colonel Lynch and Lieutenant-Colonel J. G. Cumming urge that infection of sputum-borne diseases in the army occurs rather through mess utensils than by the air of the barrack-room, and set out the need for washing these in water that is boiling. They found that in certain civilian groups, numbering in all 20,000 people, those whose dishes, &c., were machine-washed suffered far less from influenza than did those whose mess-kits were washed by hand. They desire to see a lavatory established near the mess-room in all barracks, so that the men may get into the disease-averting custom of washing the hands before each meal. They found that even in a smart regiment not quite a quarter of the men do so now. The U.S. base hospital at Etretat learned to save their orderlies from trench fever by cleaning patients on entry, and by putting the orderlies dealing with new entries, their clothing and effects into louse-proof suits, double pyjama suits sprayed with creosote oil. One clerk appeared to have become infected through carelessly sitting on the stretchers of the new entries while taking their "particulars."—Major Dodge, reporting on 638 operations for hernia, mentions that after it became a routine for all operation cases to gargle with a 1 in 10,000 solution of quinine sulphate post-operative pneumonia ceased to occur, and no one using that gargle got pneumonia during the October influenza epidemic, though several had influenza. The quinine gargle is supposed to be specific against the pneumococcus.—Lieutenant-Colonel J. T. Rugh discusses leggings and puttees, and concludes that no complaint can be made against them if they fit.

**CENTENARIANS.**—Mrs. Esther Carter died recently at East Molesey, Surrey, in her 102nd year. The deceased was born at Weymouth, and visited her birthplace upon the 100th anniversary of her birthday.—Miss Eleanor Patteson, who completed her 100th year two months ago, died on July 18th at Bath.



# THE LANCET.

LONDON: SATURDAY, JULY 26, 1919.

## An American Hospital in London.

WE publish in another column the account of a notable meeting held at the House of the Royal Society of Medicine on Thursday, July 17th, when the formal foundation was inaugurated of an American Hospital in London, to be a rallying point for American post-graduate students and all members of the medical profession in America sojourning on our side of the Atlantic; to be the natural shelter for American citizens in our midst and needing hospital attention; and (to quote the words of the main resolution epitomising the movement) "to commemorate the coöperation of the medical men of the United States and of Great Britain during the European War and to strengthen the friendship existing between the two nations." Lord READING, who presided at a meeting which was characterised alike by the brevity of the oratory and the directness of the results, said happily and wittily that the case for the foundation of an American hospital in London was so strong that had he been sitting "in another place" he must immediately have given judgment in favour of its supporters. And this must be the verdict of all who have thought over the matter.

The foundation of the American Hospital in London has been largely the conception of Mr. PHILIP FRANKLIN, an American citizen some years resident in England, a Fellow of the Royal College of Surgeons of England, and a member of the honorary staff of many institutions, civil and military. To his energy, prevision, and tact the fact is owing that the hospital has now been definitely founded, and founded with the remarkable promise of success which is sufficiently indicated by the names pledged to support it. And if ever the right seed was sown in the right soil at the right time this was such a fortunate sowing. Mr. FRANKLIN has practically found no critics of his idea or intention, though we may be perfectly certain that he came across many whose approval was more verbal than practical. We have in these columns on many occasions alluded to the fact, not so difficult of explanation as it may appear, that the vast city of London has not hitherto been recognised as a centre for post-graduate medical teaching by foreigners, while until recently what post-graduate teaching there has been has been individual, sporadic, and ill-organised. Greater London, with a population of about seven millions and an area of seven hundred square miles, containing within its boundaries all sorts and conditions of men contracting, or liable to contract, every pathological condition that can occur in an inclusive index of disease, has never been sought out by foreigners, and not even by our blood relatives who speak our tongue, the Americans, as a post-graduate centre. The fault has been our own, and is only partly condoned by the fact that the enormous figures concerned have rendered any complete system of inter-organisation difficult. Our wealth of material has never until now properly been centralised; our far-scattered hospitals have only recently begun to join in a unified plan of

education; while for the stranger, and even for the American guest, there has been as yet no centre at which he could obtain information or get into some human relations with his professional colleagues in this country.

The American Hospital is to prove itself a visible sign of a complete change of spirit. As is well known, there is in London now a post-graduate scheme in connexion with the Fellowship of Medicine, and this organisation, started on emergency lines, is sure to develop into a permanent organisation. The American Hospital, over and above its position as a general hospital ministering to American needs, will be the place where the American doctor will turn instinctively when he arrives on our side of the Atlantic for multifarious information as to how, having such and such time at his disposal, and such and such money to spend, and such and such plans for the completion and development of his medical education, he should best proceed. The information given him will enable him to make full use of such post-graduate organisation as we have, while his presence among us will spur us on to see that that organisation is good and intending to be better. Then will London take its rightful place as a great post-graduate centre.

## The Study of Wound Shock.

THE fundamental cause of wound shock still remains obscure. With this confession of ignorance Captain N. M. KEITH, R.A.M.C., opens a report<sup>1</sup> of the special investigation committee set apart by the Medical Research Committee to inquire into surgical shock and its allied conditions. And he goes on to say that, while no single ætiological factor can be recognised as the invariable initial cause, the various secondary factors which obviously contribute in many instances towards the production of the finished article are in no better case, as when these are eliminated by early preventive treatment the condition of shock often persists nevertheless, and the patient succumbs. KEITH'S contribution is to make quite clear that reduction of total blood and plasma volume are striking and important features in wound shock; that after moderate hæmorrhage without shock the total blood volume is rapidly restored, while in shock itself recovery is accompanied by restoration of blood volume. An important indication in the treatment of serious cases of wound shock, therefore, is to increase the amount of fluid in the circulation, which can only be done by intravenous infusion. His observations help to diminish the complexity of the pathological picture of shock and to replace the vague assumption of nervous influence by substantial knowledge of altered blood states and changed blood volumes.

When KEITH began his work at a casualty clearing station in the spring of 1918 our conception of the pathology of wound shock was, speaking broadly, that of a condition of circulatory failure with low blood pressure and increased permeability of the capillaries, due to a combination of one or more of the factors of cold, pain, hæmorrhage, and toxæmia at work in an exhausted system. KEITH made available a new series of data—namely, the actual records of blood and plasma volumes. The old idea of the pooling of blood in the splanchnic area had already been abandoned by the Béthune

<sup>1</sup> N. M. Keith: Blood-Volume Changes in Wound Shock and Primary Hæmorrhage. Special Report Series No. 27. Medical Research Committee. H.M. Stationery Office. Price 9d.



group of investigators, but beyond observations on concentration of the blood no new facts then emerged. KEITH used the vital red method of measuring the blood volume direct, introduced by him in 1915<sup>2</sup> and used by ROBERTSON and BOCK in a parallel investigation.<sup>3</sup> Since vital red does not yet appear in the physiology text-books it may be well to interpose that it is a dye of the triphenyl-methane series, non-toxic and readily sterilised. Ten c.cm. or so of a 1.5 per cent. solution injected into a vein mixes uniformly with the circulating blood within five minutes, staining the plasma, so that a determination of the tint of a withdrawn sample enables the total blood volume to be calculated. On these simple colorimetric lines the diminished blood volume in soldiers suffering from wound shock was found to bear definite relationship to the severity of the patient's clinical condition. In the 29 cases studied the estimated blood volume ranged from 52 to 85 per cent. of the normal, while the plasma was correspondingly reduced to 62-90 per cent. In order to determine the part played by hæmorrhage in the deficiency of blood in the circulation observations were made on donors after supplying blood for transfusion. Withdrawal of quantities up to 800 c.cm. was followed by a rapid return of the blood volume to its original level. This level was sometimes reached within an hour, and occasionally the compensatory process persisted until an actual increase in blood volume resulted. When, however, the loss of blood is excessive, or when severe trauma is present, a shock-like condition follows which is distinguished by a failure of the normal process of rapid restoration. Shock may be accompanied by a fall in the circulating blood volume even without hæmorrhage. From a clinical study, combined with blood-volume observations, cases were divided into three groups:—

*Group I.*—The less severe cases, without distressing symptoms, with a pulse-rate of 90-110, a systolic blood pressure above 95 mm. Hg, and the blood volume not reduced below 75 per cent. of the normal.

*Group II.*—Into this class fall the serious cases, where the pulse-rate is 120-140, the systolic pressure below 90 mm. Hg, and the total blood volume between 65 and 75 per cent. of the normal.

*Group III.*—The men dangerously ill, with imperceptible pulse, a systolic pressure below 60 mm. Hg, a heart-rate of 120-160, and a blood volume below 65 per cent. (frequently 50-60 per cent.) of the normal.

In this third group, when the low pressure has continued for more than a brief period, recovery is almost impossible. The intracellular oxygenation of the tissues, including the sensitive cortical nerve cells, has been interfered with, and the damage cannot then be repaired even by transfusing whole blood. But KEITH reports the case of a soldier who had sustained an extensive comminuted fracture of the femur without external wound, in whom blood volume was reduced to 64 per cent. of the normal, pulse-rate 120, and maximum blood pressure 70 mm. Hg, but in whom, under warmth and fluids by the mouth, the pulse slowed, blood pressure rose, and the blood volume increased 400 c.cm. by the next day.

These observations should be read in conjunction with Mr. E. M. COWELL's instructive Arris and Gale lecture on the Initiation of Wound Shock, which we print in our current issue. Mr. COWELL's work is based upon blood pressure observations made over

a period of three years at various points in the firing line, and often actually in the front trench. Some of these observations have been recorded in an early report<sup>4</sup> of the special investigation committee already mentioned. Criticism has been levelled against the preponderance in this report of clinical data over practical deductions for treatment. But Mr. COWELL very rightly points out that once the knowledge of wound shock is brought on to a sound clinical and pathological basis the application of therapeutic principles will follow as a matter of course. His summary of recent investigations focusses very convincingly the varied sources of new knowledge on to a screen where their practical bearing can be clearly seen. It is now established that in cases of severe wound shock the infusion of normal or even hypertonic saline has but a momentary effect<sup>5</sup> on the circulation. In uncomplicated cases, too, sodium bicarbonate solution gives no better results. Transfusion of blood, or its substitute BAYLISS's gum saline solution, gives a more lasting rise in blood pressure, since the added fluid remains within the vessels. In KEITH's experience the results of gum and blood were practically identical, and the success or failure of either depended largely upon whether the blood volume was sufficiently restored after their injection. The subcutaneous route for fluid administration is useless, because of the sluggish peripheral circulation and consequent slow absorption. The futility of relying on any of the numerous drugs commonly recommended to raise the blood pressure is emphasised by Mr. COWELL and will readily be understood in the light of KEITH's work. These are important and fruitful deductions, and their application to the surgical shock of civilian practice should not tarry.

## The North-Eastern Railway Strike and Eyesight Tests.

LAST week the locomotive men and the firemen at Carlisle objected to the eyesight test laid down by the North-Eastern Railway Company, and came out on strike as a protest. The strike that ensued crippled all the industries on the North-East coast, the price of all food has risen, and the transport of passengers has been restricted to those who were able to hire motor-cars or aeroplanes. The National Union of Railwaymen negotiated with the North-Eastern Railway Company, and it is understood that they were united on one point—that the Board of Trade should speedily set up a national eyesight test. The strike has ended on this understanding. Hitherto, unfortunately, no standard of vision has been prescribed for the various railway employees; it rests with each company to make and enforce such regulations as they may consider necessary. As the safety of the travelling public is involved, this is clearly a matter for a Government department to arrange. The nature of the tests is for ophthalmic experts to decide, after being given every facility by the railway companies to learn the special visual requirements of the service. It is necessary to point out that the standard vision of 6/6 (or standard form sense) is by no means always associated with a good light sense, and for an engine-driver it is absolutely essential that he should be able to detect the signal lights readily

<sup>2</sup> N. M. Keith, L. G. Rowntree, and J. T. Geraghty, Arch. Int. Med., Chicago, October, 1915.

<sup>3</sup> O. H. Robertson and A. V. Bock: Memorandum on Blood Volume after Hemorrhage, No. 6, Reports of the Special Investigation Committee on Surgical Shock and Allied Conditions.

<sup>4</sup> E. M. Cowell: Investigation of the Nature and Treatment of Wound Shock and Allied Conditions, No. 2, same reports.

<sup>5</sup> J. Fraser and E. M. Cowell: No. 2 same reports.



on a dark night; indeed, this is much more necessary than a standard form sense. In a good light a candidate may pass all the usual tests with Snellen's types and the colour tests with Holmgren's wools easily, but he might fail deplorably if the light were dim. The lantern test with the necessary coloured glasses seems to be the best colour test for locomotive men and for sailors, but it would appear that more attention should be devoted to the examination of light sense.

The promise of the President of the Board of Trade, Sir AUCKLAND GEDDES, that a national eyesight test for railwaymen shall be established within a month comes none too soon. Indeed, it is regrettable that such a test was not established long ago, instead of leaving a difficult matter to be decided separately by each railway company, with the result of the dissatisfaction recently manifested on the North-Eastern Railway. In the case of the Mercantile Marine, in which similar dissatisfaction used to exist, a Departmental Committee was set up by the Board of Trade in 1912 and its recommendations for a national test were adopted, with results that are said to be satisfactory. On this committee two ophthalmologists held seats, and it is essential that in deciding on the railway tests also, ophthalmologists should be brought into consultation. One of the most important tests is that for colour vision. As has been proved by Dr. F. W. EDRIDGE-GREEN, the old Holmgren wool test is both inefficient and dangerous in that it rejects some who ought to be passed, while, on the other hand, a large number will pass it easily whose future employment is dangerous. The wool test has now been replaced by most, if not all, of the railway companies by some form of lantern test. This should be made compulsory, and no lantern should be used which has not means for regulating the luminosity of the lights shown, as otherwise a man who cannot distinguish in a fog between a red and a green light might be passed. The degree of visual acuity necessary for engine-drivers and firemen is a matter that certainly requires a uniform settlement. On one railway the present standard is 6/12 in the better eye, 6/18 in the worse, without glasses. Is 6/12 good enough? Is not 6/18 an unnecessarily high standard for the worse eye? A man with 6/6 vision in one eye and 6/60 only in the other would certainly have better vision with the two eyes than one with 6/12 and 6/18 respectively. The only disadvantage that the former might be under would be the possibility of getting a spark from the engine in his better eye. The question of the employment of spectacles should be answered, and a rough but efficient test for the visual fields should be established to exclude any with such disease as retinitis pigmentosa, in which central vision may remain good till a late period.

The detection of tobacco amblyopia is a matter of very great importance at the present time, when this disease is more prevalent than formerly. No man should enter the railway service without being told the facts as to tobacco blindness and the importance of taking early advice in case of gradual diminution of vision, which will often save him from the necessity of having to throw up his job. As toxic amblyopia is fairly frequent even in those who smoke with moderation, and as its characteristic symptom is the early onset of a macular scotoma for green and red, it would seem necessary for engine-drivers and watchmen to be tested for this complaint every six months or so; and locomotive firemen at least every

year. When recognised early, recovery may be almost guaranteed in eight or ten weeks, if the required treatment is duly carried out.

## The Emergence of the Health Visitor.

THREE classes of women have come to be very closely associated with the medical practitioner in his work as indispensable helpmates, whether on the remedial or preventive side. In order of emergence these are, of course, the midwife—whose history goes back into the unknown; the nurse—whose founder, in the modern sense of the title, was FLORENCE NIGHTINGALE; and the health visitor—who scarcely existed before the London County Council Act of 1908. The nurse's work is purely remedial, to her both patient and doctor alike turn in sickness; but medicine is becoming increasingly preventive, and unless specially trained in the mechanism of health the nurse may be as inadvertently dangerous to the well child as she is mercifully helpful to the sick one. The midwife's habitat is normal physiological function, and the Board which controls her strictly defines the variations from the normal which are her concern. The health visitor arose for the purpose of advising on the proper nurture, care, and management of young children, of promoting cleanliness as the basis of health, and of carrying out (in the words of the Act of 1908) such other analogous duties as might be assigned to her. No one then could foresee to what extent these analogous duties might grow in ten years' time or be expected to devise in advance the training best suited to meet them. The Local Government Board at that time regarded the full nursing certificate or the diploma of the Central Midwives Board as satisfactory evidence of qualification. Time has not justified this claim, and the most successful health visiting is now found to be done by women of good education with some previous training in social science. To define and promote the best type of training for the health visitor has for some time been an objective of the National Association for the Prevention of Infant Mortality, and the scheme for training just issued as Circular 4 (M. and C.W. 10) by the Ministry of Health may be regarded as the fruition of their labours. At the same time appear the draft regulations (Cmd. 255, price 1d.) of the Board of Education, laying down the conditions under which in future grants will be made in aid of health visiting. Briefly, a good preliminary education and a course of two years will be required of candidates without previous special training, one year to be devoted to theory and one to practice. In the case of fully trained nurses, previous health visitors, or those holding a university degree or its equivalent, one year's training may be remitted. A certificate will be granted after examination, and subsequent to a certain date, of which notice will be given, no uncertificated appointment of health visitor may be made by any local authority. Further details will be found in the documents to which a reference has been given. Restrictive in form only, the regulations are a charter for the approved health visitor which, by protecting her from unqualified competition, will afford a much needed stimulus to the supply of the better class of visitor. The Ministry of Health was bound to protect in this way one of its principal agents in health work, and has done well in making this reform its first public action.



## Annotations.

"Ne quid nlmis."

### BETTER INSURANCE PRACTICE.

THE Special Conference of Representatives of Local Medical and Panel Committees, convened in London on July 17th and 18th by the Insurance Acts Committee of the British Medical Association, was chiefly concerned with the conditions of service under the National Health Insurance Acts and with possible extensions of this service. Any discussion of the rate of remuneration of the panel practitioner for his services was expressly ruled out, the determining of the proper amount of the capitation fee per insured person being left for a future occasion. The basis of discussion was the long and closely reasoned report of 112 paragraphs issued by the Medical Department of the Association in May last for the consideration of panel committees and individually to every member of the medical profession, as well as the memorandum of discussions convened by the Insurance Commissioners, to which allusion was made in a leading article in our columns on June 14th. A summary of the report and its recommendations appears on p. 169 of the present issue. Report and memorandum together cover the whole field of insurance practice, and it speaks volumes for the foresight and dialectic skill with which they were drawn up that no considerable principle contained in them, and little even of detail, were overturned by a conference consisting of individuals deeply concerned to make the best of both the present and the future. Acceptance of an amendment standing in the name of Stockport opposing the limitation of individual panels of insured persons to 3000 was the nearest approach to an adverse vote. This amendment was carried by a small majority, but with the proviso, emanating from the London representatives, that the Panel Committee must accept the unpleasant duty of adjudicating the efficiency of any practitioner exceeding this limit when called upon to do so by an insurance committee. The conference set its face sternly against discouragement of large panels by any lowering of the capitation fee, holding that such a suggestion of reduction on taking a quantity was derogatory to the responsible and honourable character of panel practice. No one, however, had a word of condonation for the single-handed practitioners alleged to have more than 6000 patients on their lists. Necessitated, possibly, by war emergency such ill-directed ambition can hardly long survive the pressure of public opinion.

The question of the precise amount of the capitation fee being thus excluded, discussion centred round the provision of an adequate service under conditions agreeable and convenient alike to doctor and patient, assuming that—its scope being known—such service would be adequately remunerated by the Ministry of Health. In his opening address Dr. H. B. Brackenbury cited a few instances in which panel practice had recently not shown amenities to the insured person. It was difficult, he said, for the panel patient to obtain the administration of an anæsthetic when required for a minor operation, in certain areas he might have to wait in a queue to obtain advice and treatment at all; and if doubt should arise as to his being a panel patient, medical assistance might be

sought unavailingly in case of serious emergency. Panel practitioners are, we feel sure, as anxious as the Government and the public to obtain a medical service where these things do not occur. On the practitioner's side there is a widespread feeling, amounting to a sense of soreness, that certain special services which are the patient's right under the Insurance Acts are nevertheless outside the range of general practitioner treatment, and should not be demanded of him without special remuneration. Such services include, for instance, the administration of general anæsthetics, attendance at miscarriages, and possibly the treatment of fractures and dislocations, and visits paid at night. Existing regulations admit of these services being made a prior charge on the local medical fund. If this fund itself is sufficient—i.e., if the capitation fee is large enough—it is clear that a first charge on the general fund is as favourable a form of remuneration for special services as a special fund created for the purpose. No one contended that Parliament was likely to sanction an unlimited fund for this purpose, but the Stockport representative was able to show by actual figures that the amount of these special services rendered by practitioners in his district was strictly proportional to the special remuneration available, and not to the demand for such services. Abstinence from service where the demands are demonstrably unreasonable—which is not fairly to be called shirking, though the term is thus applied—cannot be regarded as an inherent sin of insurance practice; and the view expressed in the report of the Insurance Acts Committee finally prevailed, although by a hairsbreadth. Panel practice, it will be seen by this report, will not have the additional complication of special pools for special purposes. Thus many important matters seem to have been settled, but the real struggle will come with the fixing of the new capitation fee.

### THE CAIRO SCHOOL OF MEDICINE.

THE winter session of the School of Medicine at Cairo, under the Egyptian Ministry of Education, begins on Oct. 4th, and it is the intention of the Ministry to make the school at this crisis in the development of Egypt worthy of its great historical and ethnological position. The school was inspired originally by French surgeons of the time of Napoleon, and has occupied its present site since 1837. The existing hospital of 600 beds is housed in a building entirely inadequate for its purpose, and the school itself has to refuse two-thirds of its yearly average of 150 applicants, but the enlargement and remodelling of both are under contemplation by the Government of Egypt in association with the proposed foundation of a University. But the Egyptian Educational Mission is not willing to let the proper development of the school await any extensive scheme of rebuilding, and the all-important matter of an adequate teaching staff is being handled forthwith. Reference to our advertisement columns will show a number of vacant posts for which the combined annual pay is over £10,000. The Egyptian students have been out on strike since March 9th last, and there is a strong feeling amongst them that the staff should be recruited from men of Egyptian nationality so far as this is possible. For the present, however, there are no Egyptians with the necessary qualifications. The whole-time pro-



fessorship of surgery is an innovation and designed to attract someone who is keen on teaching and research. The professor of pharmacology will have hospital beds at his disposal and a free field for research in the treatment of Egyptian diseases, and occupants of these chairs will presumably become professors in the faculty of medicine when the University takes shape. The lecturer on pathology will have a specially attractive field of work open to him, for many pathological problems still await solution in Egypt. The lectureships are designed to encourage research among Egyptians, some of whom are already being trained in England. But we are informed that none of the appointments are earmarked for any local or other candidate. The selection will be made, in the first instance, by small expert boards in England, the final selection taking place in Egypt on the recommendations of these boards. We wish every success to this practical effort for placing medicine on a substantial foundation in Cairo.

#### THE AFTER-HISTORY OF WAR NEPHRITIS.

Merklen and Desclaux<sup>1</sup> examined 26 men who had been temporarily discharged from the Army for chronic nephritis one year previously, and summarised their observations as follows: 1. Six men had no albuminuria nor any signs of renal or cardiac disturbance. There was no rise of blood pressure, and the heart was of normal size on radioscopic examination. They might therefore be regarded provisionally as cured. 2. Three men showed cardio-vascular symptoms only, such as an increase in size of the left ventricle, accentuation of the second aortic sound, a high blood pressure, and palpitation. 3. Seventeen cases, or two-thirds of the total, showed various symptoms of chronic nephritis, and albuminuria was present in every case. Though it is impossible to form a general prognosis in nephritis owing to the variable character of the affection, the writers feel justified in concluding that at the end of a year the majority of men who have been discharged from the Army for nephritis will still present symptoms of the condition.

#### AN ANTHROPOMETRIC SURVEY.

THE data obtained by the late Ministry of National Service when examining recruits in regard to their fitness for a soldier's life are in the possession of the Minister of Pensions and, in reply to a deputation from the British Association, Colonel A. L. A. Webb, Director of Medical Services, stated on July 18th that the various regional reports had been arranged and would shortly be ready for publication. Measurements, such as height, body-weight, and chest perimeter, in relation to age and occupation, have great objective value, while other data are more or less vitiated by the personal equation of the recorder. Many attempts have been made to obtain simple criteria of working ability. As long ago as 1846 Mr. John Hutchinson read before the Royal Medical and Chirurgical Society a paper, fully reported in our columns at the time, dealing with a method of detection of disease by the spirometer. This engine long fell out of repute, but recently a definite minimum standard of vital capacity was set up as a condition of admission to the Air Force, and Professor Georges Dreyer laid stress upon this measurement in a paper read before an Inter-Allied Sanitary Congress of Aeronautics held at Rome in February last. A single observation of certain

anatomical and physiological data, carefully made and recorded, may have value when dealing with the population as a whole, but how much greater would be the value of continuous exact records, such as are now within the grasp of the Ministry of Health. The policy of the Insurance Commissioners has been to demand from its medical staff a number of entries so vast as to alienate most panel practitioners for all time from statistical method. These entries are recalled at the end of each year, thus rendering them unavailable for further reference. A tithe of this labour spent on a continuous record card would have produced results far exceeding in value those of the National Service inquiry. The panel conference, which we deal with elsewhere, had something of this possibility laid before it last week.

#### THE CEREBRAL COMPLICATIONS OF MUMPS.

THOUGH a typically harmless disease, mumps may rarely be attended by serious and even fatal complications. In the Index Catalogue of the Surgeon-General's Library six deaths from mumps are recorded. Death is probably always due to cerebral complications. About 150 cases of cerebral complications have been reported. In the *Archives of Internal Medicine* for June Lieutenant R. L. Haden, U.S. Army, has published nine cases which were observed at Camp Lee, Va., U.S.A., among 476 cases of mumps, and he has reviewed the literature of the subject. The nature of the cerebral complications has been much discussed. Before the advent of lumbar puncture it was considered as meningismus, but with demonstration of pleocytosis of the spinal fluid it was looked on as meningitis. In simple mumps, according to Doptier, the cerebro-spinal fluid is normal. Many things point to the conclusion that the lesion is an encephalitis and not simply a meningitis. In most cases the cerebral symptoms are out of all proportion to the meningeal reaction, as shown by the condition of the cerebro-spinal fluid. The common symptoms are high fever, headache, nausea, and vomiting. Usually there is only slight rigidity of the neck and Kernig's sign is not well marked. Numerous cases of involvement of the cerebrum alone are on record. In these there are no definite meningeal signs, and the cerebro-spinal fluid is normal. Among the symptoms observed in 31 cases reported by Acker were unilateral convulsions, monoplegia, hemiplegia, aphasia, disturbances of speech, psychoses, disturbances of sensation, and stupor. These point to affection of the brain substance. Other symptoms, such as bradycardia, headache, vomiting, and optic neuritis are probably due to intracranial pressure. The few necropsies recorded have shown congestion of the brain with only serous meningitis. In the nine cases reported by Lieutenant Haden the symptom-complex was fairly uniform. Usually as the parotitis was subsiding the temperature rose, with little change in the pulse-rate, severe headache, nausea, and vomiting. Often the patient had orchitis. On examination he was dull, answered questions slowly, showed slight stiffness of the neck, a suggestion of Kernig's sign, and variable reflexes. Lumbar puncture yielded clear fluid under increased pressure with lymphocytoses. In a few cases increased pressure was the only abnormality. Smears and cultures were made from the fluid in all cases, but in only one were organisms (Gram-positive cocci) found. Such cocci have been described by several observers as the organisms causing the disease, although a filterable

<sup>1</sup> Bull. et Mém. Soc. Méd. de Hôp. de Paris, 1919, xliii., 434-7.



virus has also been suggested. The fluid in this case was turbid. Lumbar puncture proved effectual therapeutically. The temperature usually fell quickly to normal and the headache was relieved. The following case may be taken as typical. A wagoner, aged 21 years, was admitted to hospital on Feb. 3rd, 1919, complaining of headache, swelling of the neck, and occasional nausea. Three weeks ago he first noticed the swelling. On admission the right submaxillary glands were swollen, the temperature and pulse were normal. On Feb. 5th the left parotid became swollen, and on the 9th bilateral orchitis was noted. On the 10th the patient became very dull and suffered from headache and vomiting. The temperature was 105° F. and pulse 180. On the 11th he was very drowsy and still vomiting. There was definite stiffness of the neck. The knee-jerks were not obtainable. Kernig's sign was positive and Babinski's negative. Lumbar puncture yielded clear fluid under increased pressure, and the patient's condition immediately improved. On the 13th the pulse was only 48 and the temperature subnormal. He said that he could not see well, and during the night became delirious. On the 14th he was stuporous with the head retracted; the pupils reacted sluggishly. The temperature was 97° and pulse 44. The deep reflexes could not be elicited. Next day he was much improved. Rapid recovery followed. The following were the laboratory findings: Feb. 12th, leucocyte count, 6200. Differential count: small mononuclears, 48 per cent.; large mononuclears, 6 per cent.; eosinophils, 5 per cent.; polymorphonuclears, 41 per cent. Feb. 11th, cerebro-spinal fluid contained 10 cells per c.mm., all mononuclears. Feb. 14th, the fluid contained only 5 cells per c.mm. Sugar was present on both occasions.

#### A FLOATING SCHOOL OF TROPICAL MEDICINE.

To most of us the stimulus of encouragement and criticism is necessary to bring forth our best, and the foregathering of workers on kindred subjects at the regular meetings of learned societies has often acted like the piece of leaven in the amorphous dough or, as we should now say, as a catalyst in a mass reaction. This stimulus has been wanting to most workers in tropical medicine, cut off for months or years from their friends and critics, and, in addition, borne down by conditions of great bodily discomfort. Small wonder that under these circumstances the best work has not always been done, although the history of tropical medicine is punctuated with individual brilliant successes. Nine years ago, in a letter to our own columns,<sup>1</sup> Dr. Andrew Balfour, struck with the usefulness of the Wellcome floating laboratory on the Nile, suggested the extension of the marine floating laboratory for the purpose of visiting any desired portion of the globe and bringing back a store of material for museum and teaching purposes. By such a perpetual *Challenger* expedition diseases could be studied on the spot, parasites observed in a living state, and tutorial classes given to successive crews of students desirous of obtaining a nearer insight into the fascinating problems of disease and its prevention in hot countries. Dr. Balfour's suggestion passed unheeded, and it remained for Dr. Louis Sambon, in a lecture delivered before the Royal Society of Medicine on June 14th last, by arrangement with the

West India Committee, to develop the theme of bringing students periodically into the tropics by means of a floating school. The islands of the Lesser Antilles, which he had recently visited, were ravaged each by its particular breed of epidemic, and nothing would coördinate the isolated efforts of medical officers on these lonely isles so thoroughly as a regular circulation of expert advice and help. He advocated a development on international lines, having already received encouragement from the French and Italian Governments. The idea thus timely set forth was not allowed to drop and came up for discussion at a private meeting held under the chairmanship of Sir Humphry Rolleston on Thursday, July 10th, at the same place. Here Dr. Balfour set out the views summarised above, adding the further claim of a floating laboratory as a link between the Dominions and the Mother Country. Sir David Bruce and Dr. G. C. Low, among others, doubted the feasibility of the floating school as a substantial agent of research, the latter pointing out that sleeping sickness and kala-azar at all events could not be studied on the littoral. The extended establishment of local shore laboratories appealed to the majority of those present for the purpose of actual research work, neither nostalgia nor rolling and pitching apparatus being specially conducive to the desirable mental detachment. Sir Thomas Horder voiced the general consensus in finding the floating school an attractive idea for teaching purposes, adding that finance should not be an impediment if the ruling authorities were satisfied of the practicable character of the proposal. A committee was appointed, with Dr. Balfour as chairman, and Dr. Low, Dr. R. T. Leiper, and Dr. Sambon as secretaries, to inquire into the question in all its aspects. We are inclined to agree with Dr. Balfour, who has from first to last been the moving spirit in the proposal, that the cost of such a floating school might reasonably be regarded by Parliament and public in the same light as polar expeditions. The adventures and prizes are much the same, the gain, indeed, presumably much greater: the difference consists chiefly in the substitution of pith helmets and mosquito nets for fur caps and mocassins. Within a generation, if ankylostomiasis and pellagra are not then extinct, we doubt not that the floating school will be a routine method of education and preventive study.

#### CRIME AND RESPONSIBILITY.

THAT "insanity is not an absolute defence," and that what is called the defence of insanity to the charge of murder requires, for success, not merely the proof of insanity, but that of insanity of such a nature as to carry with it irresponsibility to the law, is clearly shown by Section 2 (1) of the Trial of Lunatics Act, 1883, in which the following form of words is employed: "insane so as not to be responsible according to law for his actions at the time the act was done." Formerly, many judges refused in court to allow, when in murder cases the "defence of insanity" was raised, evidence to be given by experts as to the existence of insanity in the broad, or medical, sense; but nowadays practically every judge allows, as did Sir Charles Darling in the recent case of Perry, testimony of such nature to be given before attention is directed to the more stringent issue of legal responsibility. It is generally by the application of the M'Naughton Rules that this question of responsibility is decided, but there are not wanting judges who

<sup>1</sup> THE LANCET, 1910, ii., 55.



will direct, in accordance with the view of the late Sir James Stephen, that responsibility may be abrogated by loss of control, if arising from mental disease or infirmity, and not from the accused person's own conduct. Such elasticity is permissible in practice because, after all, the M'Naughton Rules are not part of the statute law which is applicable to civilians. In respect of military law it is otherwise. Reference to the "Manual of Military Law" (chap. vii., par. 9) will satisfy those to whom the point is unfamiliar that, in the case of a member of His Majesty's Army under trial by court-martial, the question of responsibility, if a defence of insanity be raised, can only be resolved by a rigid and undeviating application of the M'Naughton Rules. The effect of this is that when, either in the course of trial or afterwards, medical testimony is adduced, or a Medical Board is constituted to inquire into, as is said, the state of mind of the accused, the medical witnesses are required to testify, or the Board to direct inquiries, not to the general question of the accused's sanity or insanity at the time of inquiry or anteriorly, but to the specific questions implied in the Rules. All other considerations are irrelevant; the problem is simply whether or no it can be said, at a certain date, that a certain person was, at an anterior date, in such a state of mind that he did not know the nature and quality of his act or that what he was doing was wrong. There is no room for elasticity of interpretation; and the question of impulsion, or lack of control, cannot be raised. That this is a perfectly fair representation of the procedure in vogue is known at any rate to some of those who have lately served overseas; and official confirmation is afforded by the answer given by Mr. Macpherson, in the House of Commons on April 11th, 1918, to a question put to him some time previously by Sir William Job Collins.<sup>1</sup> No great effort is required, then, to realise how readily the specific instructions addressed to a Medical Board may determine the infliction of the last penalty upon an officer or man who, under the influence of temporary mental disorganisation produced by physical agencies, commits the supreme military offence of "desertion in the face of the enemy," or of apparent cowardice. The military necessity for such stringency is not a matter on which we express any opinion; but the facts are as stated. The ultimate consequence to Perry, alias Beckett, of his acts has been his execution; but he enjoyed more generous opportunity under the English common law than would have been his had he left a post of military duty under that kind of mental compulsion best known to those who have experienced—or feared it.

#### THE SUPPLY OF DRUGS DURING THE WAR.

A VERY interesting Memorandum was issued from His Majesty's Stationery Office this week (Cmd. 183) on the special measures taken by the National Health Insurance Commission (England) in relation to the supply of drugs and other medical stores during the war. It shows how the critical position in regard to the supply of drugs created by the sudden and unexpected outbreak of war was dealt with. Immediate steps had to be taken to conserve existing stocks and to encourage the production in this country of drugs for the supply of which we had hitherto been wholly or mainly dependent upon

enemy countries. Conspicuous service was rendered by the Royal Society, while the energy and enterprise shown by the chemical manufacturers of the country will lead to permanent results of the utmost importance to the medical needs of the community. The requirements of the Forces and of the civil population were met after a little inevitable shortage experienced at the beginning. The Chairman of the Committee, Mr. Waldorf Astor, concludes his prefatory note by saying that the fine chemical industry has been very greatly developed and extended, and that this country is now capable of manufacturing on a large scale all the important medicinal chemicals which before the war were practically a German monopoly. Thus ground has been regained which should, in point of fact, never have been lost. The Memorandum, opportunely enough, provides a key to many of the scientific products now being exhibited by the British Science Guild at the Central Hall, Westminster.

#### HUGH OWEN THOMAS.

THE Medical Institution of Liverpool have organised a scheme for the perpetuation of the memory of Hugh Owen Thomas, a pioneer worker in orthopædic surgery. Hugh Owen Thomas was born in 1834 and studied medicine at Edinburgh in the days of Goodsir, Syme, Spence, and Simpson, with Turner as demonstrator of anatomy. Later he entered University College, London, and qualified as a Member of the Royal College of Surgeons of England in 1857. On returning to Liverpool he took up surgical work in connexion with workmen's societies and at the docks, his practice being almost entirely concerned with accidents, deformities, and joint diseases. He instituted a free clinic at his surgery on Sundays—a recognised practice before the establishment of out-patient departments at the hospitals—and devised and made his own splints, employing a blacksmith and various artisans in their construction. Later he himself became an expert metal-worker, laying great stress on the careful fitting of all splints and their correction from time to time under his own supervision. In 1871 he described an ingenious method of wiring fractures of the lower jaw, and soon afterwards published an important work on the treatment of the diseases of the hip, knee, and ankle joints. The appliances which he invented have not been improved upon in principle, and in joint diseases his splints enable sufferers to enjoy fresh air and exercise, as they did upon their invention half a century ago. He was without doubt one of the founders of modern orthopædic surgery, and the appeal for funds to endow a worthy memorial to his work in the city where his whole life was spent should certainly meet with a generous response. Subscriptions should be sent to Major C. Thurstan Holland, at the Medical Institution of Liverpool, and crossed "Hugh Owen Thomas Memorial."

THE House and Library of the Royal Society of Medicine will be closed during the whole of August for repairs and cleaning.

A DINNER will be held in London, at a date to be arranged, for all R.A.M.C. (T.F.) officers; will those who are interested and would be likely to attend kindly communicate with Lieutenant-Colonel A. R. Henschley, D.S.O., R.A.M.C. (T.F.), care of Holt and Co., 44, Charing Cross. It would facilitate matters if London officers would say whether they would kindly serve on the committee.

<sup>1</sup> THE LANCET, 1918, i., 587.



## THE AMERICAN HOSPITAL FOR GREAT BRITAIN.

THE American Hospital for Great Britain, to which allusion has been made frequently in our columns, was formally founded on Thursday, July 17th, at a meeting at the House of the Royal Society of Medicine.

LORD READING, the Lord Chief Justice of England, presided over the meeting of supporters of the hospital, and in a brief but happily worded speech laid stress on the coöperation that had existed between Americans and British during the later stages of the war. He pointed out that from the very beginning of the war a certain number of American medical men had worked in British hospitals, and that out of the cordial relations thus established had arisen the idea that there should be founded an American hospital in London both for the reception of sick Americans, and to act as a centre for post-graduate work in London among Americans who hitherto have pursued such studies mainly in Berlin or Vienna.

MR. PHILIP FRANKLIN, who has been a moving spirit in the foundation of the American Hospital for Great Britain, then made a statement in which he pointed out the need for an American Hospital in London, which the American medical man could make his headquarters when engaged in organised post-graduate work.

In the absence of the American Ambassador, Mr. NEWTON CRANE moved, and Sir W. ARBUTHNOT LANE seconded, the following resolution:—

"That, in commemoration of the coöperation of the medical men of the United States and of Great Britain during the European War, and to strengthen the friendship existing between the two nations, the American Hospital for Great Britain be, and is hereby, founded for the medical and surgical treatment of patients of all classes, irrespective of creed or nationality, and for the promotion of scientific study and research."

Sir HUMPHRY ROLLESTON, President of the Royal Society of Medicine, then moved a resolution that a governing body should be constituted. Sir JOHN BLAND-SUTTON seconded and paid an eloquent tribute to the value of the work done by lay boards in administration hospitals.

The following were constituted the original members of the council:—

His Excellency the American Ambassador.	Mr. Robert Grant, jun.
Mr. Walter Blackman.	" James Benson Kennedy.
" George M. Cassatt.	" J. Blair MacAfee.
" R. Newton Crane.	" George A. Mower.
" Wilson Cross.	" Francis E. Powell.
" James E. Dunning.	" H. Gordon Selfridge.
" J. Grant Forbes.	" Henry E. Stoner.
" Philip Franklin.	" Lawrence L. Tweedy.
" Clarence Graff.	" F. C. Van Duzer.
	" E. Bradner White.
	" Robert Skinner.

MR. F. E. POWELL moved, and Mr. WALTER BLACKMAN seconded, a resolution, which was unanimously adopted, constituting the Medical Committees in Great Britain and in the United States, the following being the selected personnel:—

Of the Medical Committee in Great Britain:

Sir William Osler, Regius Professor of Medicine, University of Oxford.

Sir W. Arbuthnot Lane.

Sir Humphry Rolleston, President of the Royal Society of Medicine.

Sir John Bland-Sutton, Vice-President of the Royal College of Surgeons of England.

Mr. J. Y. W. MacAlister, Secretary of the Royal Society of Medicine.

Mr. Philip Franklin, Joint Honorary Secretary of the Fellowship of Medicine.

With power to add to their number.

Of the Medical Committee in the United States:

Dr. George W. Crile, of Cleveland, nominated by the

American Academy of Science on International Relations.

Dr. W. J. Mayo, of Rochester, Minnesota.

Dr. Charles H. Mayo, of Rochester, Minnesota.

Dr. Albert J. Ochsner, of Chicago.

Dr. Rudolph Matas, of New Orleans.

Dr. Franklin Martin, of Chicago, nominated by the

American Gynaecological Association.

With power to add to their number.

Mr. Philip Franklin was then unanimously appointed honorary secretary to the hospital, while it was left in the hands of a small subcommittee to invite the support of certain vice-presidents. The committee also decided to appoint legal, financial, and appeal committees. The meeting terminated with a cordial vote of thanks to the Royal Society of Medicine for its hospitality and assistance to the movement.

In replying, Sir HUMPHRY ROLLESTON wisely took the opportunity of pointing out that this movement was in no sense in rivalry to the existing post-graduate work in London, but would prove a source of support and inspiration of such efforts.

## THE MINISTRY OF HEALTH: ORGANISATION OF MEDICAL STAFF.

ON the establishment of the Ministry of Health the medical staffs of the Local Government Board and of the National Health Insurance Commission have been brought together to form the main portion of the medical staff of the Ministry, but on a newly organised system, and with considerable additional posts.

The Minister has appointed Sir George Newman, K.C.B., as Chief Medical Officer of the Ministry, with status corresponding to that of a secretary of the Ministry. By arrangement between the President of the Board of Education and the Minister, Sir George Newman retains his position as Chief Medical Officer of the Board of Education.

Five new posts of "Senior Medical Officer" have been established, with status corresponding to that of Assistant Secretary. To these the Minister has appointed the following:—

Dr. G. S. Buchanan, C.B.

Dr. Janet M. Campbell (who will also by arrangement with the President of the Board of Education act as Chief Woman Medical Adviser of that Board).

Dr. F. J. H. Coutts.

Dr. A. W. J. MacFadden, C.B.

Mr. J. Smith Whitaker (who will also act as Medical Adviser to the National Health Insurance Joint Committee).

The whole of the rest of the established medical staff of the Ministry will be in one grade, to be known as "Medical Officers." They will comprise the remainder of the existing medical staffs of the Local Government Board and of the Insurance Commission, with the addition of new officers still to be appointed as the additional services may require. The following appointments have so far been made:—

Dr. Irene Cecil Davy Eaton.

Mr. Major Greenwood (Medical Statistics).

Dr. Florence Barrie Lambert (Remedial Treatment).

Dr. Jane Holland Turnbull, C.B.E. (Obstetrics and Gynaecology).

Besides this regular staff, arrangements have been made whereby the Ministry may secure the services, from time to time, of specialists and others on a part-time basis; amongst these are included at present the following:—

Dr. Maurice Craig (Psychological Medicine).

Colonel L. W. Harrison, D.S.O. (Venereal Diseases).

Sir David Semple (Rabies).

Further appointments will be announced as they are made.

PORTSMOUTH AND SOUTH HANTS EYE AND EAR HOSPITAL.—At the annual meeting of this institution, held on July 14th, it was reported that overtures had been received from the Royal Portsmouth Hospital with a view to amalgamation, but that the committee had not felt justified in altering the present arrangements. The financial statement showed a small deficit of £148 on the year's working.

PRESENTATIONS TO MEDICAL MEN.—On the occasion of the closing of the Hart House V.A.D. Hospital, Burnham, Somerset, Dr. N. O'Dell Burns, the honorary medical officer in charge, was presented with a silver cigarette case as a mark of respect and esteem.—Dr. W. R. Newton Cole, St. Tudy, Cornwall, has been presented with a clock and an album containing the names of 300 subscribers, as a mark of respect and esteem, on the occasion of his retiring from active work after 37 years' residence in the village.



## WOMAN IN INDUSTRY.

## I. WOMAN'S ECONOMIC VALUE IN RELATION TO HEALTH.

THE ability of women to compete on equal terms with men in industry and the principle of "equal pay for equal work" is very fully discussed in the Report of the War Cabinet Committee on Women in Industry, which has lately been published. Dr. Janet Campbell deals with the Health of Women in Industry, and in her memorandum brings out important points with regard to men's and women's work which, although well-known to physiologists and students of industrial medicine, have, so far, not been given sufficient prominence in actual practice. No one has ever denied that a woman is handicapped on account of her potential motherhood, but this handicap is, as a rule, far greater than is necessary. Those who are engaged in looking after the health of girls employed in offices must have realised that much of the tribulation and inability to carry on which occur at the menstrual periods is avoidable, and is much increased by ignorance of the elements of hygiene and the laws of health. Decayed teeth are only too common among all classes of workers, the constipation of women is proverbial, digestive disturbances are not unusual, anæmia is essentially an ailment of girls and young women, and it is a well-known fact that girls and women often forego proper meals. All this tends to a lowered state of vitality, which is still more accentuated during menstruation.

*Disadvantages of Women Workers as Compared with Men.*

Only in very rare and exceptional cases is it possible to compare with any degree of fairness the ability, both physical and mental, of men and women. Their upbringing has been different and their training and development have been forced along different lines. Among the children of the poor the boys, during out-of-school hours, are given the open-air work to do, such as carrying messages, &c., whilst the girls are cooped up indoors helping with the domestic work. Teachers in secondary schools complain that it is impossible to send a girl up for a certain examination at the same age as a boy. She is usually about a year behind, not, as they say most definitely, on account of her lower mental capacity or of an even slightly lower grade of intelligence, but because she has no proper time for her home work and because, being engaged in household tasks, she comes to school with her brain more tired, her mind less receptive, and her memory less retentive. The same handicap follows her through life. If she is living at home and going out to work there are still household duties which she is expected to carry on, although nothing of the kind is expected from her brothers. In the poorer classes, as a mother of a family compelled to go out to work, it is still her duty to keep the home, cook the meals, and do the family washing. A dish for the dinner is unusual, as it means more washing up, so the mother spends her time going backwards and forwards from the fireplace to the table helping the rest of the family to food. She herself has for her dinner "whatever is left," and this occurs as a matter of course. There seems no doubt that less and poorer food, combined with domestic duties, has an extremely deleterious effect on women's work, and handicaps them to a very marked degree in competition with men for work and wages. Miss Anderson, in her evidence before the Committee, pointed out that "a limitation of hours was necessary in the national interest, in order to enable women with domestic responsibilities to carry on their home duties." Miss Martindale "showed that night-shifts, and especially permanent night-shifts, are particularly harmful to women with domestic responsibilities, as it is more difficult for them to obtain adequate sleep; they invariably do their own housework during the day and their rest is subject to continual interruptions; their work becomes inferior in quality and their health suffers." There are no doubt profound physiological differences between men and women, as Dr. Campbell insists, but there has been no proper evaluation of these differences, and until the question has been more fully elucidated there is no reason to conclude that women's handicaps are physiological and unalterable. A great difficulty arises in the case of the married woman who has a baby and who has to add to the family income. For the national welfare the baby should be breast-fed; for

the family welfare the mother must go to work. It seems to us that the only way out of the difficulty is the institution of creches in connexion with the factories where nursing mothers are employed, which should be under the supervision of the doctor who is also in charge of the health of the mothers, and where time should be allowed every four hours for breast-feeding.

*An Old Problem in a New Aspect.*

These are some of the more obvious considerations that arise on a first survey of the report, but they lie at the root of the whole of social and industrial medicine. They are the justification for the call for more effective supervision and for energetic research into the causes of industrial fatigue and the methods of preventing disease directly or indirectly due to occupation. Employers of the more educated type of labour do already to some extent provide efficient supervision, preliminary medical examination, and medical advice. But such conditions as decayed teeth, unhealthy throats, and defective eyesight usually remain unrealised and untreated among employees of the poorer classes. It what follows the vast problem of industrial health from the woman's point of view is studied largely in Dr. Campbell's own words.

## II. THE PERSONAL HEALTH OF THE WOMAN WORKER.

In her memorandum on the Health of Women in Industry, included in the Report of the War Cabinet Committee on Women in Industry, Dr. Janet Campbell points out that in considering the position of women in industry and their capacity and power of continuance to compete equally with men two essential principles can never be disregarded, namely: (1) the profound physiological differences between the man and the woman; and (2) the woman's potential function of motherhood and child-bearing. The woman's abdominal muscles are longer, and, as a rule, less well developed; they act under greater mechanical disabilities on account of the relatively greater length of the abdominal cavity, the greater area of the abdominal wall, and the larger size of the pelvic cavity. This natural weakness is not infrequently accentuated by habits of dress and by lack of proper use and training of the muscles. The effect of pregnancy, especially when repeated, is usually a further weakness and stretching of the abdominal walls, which result in a less effective support of the internal organs. The muscular system of the girl and young woman can be greatly developed by suitable nutrition and training, but, in this country at any rate, the smaller size of the bones, together with the mechanical disadvantages of the general build and an inherent physiological difference not to be overcome rapidly, if at all, by any method of upbringing, make it unlikely that women can become equal to men in physical strength, and suggest that uncontrolled competition between men and women in matters requiring considerable muscular energy is undesirable. The greater weight of the man is itself an advantage where heavy work is concerned, and the strength of his muscles and joints makes him less liable to instability or accident from sudden or violent jerks or strains.

Owing possibly to the greater fineness and delicacy of her skin and the greater deposit of adipose tissue, a woman usually reacts more quickly than a man to an unsatisfactory atmospheric environment, and particularly to ill ventilation and high temperatures. She loses heat from the surface of the body less rapidly than the man, and therefore feels low temperatures less and high temperatures more.

There seems no reason to believe that the *special senses* of a woman (sight, hearing, touch, taste, smell) cannot be trained as highly as those of a man, though there may be certain differences in the two sexes. As regards the *central nervous system*, there is probably little difference, except as regards a woman's higher degree of emotional expression. Professor Sherrington stated that, judging by certain simple sensory tests, the young woman's delicacy of sensation is possibly less than the young man's, but the more complex the test the smaller the difference.

*Maternity.*

The function of maternity, even when potential only, necessarily imposes on the woman disabilities from the point of view of physical strength and efficiency. The structure of her body is framed with a view to pregnancy and childbirth, and is less well adapted to muscular exertion



than that of the man; she is further subject to periodical functional disturbances which tend to render her nervous and muscular energy somewhat unequal and varied. Interruption of employment due to childbearing and lactation is an economic handicap to the married woman; pregnancy places a considerable physiological strain upon the general metabolism which requires adequate physical compensation if the woman is to maintain her health and strength. She is also exposed during this period to various dangers, some of them chiefly physiological in origin, others due to more or less unsatisfactory treatment at the time of her confinement, but the results of which may persist as permanent disabilities and render her less fit for her ordinary occupation and less able to resist subsequent strain or fatigue.

#### Nutrition.

One of the primary requirements for healthy physiological development is satisfactory nutrition.

The habit of the woman is to consume less than the man even when ample food is available; this habit is far more marked among working-class women and girls, who are frequently not in a position to provide themselves with an adequate diet. The average wages earned by women before the war made it impossible for them to procure good and substantial food; their diet, besides being less in quantity, was less satisfactory in quality than the diet of men in their own position. It is a matter of common knowledge that the mothers of working-class families often suffer from an inadequate diet; when the wages are insufficient the needs of the father as bread-winner almost necessarily come first, those of the children next, the mother's last.

*Fatigue*, the true index of which is diminished capacity, results in reduced output, even before it is observed subjectively by the worker. Persistent fatigue, shown in reduced physical capacity, results in the loss of resistance to disease or an unsatisfactory environment, which are further reflected in returns of sickness, of broken time, and of the number of accidents recorded. Fatigue naturally occurs earlier in under-paid, under-fed persons; the secondary results of overstrain, including sickness, are most common and excessive among this class of worker, which is mainly comprised of women and girls. It is a frequent cause of complaint that women workers are worse time-keepers than men; omitting such reasons as domestic duties and temporary physiological incapacity, fatigue, whether giving rise to actual sickness or not, will inevitably tend to increase absence and unpunctuality. Accidents have been shown to be most common during the period of the day when fatigue is most pronounced and to be due, in some degree at any rate, to diminished capacity leading to inattention and carelessness.

*Prolonged standing* is a not uncommon cause of excessive fatigue in women. Women who have borne children are likely to suffer more from continual standing than unmarried girls, and are more apt to develop varicose veins, internal displacements, or other disabling conditions in consequence. In order to avoid unnecessary fatigue and conserve physical energy, it is important that suitable seats should be provided for women engaged in occupations involving constant standing, even if occasional advantage only can be taken of them.

*Lifting heavy weights* is another source of overstrain and possible injury. Women are less able to lift weights than men, but are usually better able to deal with small compact objects than with bulky articles of the same weight. Part of their natural disability can be overcome with training, and in certain factories selected women have shown themselves surprisingly competent in the handling of heavy weights.

*Anæmia* is present in greater or less degree in a very large number of working girls. It certainly reduces their efficiency, sometimes to a considerable extent, hinders their full physiological development, and may predispose to more serious diseases.

*Overstrain* also results in greatly reduced industrial efficiency. The over-tired woman performs her task at an excessive expenditure of nervous energy. If long continued, this results in a serious lowering of vitality and the power to resist disease (for example, tuberculosis, infectious diseases, &c.), it renders her less capable of performing maternal functions such as nursing her baby, and it prematurely wears her out and makes her an old woman

long before her time. Overstrain may result from the nature of the work alone, but is far more likely to be associated with undue speeding up or competition with physically stronger workers of either sex.

*Incidence of sickness.*—The operation of the National Health Insurance Act revealed for the first time the remarkable incidence of minor and major sickness among girls and young women, an incidence which compared most unfavourably with the sickness rates for men. The report of the committee appointed to inquire into the alleged excessive claims in respect of sickness benefit contains important evidence in this connexion. This chronic ill-health among working women was ascribed to low wages resulting in badly prepared and insufficient food, and to conditions of employment, such as long hours, long standing, lack of fresh air, and long intervals without food.

Dr. Benjamin Moore, in an article on factory and workshop conditions and the prevalence of pulmonary phthisis, has pointed out<sup>1</sup> that after the thirtieth year there was a great preponderance of the disease among urban males which is not shared by urban females, no such disparity being observed between rural males and rural females. This is ascribed to the daily occupation—(1) the long-continued strain of work under unhealthy conditions, and (2) the infection of men (thus reduced in resisting power) by fellow workers actually at work alongside them while suffering from open phthisis. Since 1914 the mortality rate among urban women has shown a substantial increase. This, Dr. Stephenson thinks, may well be due to the introduction of many thousands of women into industrial life.

#### III. THE EFFECT OF INDUSTRIAL EMPLOYMENT ON MOTHERHOOD.

It is difficult to determine the effects of employment on the function of motherhood. As Dr. Campbell says, "It may be personal and physiological, but it is difficult to separate this from social and national welfare."

The direct result upon the reproductive system of the woman is probably largely negligible, except in the case of multiparous women engaged in heavy or fatiguing work. The influence of employment in causing an impairment of the general health and vitality is certainly, if indirectly, considerable. The effect of the increasing employment of women on the birth-rate has probably been to accelerate somewhat the steady decline which has been observed since 1876, and the figures relating to occupations in which married women's labour is common suggest that this result would become more pronounced if the proportion of employed married women was much increased. The influence of employment upon the infant mortality rate is not altogether clear. The industry associated with the highest infant mortality rate is mining, in which there is little employment of married women, but the housing and sanitation are notably inferior and the standard of general hygiene and domestic comfort is low. Almost as high infant mortality rates are associated with the pottery and textile industries, in which many married women are employed for long hours away from home. The regular employment of the mother necessarily deprives her infant of its natural food, which is the greatest safeguard to its healthy growth and development, and also of the careful and constant attention which is so necessary to its successful nurture. On the other hand, poverty or an insanitary environment may have an even more injurious effect than the mother's absence. This is borne out by the low infant mortality rates in 1916 and 1917, years during which a continually increasing number of married women was being employed. The infant mortality rate has shown its most rapid decline in the last decennium, during which industrial employment of women has increased. In 1899 the infant mortality rate for England and Wales was 163; in 1902 it was 133; in 1908, 120; in 1911, a year of heat and drought, it was 130, but dropped in the following year to 95. In 1915 it rose to 110, but in 1916 it was 91, the lowest recorded rate. In 1917 it again rose slightly to 97, but there has been no substantial interruption in the steady downward tendency. The chief direct causes of deaths amongst infants are: (1) premature birth, atrophy, marasmus, and congenital defect; (2) diarrhoea and enteritis; (3) bronchitis and pneumonia.

Among the various general influences which affect infant mortality, the most important would seem to be poverty,

<sup>1</sup> THE LANCET, Nov. 9th, 1918, p. 618.



bad housing and insanitation, the lack of education of the mother, and the occupation of the parents. Poverty and bad housing are often inseparable; ill-paid work and a low standard of domestic hygiene are usually, though not always, associated. A hand-fed baby is much less likely to thrive in such circumstances than in a well-to-do household.

*Parental Occupation and its Effect on Infant Mortality.*

With regard to the effect on the infant mortality rate of the occupation of the parents, it is shown that the mortality in the middle classes is only 61 per cent. of the total infant mortality of the country, which suggests that practically 40 per cent. of the mortality could be avoided if the health conditions of infant life in general could be approximated to those in the middle class. The observation is not a new one, for in the classic inquiry carried out by Sir John Simon and Dr. Greenhow for the old Board of Health, in the middle of the last century, into the sanitary state of the people of England, it was noted that one of the causes of the high rate of infant mortality then existing was the occupational differences among the inhabitants in certain large towns where women were greatly engaged in branches of industry away from home. In such circumstances the houses were usually ill-kept, and infants who should have been on the breast were improperly fed, starved, or quietened with opiates. After consideration of subsequent investigations in England and Scotland by other authorities, including the Home Office inspectors, Sir George Newman ("Infant Mortality," 1906) concludes that in towns where women are largely employed in factories, the disadvantages to the health and life of their infants are enormously increased on account of: (1) the injuries and diseases to which women and girls in factories are liable; (2) the strain and stress of long hours of hard work to the pregnant woman; and (3) the absence from home of the mother and the infant. The results of an investigation of Dr. J. Robertson, of Birmingham, carried out in two wards where the wages were low and the industrial employment of women was common, suggest that poverty was more injurious to infant life than the employment of the mother. Dr. G. Reid, medical officer of health for Staffordshire, in his report for 1910, shows that the infant mortality rate was greatest and had declined least in the five large towns in the county having the highest proportion of married and widowed women industrially employed. Industrial employment of women leads to the neglect of breast-feeding, and the infant may be left in the charge of an unskilled "minder" instead of being sent to a properly managed crèche. As a result epidemic diarrhoea and nutritional disturbances are more common, the infant's chance of survival during the first years of its life are diminished, and its liability to subsequent weakness and debility are increased. The areas in which the infant mortality rate is highest are the mining and manufacturing districts. In the mining districts the cause is probably to be found in defective housing and sanitation, overcrowding, and the low standard of general hygiene. In the pottery and textile trades it is probably due to low wages and the handling by the mothers of a substance specifically dangerous to infant life—namely, lead.

Married women's labour must be regarded from various points of view: (1) the direct effect on the health of the mother while she is bearing or nursing a child; (2) the general effect on her health in view of her domestic responsibility and duties; and (3) the effect on her home and children.

Besides its effect on the birth-rate and on infant mortality, the employment of married women may react directly on the personal health of the expectant and nursing mother, and on her general physical strength at other times by imposing a double burden of factory labour and domestic duties, while lack of "mothering" may lead to the moral and physical injury of the children. Employment under suitable conditions is not in itself injurious to the pregnant woman, while the money thus earned may enable her to be properly fed—a matter of the highest importance. If the work causes undue fatigue or involves strain or violence it may give rise to general or local injury and lead to premature confinement or complications of pregnancy. Section 61 of the Factory and Workshops Act, 1901, provides that a woman shall not return to work within four weeks of giving birth to a child and is generally observed, because most women do not desire to return to work until at least a

month, and usually longer, after their confinement. It would be undesirable to extend this period unless grants in aid were available to assist the mother.

*Wages in Relation to Health.*

The results of employment of women under war conditions have emphasised the important to health of the good food, clothing, and domestic comfort which can be obtained when the wages represent a reasonably adequate recompense for labour. They have also proved that properly nourished women have a much greater reserve of energy than they have usually been credited with, and that under suitable conditions they can properly and advantageously be employed upon more arduous occupations than has been considered desirable in the past, even when these involve considerable activity, physical strain, exposure to weather, &c. Light sedentary occupations are not necessarily healthy occupations. The commercial futility of unduly long hours of work and of overtime has been demonstrated repeatedly, together with the benefit to health and to output of shorter hours, of the abolition of work before breakfast, and of properly arranged spells and pauses. There is advantage to the employer as well as to the workpeople in the provision of factory canteens, well-equipped surgeries and rest-rooms, suitable arrangements for sanitation and hygiene, and, when necessitated by the nature of the work, of protective clothing.

*Physical Strain on the Worker with a Family.*

Dr. Campbell points out the great physical strain which is placed upon the woman who is industrially employed and also has a home and family to manage. This strain is often unrealised because the woman shoulders this heavy burden patiently as a matter of course and without complaint. That she is often surprisingly successful, though at the expense of her own youth and physical vigour, is no reason why the nation should be content to allow its mothers to wear themselves out in a life of colourless drudgery and a continual struggle with difficulties which frequently prove too great to be overcome, and of the results of which there is ample evidence in the sickness returns under the National Health Insurance Act. In addition to the general physical strain, a woman who has had children is more liable than one who has not to various forms of injury and disability arising from heavy work, work involving constant standing and so forth. Pathological conditions following upon confinement are likely to be accentuated and prolonged by certain forms of factory work. In such circumstances it is not possible for a woman to give her children that care and attention which are needful for healthy physical development and for the prevention of avoidable defects and ailments, or to make her home as pleasant, comfortable, and hygienic as she would otherwise do.

(To be concluded.)

## INSURANCE ACTS COMMITTEE OF THE BRITISH MEDICAL ASSOCIATION:

### REPORT ON THE REVISION OF THE CONDITIONS OF SERVICE.

THE report on the revision of the conditions of service under the National Health Insurance Acts and on possible extensions of service, drawn up in May last and circulated for discussion by local medical and panel committees, was passed substantially as presented by the Special Conference held at the Connaught Rooms, London, on July 17th and 18th:—

*Summary of the Main Changes.*

A summary of the main changes that would take place in the present terms and conditions of service in the event of the suggestions contained in the report being carried into effect, was included in the report as follows:—

- (i.) The central pool for the year would be actuarially fixed before the beginning of the year and the amount payable for the year to the practitioners collectively of each area (the local pool) would be known before the work of the year was commenced.
- (ii.) The distribution of this known amount would be made to practitioners definitely quarter by quarter soon after the work of the quarter was completed.
- (iii.) A first charge on the local pool would be the payment of an agreed fee in every area for the administration of general anaesthetics, and a second charge, if the practitioners of any area so wished, would be the payment of an agreed fee for attendance at miscarriages or for any one or more of a number of other specified special services.



(lv.) The distribution of the remaining portion of the local pool would then be made to practitioners in amounts proportionate to the names on each list, subject to some minor variations in the values to be attached to some names to meet special cases.

(v.) The present calculations and accounts for temporary residents and other like classes would be done away with, the payments for these classes being secured in the general distribution.

(vi.) The practitioners of an area would have no financial interest in the amount of the drug fund, the responsibility for any deficit in which would be assumed by the Treasury, but from the drug fund two payments would be made to all practitioners: (a) a small capitation fee, uniform for the whole country in respect of drugs supplied in emergencies; (b) a capitation fee, which might be variable from area to area or from practice to practice, in respect to dressings.

(vii.) Rural and semi-rural practitioners in every area would receive, in addition to the foregoing: (a) a payment from the drug fund in respect of patients for whom they dispense, fixed yearly on such a basis as to secure that the remuneration would be equal in every relevant respect to that of the pharmacists; (b) a payment from a special mileage or travelling fund calculated according to data, which would aim at securing for them an amount corresponding as nearly as possible to the excess cost of the necessary travelling (including extra time spent) over that of an urban practitioner.

(viii.) There would be a high limit—say, 3000—fixed for the whole country, beyond which no practitioner would be allowed to accept names on his list; but this limit would be for individual practitioners only. Every opportunity would be afforded for arrangements in the nature of partnership or assistantships, and, in the case of practitioners whose lists were above the prescribed limit on the day on which the limitation became operative, a period of one year would be allowed for the required reduction of the list, the practitioner himself having a voice in the exact method by which the reduction should be effected.

(ix.) It would be possible for a practitioner to come on the panel of an area under a special arrangement by which he would be guaranteed a small minimum payment for a period of two years, irrespective of the number on his list, provided that he undertook certain special obligations.

(x.) The machinery for keeping lists would be in some respects altered so as to eliminate the causes of some of the errors that have hitherto prevailed; at the same time the necessity for minute correctness would become relatively less important than hitherto.

(xi.) The present agreement between the practitioner and the Insurance Committee would be abolished, and the contract would take the form of a letter from the practitioner accepting the published terms and conditions.

(xii.) Specific arrangements would be made by which a practitioner could conditionally charge a fee (a) in cases in which there is a doubt as to whether the patient is entitled to medical benefit; (b) in cases where the service to be rendered is alleged to be outside the scope of medical benefit, but in which the practitioner claims to be specially qualified to render it, the amount of the fees in each case being deducted from subsequent payments to the practitioner should it be determined that the treatment was, in fact, due under the contract.

(xiii.) It would be permissible for a practitioner to arrange with fellow practitioners to undertake on his behalf certain kinds of treatment which, though within the scope of the contract, he was not, in fact, in the habit of undertaking in the case of his private patients—e.g., minor surgical operations.

(xiv.) The requirements with regard to (a) attendance on an insured person in an emergency; (b) the provision of a deputy during absence; (c) adequate surgery and waiting-room accommodation; (d) the maintenance of a satisfactory standard of competence as well as of conduct, would be strengthened.

(xv.) The arrangements for records and for certification would be revised with a view to making them less laborious and more useful.

(xvi.) Certain additional services would be established—e.g., consultations and specialised treatment, laboratories—and the arrangements with the tuberculosis service would be reviewed; in every case the general practitioner would have duties in connexion therewith; and he would be encouraged to associate himself with the work thereof; and he would have the right, if possessing the necessary special qualifications, of being appointed to give the service in the same way as a consultant or specialist.

(xvii.) Medical referees would be appointed with responsible duties, which would include their acting indirectly in a supervising capacity over the administration of the clinical services.

(xviii.) The machinery for dealing with alleged breaches of agreement would be made more clear, and alterations would be made so as to remedy some points which appear inequitable to practitioners.

The limitation of the number of the panel list was defeated at the Conference, the division being a close one.

#### Recommendations.

The following definite recommendations were appended to the report:—

(I.) That, subject to a full consideration of any suggestions from Local Medical and Panel Committees or from the Group Conferences, and subject also to any resolutions of the July Conference, the Insurance Acts Committee be authorised to negotiate definitely with the Central Government Department for new terms and conditions of service for 1920 on the lines of this report and of the two interim reports already issued.

(II.) That the Insurance Acts Committee be requested throughout such negotiations to keep in touch with Local Medical and Panel Committees and with other professional organisations with a view to a decision at the October Conference on the question of the amount of remuneration which practitioners would agree to accept for the services to be rendered.

(III.) That as regards the additional services for insured persons suggested in the report, it is important that, as from early in 1920, these services should be regarded as an essential part of the whole service, though in practice they might be developed only gradually.

(IV.) That the Ministry of Health should consider as soon as possible through its Medical Consultative Council the order in which and the method by which such services should be extended to the non-insured population; but that in this connexion it is essential (a) that a general practitioner service should be established for any class of persons before

such additional services are made freely available for that class; (b) that general practitioners, if possessed of the necessary qualifications, should be eligible to render such additional services; (c) that the clinical staff of any such additional service should be engaged on a part-time basis and should be remunerated on a time basis, and that a medical committee should play an important part in its selection.

(V.) That the Insurance Acts Committee be authorised on behalf of Local Medical and Panel Committees and in conjunction with other professional organisations to continue to hold "round table conferences" with the central Government department with regard to the extension of the service to the dependants of insured persons, the provision of residential institutional treatment, and the administrative arrangements which should be established for the proper provision and supervision of the service.

And these were confirmed by the vote of the Conference.

## THE OXFORD OPHTHALMOLOGICAL CONGRESS, 1919.

### ANNUAL MEETING.

THE tenth annual meeting of the Oxford Ophthalmological Congress was held on July 10th and 11th last in beautiful weather. Members were lodged in Keble College and the scientific proceedings took place in the Department of Human Anatomy of the University (kindly lent for the purpose by Professor Arthur Thomson), where technical and commercial museums were also arranged.

The programme was opened on July 10th by an address of welcome by the Master, Mr. SYDNEY STEPHENSON.—Major WALTER H. KIEP, R.A.M.C., read a paper on the Ocular Complications of Dysentery, which was followed by a good discussion on the subject.—Major EDGAR H. SMITH, R.A.M.C., read a communication dealing with "Quinine Amaurosis," well discussed by the members present.—Dr. WILLIAM MCLEAN, of New York, described his further experimental studies in intra-ocular pressure and tonometry, and exhibited his latest model tonometer.

A discussion on

#### *Preventive Ophthalmology*

was introduced by Colonel J. HERBERT PARSONS, C.B.E., consulting ophthalmic surgeon to the Forces. Colonel Parsons pointed out that the scope of his subject dealt with the prevention of damage (a) to the individual, and (b) to others. (a) Included many subjects, such as prevention of damage to the eyes from accidents, defective illumination, deleterious rays and organisms, and the prevention of damage to health from headache, accident, fatigue, &c.; (b) included regulations for the prevention of the transference of contagious disease and rules for Navy, Army, Air Force, Mercantile Marine, railways, motor industry, cinemas, and so forth. The problems of preventive ophthalmology constituted a question of collective action, and were of particular value at the moment, when projects of reconstruction were to the fore. In connexion with the prevention of accidents to the eyes in factories, there is urgent need of a scale of awards for compensation founded upon scientific principles. The formulation of regulations for the public services demanded (1) a widening of the basis of education of ophthalmologists; (2) coöperation between ophthalmologists and other experts; and (3) improvement in the methods of examination of candidates and the selection of examiners.

After the discussion the Doyné Memorial medal was presented to Colonel Parsons by the Deputy Master, Mr. PHILIP H. ADAMS. In the afternoon members and their friends were entertained to tea in the gardens of Trinity College by Mr. D. N. Nagel, M.A., and Miss Nagel. In the evening the annual dinner of the Congress was held in the hall of Keble College, some 70 members and visitors being present. The toast-list was commendably brief.

After dinner the annual general meeting of the Congress was held in the junior common room at Keble College. Among other things it was determined, on the motion of Mr. J. B. STORY, to make representations to the General Medical Council in support of those recently preferred to that body by the Council of British Ophthalmologists concerning the instruction and examination of medical students in eye work. Readers of THE LANCET are aware that the recommendations in question have been rejected by the General Medical Council.

On July 11th the proceedings began with a paper by Dr. S. LEWIS ZIEGLER, of Philadelphia, on the Problem of the Artificial Pupil; Knife-Needle *versus* Scissors.—Dr. P. BAILLART, of Paris, followed with a communication dealing



with his dynamometer for determining the blood pressure in the branches of the central retinal artery.—Mr. A. F. MACCALLAN (Cairo) read a paper on the Seasonal Variations of Acute Conjunctivitis in Egypt.—Colonel A. H. TURBY entered a suggestive plea for investigation as to any possible connexion between skeletal asymmetry, on the one hand, and defects of the eye, on the other.

A discussion upon Employment for the Blind was introduced by three blind speakers—namely, Mrs. ADOLPHUS DUNCOMBE, Captain PEIRSON WEBBER, and Captain TOWSE, V.C., and it is to be hoped that useful action will be undertaken by the Congress in connexion therewith.

In the afternoon the Ashhurst War Hospital at Littlemore, near Oxford, was thrown open to members by Lieutenant-Colonel T. S. GOOD, R.A.M.C.

The Congress was well attended, and a pleasing feature was the presence of representatives from Canada, Australia, Egypt, the United States, France, and Norway.

## TUBERCULOSIS.

### *The Establishment and Conduct of a Tuberculosis Sanatorium.*

THE Department of Health of the city of New York has published a monograph of 138 pages on the above subject by Dr. Charles B. Slade, visiting physician to the Municipal Sanatorium at Otisville. This book is full of good and much-varied advice, and deals with as widely different subjects as climate, building plans, and the qualifications to be found in the ideal sanatorium physician. Even the attitude of residents to a sanatorium in their neighbourhood is discussed. The author calculates that sanatorium accommodation should be provided for not less than 1 to 3 per 1000 of the community for which it is established. A complete sanatorium, with a capacity for 500 or more patients, should consist of five units—a reception, a men's, a women's, a children's, and an administration unit. A medical superintendent should be "of good moral character and temperate habits," and he should have practised his profession with reasonable success for several years, have had one to three years' "internship" in a general hospital, several years' experience in outdoor clinics for tuberculosis, some familiarity with the conduct of sanatoriums, and a wide knowledge of people. The monograph also discusses such vexed questions as the remuneration of work done by patients and ex-patients. The physical examination of the chest, the daily routine of a sanatorium, principles of treatment, after-care, and a host of other subjects come under review.

### *Annual Report of the Tuberculosis Officer for Wigan.*

This report, which is for 1918, in addition to giving the usual statistics, records the fact that the cases received direct from the Army, through the Insurance Commissioners, were in a comparatively early stage of the disease, and the prospect of restoration to working capacity was correspondingly good. But 48.8 per cent. of the 217 deaths between July, 1912, and Dec. 31st, 1918, occurred within six months of application for sanatorium benefit. This deplorably high percentage is regarded as absolute proof of the urgency of the need for still further coöperation between the panel doctors and the tuberculosis dispensaries.

### *Trudeau Sanatorium: Thirty-fourth Annual Report.*

Of the 259 patients discharged in the year under review, 52.9 per cent. were classified as cases of arrest or quiescence. In a further 13.1 per cent. the disease was improved, and in 17.7 per cent. the patients were either not tuberculous or classified merely as tuberculosis suspects. A notable fact was the increasing number of patients in whom the diagnosis of tuberculosis was in doubt (42), and this was interpreted as the result of the widespread educational campaign that had taught patients to seek advice early, and physicians to send more persons with suspicious symptoms for observation. The staff has found the study of these cases most instructive and excellent material for demonstration to the Trudeau School. The good results achieved by the radical bed-rest method have been maintained, but graduated exercise was the treatment adopted for the majority. Tuberculin was largely discontinued and artificial or natural light treatment was adopted in a few cases. The

influenza vaccine, which was given to a large number of patients, seemed to be harmless as well as prophylactic. No fewer than 125 former patients and members of the staff joined the various services; with what result is not stated. The work of the X ray laboratory included 2000 examinations, requiring 5000 plates, and 1500 fluoroscopic examinations. The principal occupations for the patients were basket-making, clay-modelling, photography, and typewriting. At the fourth session of the Trudeau School of Tuberculosis, 25 physicians and medical students were enrolled; of the 59 physicians trained during the four sessions, most have taken a definite position in tuberculosis work.

### *Injections of Saccharose in Pulmonary Tuberculosis.*

Writing in the *Corresp. Bl. f. Schweiz. Arzt.* for April 12th Dr. P. von Schulthess-Rechberg notes that, in his experience, the beneficial action of saccharose in pulmonary tuberculosis appears to be limited to a reduction of the sputum. Of the nine patients thus treated six reacted with severe local as well as with general disturbances, and also with a rise of temperature. One patient died a fortnight after the treatment was started, and four gave it up on account of the reactions provoked. In four cases the reduction in the amount of sputum varied between 20 and 80 per cent. In all but one case there was no corresponding improvement in the physical signs. The most important observation in this series of cases is that the injections, whatever their merits, are liable to provoke serious and even dangerous reactions.

## MEDICINE AND THE LAW.

### *Professional Secrecy: The Military Aspect.*

THE question of professional secrecy, difficult enough in England, is in France posed on a somewhat different basis. At a meeting of the Société de Médecine Légale (de Paris), according to the *Presse Médicale* (1919, xxxvii., 367), M. Granjux discussed some military aspects of the problem, for apparently there have been medical "incidents" and, it is suggested, administrative "errors" that have provoked public comment. At any rate, M. Granjux feels that two separate sets of circumstances should be distinguished. In the first, a soldier (officer or man) reports, or "goes sick," as we say, and is seen by the medical officer in the course of familiar routine. The ordinary social and ethical relationship and obligations, as between doctor and patient, do not then obtain; military administration and disciplinary necessities alone are involved, and the civil issue of professional secrecy cannot arise. In the second case recognised by M. Granjux, the circumstances, though not unknown, are less familiar to those who have served in the R.A.M.C. We are here asked to consider the case of a "militaire" (officer or man) who seeks the advice or services of the doctor without first going through the process of "reporting sick." Then, says M. Granjux, the surgeon must respect his patient's confidence. It appears, however, that when a "militaire" who has thus sought and obtained the advice of his battalion medical officer is afterwards compelled to "go sick," the ethical rule recognised by all officers of the Corps de Santé is to forget all that has passed, and to begin again on a purely military and official footing.

### *The Civil Aspect.*

At the same session as that at which the military difficulty was discussed, M. Berthélemy reopened the civil question, which has become recently, in France, of some moment. While, on the one hand, the proposal to make obligatory the notification of tuberculosis has provoked many objections; on the other, the crusade against criminal abortion bids fair to involve doctors in many difficulties. As is well known, the French Penal Code, by Article 378, constitutes the violation of professional secrecy a punishable offence, save only when the breach is in response to the definitely imposed legal obligation to give information under certain circumstances. As the result of certain decisions of the Cour de Cassation, however, the law, in the words of M. Berthélemy, has converted the custom of professional secrecy into a tyrannical obligation laid upon medical men, overriding the social duty of assisting justice. And M. Berthélemy thinks that it has been an error thus to convert what should be a facultative means of escape from



the witness-box into an absolute prohibition of the right to perform a duty to society.

We gather that it is now proposed, in certain legal instruments designed to check the practice of criminal abortion, to enforce the rigid application of the doctrine of professional secrecy by the clearest legal provision—the impulse coming from the public rather than from the profession. M. Berthélemy thinks, however, that it were better for medical men to be absolved from the social duty in particular circumstances rather than to be forbidden ever to perform it.

#### *An International Contrast*

This striking contrast then obtains: that while in England the effect of the strict interpretation of the law is to impose on medical men the "social duty" of giving information of the commission of a crime, and is in opposition to the views of that body of professional opinion (recently voiced by Sir John Tweedy) which clings to the sanctity of the professional secret as a professional privilege; in France, on the other hand, there is an apparently strong current of professional resentment against the proscription by the law of the right to exercise, save under extremely limited conditions, the duty to society. It is not suggested for one moment that our French brethren are less scrupulous than are we in their allegiance to the spirit and letter of the Hippocratic oath, but they are clear-headed and logical enough to recognise the possible evil to the State if medical men, in response to public clamour, are forced to "contract out" of social obligations which are not less incumbent on them than on others.

## AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

#### *The Influenza Epidemic.*

THE progress of epidemic influenza has shown little that is new during the past month. In Sydney there has been a gradual decline, and early in May the Government removed all restrictions, including the wearing of masks in trains and trams. There are no figures which are at all accurate as to the extent of the outbreak, but the number of deaths will be not short of 1000 in New South Wales for the present wave. In Melbourne the attack-rate, as gauged from the death-rate, has been curiously steady, and from 20 to 30 deaths are being still reported daily for the whole of Victoria. The disease has been just as prevalent in country districts as in towns, and severe cases are as often met with. Brisbane is now definitely suffering from an epidemic, but as yet the dimensions are not alarming. Adelaide has also now become infected, although the number of cases is not great. Several well-known medical men have succumbed to the disease in different States, and scarcely any practitioner has escaped more or less severe infection. The resident medical officers at all hospitals have been at some time patients during the past few months.

There is as yet no clear-cut evidence as to the value of any preventive measure adopted during the epidemic, but opinion is crystallising that nothing so far attempted has been of any avail in staying the spread of influenza. The experience of public mask-wearing in Sydney does not support the idea that it is worth while, and it has been regarded by all as very irksome and disagreeable. Inhalatoriums in which medicated steam was supplied for a few minutes were loudly advocated by some, but in Sydney the medical committee, after employing them, condemned them as harmful. In Melbourne they were never used except by the Public Health Department at a hospital and at the quarantine grounds. Inoculation may be said to have lost most of its friends and supporters, both lay and professional. Some observers still persist that it modifies the symptoms, but this is purely a personal opinion, and no evidence in support of the assertion is produced.

In Victoria the acting Minister of Health has appointed Dr. H. Newton as controller of influenza hospitals, and has also created an additional staff of transport and organisation in connexion with the epidemic aspect of influenza. This work was in the hands of the chairman of the Board of Public Health, but it has proved too much for a single direction, and the change was made in response to public clamour for more vigorous action. No considerable steps have as yet resulted from the new policy.

#### *Melbourne University: an Overcrowded Medical School.*

The Council of the Melbourne University approached the Victorian Government with a request for money in order to provide increased accommodation for students. Every school is said to be overcrowded, but the urgent requirement is in the medical school, which during the past two years has been taxed to breaking point to find room for first- and second-year students. It was proposed some time ago to remove the medical school to a separate site in the vicinity of the hospitals, but this scheme failed to attract political support, although it was approved by the profession and by some of the University staff. The Premier was sympathetic to the recent deputation and has undertaken to find a sum of £200,000 to build and equip new class-rooms and laboratories.

#### *Veneral Disease.*

A return has been issued of the number of cases of venereal diseases notified in Victoria for the year 1918. It appears that 6790 persons were affected (State population about 1,250,000). Gonorrhœa was returned alone in 4878 cases, syphilis in 1686, and the two in combination in 99 patients. The remainder were various combinations of infection. In Victoria the diseases are compulsorily notifiable and there are penalties for neglecting treatment. There are clinics for treatment managed wholly by the Government, and some of the general hospitals have been brought into the scheme although the provision on this regard is not yet very great.

#### *Personal.*

Colonel H. Maudsley, C.M.G., C.B.E., has arrived in Melbourne after an absence of four years on duty with the A.A.M.C. in Egypt and England. Colonel Maudsley is lecturer on medicine in the University of Melbourne and will take up his position shortly.

Lieutenant-Colonel Sir James Barrett, K.B.E., has also returned to Melbourne and resumed private practice.

The death is announced of Surgeon-General Sir W. T. Williams, who was the Director-General of the Commonwealth Military Forces at the outbreak of war, but resigned owing to ill-health. General Williams had a distinguished record in the Boer war with the New South Wales contingents, and was the first Director-General of the Federal military organisation.

May 27th.

## URBAN VITAL STATISTICS.

#### VITAL STATISTICS OF LONDON DURING JUNE, 1919.

IN the accompanying table will be found summarised statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious disease it appears that the number of persons reported to be suffering from one or other of the ten diseases notified in the table was equal to an annual rate of 4·7 per 1000 of the population, estimated at 4,026,901 persons; in the three preceding months the rates had been 4·5, 4·6, and 4·5 per 1000. Among the metropolitan boroughs the lowest rates from these notified diseases were recorded in Hammersmith, the City of Westminster, Hampstead, St. Pancras, the City of London, and Wandsworth; and the highest in Chelsea, Holborn, Bethnal Green, Stepney, and Southwark. Two cases of small-pox were notified during the month, against 7, 2, and 3 in the three preceding months; these cases belonged respectively to Stepney and Lambeth. The cases of small-pox under treatment in the Metropolitan Asylums Hospitals at the end of the month numbered 2, against 6, 1, and 3 at the end of the three preceding months. The prevalence of scarlet fever was slightly more than in the preceding month; this disease was proportionally most prevalent in Finsbury, Stepney, Southwark, Lambeth, Deptford, and Greenwich. The Metropolitan Asylums Hospitals contained 1132 scarlet fever patients at the end of the month, against 1009, 1043, and 1066 at the end of the three preceding months; the weekly admissions averaged 157, against 126, 138, and 150 in the three preceding months. The number of notified cases of diphtheria was the same as in the preceding month; the greatest prevalence of this disease was recorded in Kensington, Chelsea, Holborn, Shoreditch, Bethnal Green, and Southwark. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1152, 1134, and 1086 at the end of the three preceding months, numbered 1021 at the end of June; the weekly admissions averaged 138, against 164, 151, and 145 in the three preceding months. Twenty-four cases of enteric were notified during June, against 13, 18, and 22 in the three preceding months; of these cases, 5 belonged to Kensington, 3 to Poplar, 2 to Paddington, and 2 to Lewisham. There were 25 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 16, 16, and 19 at the end of the three preceding months; the weekly admissions averaged 5, against 3, 2, and 3 in the three preceding months. Erysipelas was proportionally most prevalent in Stoke Newington, Holborn, Bethnal Green, Poplar, and Southwark. The 18 cases of puerperal fever notified during the month included 2 each in Islington, Poplar, Wandsworth, Camberwell, and Deptford. Of the 14 cases of cerebro-spinal meningitis 2 belonged to Battersea and 2 to Greenwich; while of the 6 cases of poliomyelitis 2 belonged to St. Marylebone.



## ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING JUNE, 1919.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHES.	Estimated civil population, 1917.	Notified Cases of Infectious Disease.											Deaths from Principal Infectious Diseases.											
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other con- tinued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping- cough.	Enteric fever.	Diarrhoea and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.	Deaths from all causes.	Death rate per 1000 living.
LONDON... ..	4,026,901	2	654	570	—	24	—	18	151	14	6	1439	4.7	—	23	6	37	6	—	35	107	0.3	3011	9.7
<i>West Districts:</i>																								
Paddington ... ..	122,507	—	12	18	—	2	—	1	6	—	1	40	4.3	—	1	—	—	—	—	1	2	0.2	83	8.8
Kensington ... ..	151,535	—	14	34	—	5	—	1	7	1	—	62	5.3	—	4	—	2	—	—	1	7	0.6	140	12.0
Hammersmith ...	114,952	—	10	14	—	—	—	1	1	—	—	27	3.1	—	—	1	—	1	—	3	5	0.6	72	8.2
Fulham ... ..	145,186	—	24	16	—	—	—	1	5	—	—	46	4.1	—	1	—	—	—	—	1	2	0.2	95	8.5
Chelsea ... ..	57,368	—	11	16	—	1	—	—	—	—	—	28	6.4	—	—	—	1	—	—	1	0.2	45	10.2	
City of Westminster	122,046	—	10	6	—	—	—	—	5	1	—	22	2.3	—	1	—	—	—	—	1	0.1	93	9.9	
<i>North Districts:</i>																								
St. Marylebone ...	92,796	—	16	16	—	—	—	—	3	—	2	37	5.2	—	1	1	1	1	—	1	5	0.7	74	10.4
Hampstead ... ..	75,649	—	5	6	—	1	—	—	—	—	—	12	2.1	—	—	—	1	—	—	1	2	0.3	49	8.4
St. Pancras ... ..	186,600	—	26	15	—	—	—	—	7	—	1	49	3.4	—	3	1	—	—	—	1	5	0.3	142	9.9
Islington ... ..	297,102	—	40	59	—	1	—	2	10	1	—	113	5.0	—	1	—	3	—	—	3	7	0.3	238	10.4
Stoke Newington...	47,426	—	9	5	—	—	—	—	3	—	—	17	4.7	—	—	—	1	—	—	1	0.3	40	11.0	
Hackney ... ..	196,598	—	36	30	—	1	—	—	5	—	—	72	4.8	—	—	—	5	—	—	2	7	0.5	154	10.2
<i>Central Districts:</i>																								
Holborn ... ..	35,303	—	6	13	—	—	—	—	2	—	—	21	7.8	—	—	—	—	—	—	—	—	—	28	10.3
Finsbury ... ..	68,011	—	14	10	—	—	—	—	—	—	—	24	4.6	—	—	—	—	—	—	—	—	65	12.8	
City of London ...	16,138	—	1	1	—	—	—	—	—	—	—	2	1.6	—	—	—	—	—	—	—	—	9	7.3	
<i>East Districts:</i>																								
Shoreditch ... ..	89,675	—	2	19	—	1	—	—	4	1	—	27	3.9	—	—	—	—	—	—	—	—	—	83	12.1
Bethnal Green ...	107,362	—	21	22	—	—	—	—	10	—	1	54	6.6	—	3	—	2	—	—	2	7	0.8	88	10.7
Stepney ... ..	232,010	1	76	40	—	1	—	—	9	1	—	128	7.2	—	1	1	1	1	—	3	7	0.4	179	10.1
Poplar ... ..	143,443	—	19	13	—	3	—	2	8	—	—	45	4.1	—	1	—	2	—	—	2	5	0.5	115	10.5
<i>South Districts:</i>																								
Southwark ... ..	167,936	—	60	41	—	1	—	—	12	1	—	115	8.9	—	—	—	7	1	—	8	0.6	121	9.4	
Bermondsey ... ..	107,635	—	14	19	—	1	—	—	4	—	—	38	4.6	—	1	—	—	—	—	1	0.1	86	10.4	
Lambeth ... ..	272,038	1	59	23	—	1	—	1	13	1	—	99	4.7	—	2	—	5	—	—	4	11	0.5	227	10.9
Battersea ... ..	150,023	—	20	21	—	—	—	1	6	2	—	50	4.3	—	—	—	—	—	—	1	1	0.1	107	9.3
Wandsworth ... ..	300,787	—	36	19	—	1	—	2	6	1	1	66	2.9	—	—	—	2	—	—	1	3	0.1	202	8.8
Camberwell ... ..	239,461	—	32	28	—	—	—	2	11	—	—	73	4.0	—	1	1	—	2	—	5	9	0.5	169	9.2
Deptford ... ..	103,527	—	22	9	—	—	—	2	5	—	—	38	4.8	—	1	—	—	—	—	1	1	0.1	60	7.6
Greenwich ... ..	90,440	—	19	10	—	1	—	—	2	—	—	32	4.6	—	—	1	—	—	—	1	2	0.3	62	8.9
Lewisham ... ..	161,405	—	25	23	—	2	—	1	7	1	—	59	4.8	—	—	—	1	—	—	1	2	0.2	56	7.8
Woolwich... ..	131,942	—	15	24	—	1	—	1	2	—	—	43	4.2	—	1	—	3	—	—	1	5	0.5	89	8.8
Port of London ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

\* Including membranous croup.

The mortality statistics in the table relate to the deaths of civilians belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased had previously resided. During the four weeks ended June 28th the deaths of 3011 London residents were registered, equal to an annual rate of 9.7 per 1000; in the three preceding months the rates had been 20.9, 15.0, and 11.1 per 1000. The death-rates ranged from 7.3 in the City of London, 7.6 in Deptford, 8.2 in Hammersmith, 8.4 in Hampstead, and 8.5 in Fulham, to 10.7 in Bethnal Green, 10.9 in Lambeth, 11.0 in Stoke Newington, 12.0 in Kensington, 12.1 in Shoreditch, and 12.5 in Finsbury. The 3011 deaths from all causes included 107 which were referred to the principal infectious diseases; of these, 23 resulted from measles, 6 from scarlet fever, 37 from diphtheria, 6 from whooping-cough, and 35 from diarrhoea and enteritis among children under 2 years of age. No death from any of these diseases was recorded in Holborn, Finsbury, the City of London, and Shoreditch. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in the City of Westminster, Bermondsey, Battersea, Wandsworth, and Deptford; and the highest in Kensington, Hammersmith, St. Marylebone, Bethnal Green, and Southwark. The 23 deaths from measles were less than a fifth of the average number in the corresponding period of the five preceding years; of these deaths 4 belonged to Kensington, 3 to St. Pancras, 3 to Bethnal Green, and 2 to Lambeth. The 6 fatal cases of scarlet fever were 7 below the average number. The 37 deaths from diphtheria were one less than the average; of these deaths 7 belonged to Southwark, 5 to Hackney, 5 to Lambeth, 3 to Islington, and 3 to Woolwich. The 6 fatal cases of whooping-cough were one-twelfth of the average number; of these, 2 belonged to Camberwell. No death from enteric fever was recorded during the month, against an average of 9. The 35 deaths from diarrhoea and enteritis among children under 2 years of age were 20 less than the average number; of these deaths, 5 belonged to Camberwell, 4 to Lambeth, 3 to Hammersmith, 3 to Islington, and 3 to Stepney. In conclusion, it may be stated that the aggregate mortality from these principal infectious diseases in London during June was 66 per cent. below the average.

(Week ended July 19th, 1919.)

*English and Welsh Towns.*—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had been 9.6, 10.0, and 10.1 in the three preceding weeks, declined to 9.0 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual rate was 9.2, or 0.8 per 1000 below that recorded in the previous week, while among the remaining towns the rates ranged from 3.3 in Norwich, 4.4 in Wakefield, and 4.5 in Coventry, to 13.8 in Stoke-on-Trent, 14.2 in Gillingham, and 14.7 in Darlington and in Sunderland. The principal epidemic diseases caused 109 deaths, which corresponded to an annual rate of 0.3 per 1000, and included 35 from diphtheria, 34 from infantile diarrhoea, 19 from measles, 11 from whooping-cough, 6 from scarlet fever, and 4 from enteric fever. The mortality from these diseases showed no marked excess in any town. There were 5 cases

of small-pox, 1438 of scarlet fever, and 1100 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 6, 1348, and 1068 respectively at the end of the previous week. The causes of 21 deaths in the 96 towns were uncertified, of which 4 were registered in Birmingham, and 2 each in London, Stoke-on-Trent, Middlesbrough, Darlington, and Gateshead.

*Scotch Towns.*—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had been 11.5, 9.9, and 11.0 in the three preceding weeks, fell to 10.6 per 1000. The 227 deaths in Glasgow corresponded to an annual rate of 10.6 per 1000, and included 10 from whooping-cough, 4 from diphtheria, and 3 each from measles and infantile diarrhoea. The 59 deaths in Edinburgh were equal to a rate of 9.1 per 1000, and included 1 each from measles, whooping-cough, and infantile diarrhoea.

*Irish Towns.*—The 70 deaths in Dublin corresponded to an annual rate of 9.0, or 4.1 per 1000 below that recorded in the previous week, and included 6 from infantile diarrhoea. The 84 deaths in Belfast were equal to a rate of 10.9 per 1000, and included 1 each from measles, scarlet fever, diphtheria, and infantile diarrhoea.

**BRISTOL HOSPITAL SUNDAY FUND.**—Mr. J. H. Reed has retired from the honorary secretaryship of this fund after 21 years, during which time nearly £47,000 have been collected for the Bristol medical charities, and the annual total of a few hundreds increased to £5300.

**DONATIONS AND BEQUESTS.**—By the will of the late Mr. W. Shepherd, of Clapham Park and Guildin-hurst Manor, Sussex, who left property of the value of £600,000, the testator has bequeathed the larger part of this sum to London hospitals.—Under the will of the late Mr. Longueville Gladstone, of Liverpool, the testator has left £1000 to the Liverpool Royal Infirmary, £700 to the Royal Southern Hospital, £500 each to the David Lewis Northern Hospital, Stanley Hospital, and the School for the Indigent Blind, and £2000 for such other charities as the executors and Mayor of Liverpool may select.—The late Miss Mary Austin, of Bath, has, among other bequests, left £500 each to the Finsbury Dispensary, Clerkenwell, and to the Norwood Cottage Hospital, and, on the death of her sister, £500 each to the Middlesex Hospital, Westminster Hospital, Guy's Hospital, and the Royal United Bath Hospital.—Subject to the life-interest of two sisters, the late Dr. J. Duff, of Chester, has left by will property of the value of £9752 to Glasgow University to form a Fellowship for the elucidation of malignant diseases.



## Correspondence.

"Audi alteram partem."

## INCIPIENT MENTAL DISEASES.

To the Editor of THE LANCET.

SIR,—In reports of committees, in articles in medical papers, in books recently published, and in last year's report of the Board of Control the early treatment of these cases without certification and by simple notification has been earnestly suggested. Now a whisper reaches me that during the next session the Ministry of Health intend to bring in a short Bill dealing with these cases, and my very heart rejoices.

One great drawback to the early treatment of mental diseases has not only been the Lunacy Act of 1890, but also the curious unreasonable attitude of the general public, who still insist in looking at mental disease as a "stigma" on the family. By allowing these cases to be under the Board of Control, which deals only with mental diseases, and under their supervision, as suggested in their last year's report, this "stigma" would still exist; whereas if these cases are dealt with by the Ministry of Health, together with all sorts of other diseases, the idea of "stigma" will be done away with.

There are, however, some important points to be considered and brought to the notice of the general public.

(1) There seems to be difficulty in the minds of those who are bringing in this Bill as to the way in which these cases should be defined. Should they be called: (a) not certified cases, (b) uncertifiable cases. Personally I prefer the latter definition, as the first one leaves the question open as to whether or no they are certifiable.

(2) *Supervision.*—These cases must be under some supervision. I feel sure the Ministry of Health will deal with these cases with regard to proper supervision in the most humanitarian manner. The Board of Control, in their 1918 report, agree as to the necessity of supervision, but do not see their way to carry it out with their present staff and the work they have already in hand, so it ought to be a comfort to them to find the Ministry of Health are taking up this matter.

(3) As to who should take charge of these cases it seems to be obvious that the more skilled supervision and treatment they come under the greater will be their chance of recovery. Single cases may be in some instances easily and properly placed, but I am strongly of opinion that "approved homes" for such cases should be permitted, as are now allowed for cases of mental deficiency. Such approved homes should be under the charge of experienced physicians if good results are to be obtained.

(4) Limitation of sojourn for such cases. It has been suggested, both by the Board of Control and committees, that such period should be for six months only. To my thinking this is utterly wrong, unless such period be renewable in certain cases. A patient may be nearly well when the six months has expired. To suddenly take such a patient from the care and treatment and the environment in which he or she has got well to some new home surroundings and treatment might be fatal. I therefore consider that the six months should be renewable in certain cases.

We who have spent our lives in treating mental diseases in all stages have only one wish, and that is to increase the recovery rate of mental diseases, which has stood still during the last 60 years. I trust my suggestions will meet not only with your approval, but with that of the medical profession, the general public, and the Ministry of Health.

I am, Sir, yours faithfully,

July 21st, 1919.

LIONEL A. WEATHERLY, M.D.

## PARAFFIN WAX IN FACIAL SURGERY.

To the Editor of THE LANCET.

SIR,—In your issue of July 19th Lieutenant-Colonel Spencer Mort contributes a very interesting and carefully thought-out article on this subject, and advises the use of paraffin wax for facial scars and depressions of contour of the face. There is no doubt that his method of insertion of paraffin wax is the most practical and fruitful in giving good

immediate results. I cannot, however, let the opportunity pass without entering a protest against the practice of insertions into the facial tissues of any foreign body, and of wax in particular. Before my department was moved en bloc to Sidcup it had been clearly shown by myself and my colleagues that the natural tissues of the body, in the form of autologous grafts or tissue flaps, give ultimate results quite as cosmetic as those of any foreign body implantation.

In regard to paraffin, in 1916 I was inserting it in blocks, and I also used the syringe method, which gives such excellent immediate results with those who are familiar with the method, particularly the Bond Street beauty specialists. I thoroughly agree with Colonel Mort in condemning this practice; in fact, I should go so far as to say that the injection of melted paraffin into the face is a practice that should be prohibited by law. A solid block of paraffin wax is better than the injected wax, in that the late bad results are fewer and more easily dealt with; at the same time, fibrosis must naturally occur round any block of paraffin in the attempt, sometimes successful, of the tissues to get rid of the foreign body. When placed deep I admit little harm comes therefrom, but I think the practice is a retrograde step.

The class of case with which Colonel Mort states he has had the best results—viz., depressed scars—can easily be remedied by excision of the scar tissue and the use of subcutaneous flaps to build up the contour. In the larger depressions cartilage implantations or muscle flaps, combined with complete and total excision of the scar, give the most perfect results possible. This opinion is shared by all my facial colleagues at the Queen's Hospital, and, in particular, by our consulting surgeon, Sir William Arbuthnot Lane.

I am, Sir, yours faithfully,

H. D. GILLIES, F.R.C.S.,

London, July 23rd, 1919.

Major, R.A.M.C.

## NATIONAL HEALTH INSURANCE AND THE MEDICAL GUILD.

To the Editor of THE LANCET.

SIR,—I have been instructed by Dr. John Playfair, the President, and the Executive Committee of the Medical Guild to submit for your consideration the following suggestions embodied in certain resolutions passed at recent meetings of the Guild, after full consideration of the Memorandum of the Insurance Commissioners and the report of the Insurance Acts Committee of the British Medical Association on the Revision of the Conditions of Service under the National Health Insurance Acts and possible extensions of service:—

(1) That professional attendance and treatment given to any insured person by any registered medical practitioner acting solely on the usual understanding subsisting between a practitioner and his private patient shall be recognised as medical benefit for that person, and such person shall receive a just contribution from moneys provided for medical benefit towards the payment of such attendance and treatment.

(2) That obstetric practice should not be included within the range of National Health Insurance.

(3) That tuberculosis should be excluded from the range of National Health Insurance.

(4) That the National Health Insurance Acts as at present administered should not be extended, with the exception of specialists' advice to the present insured.

(5) That a State Medical Service is of urgent necessity for the genuinely necessitous classes of the community and for them only.

With regard to the first of these resolutions or suggestions, it has been estimated that there are approximately 20,000 insured persons in Edinburgh who receive professional attendance and treatment from non-panel practitioners, and as this number is increasing annually it is a matter of justice that those persons should be allowed a money contribution towards payment of such attendance and treatment, especially when the fact is taken into account that the large sum of money for payment of the medical benefit of those persons is being paid to, or distributed among, the panel practitioners who do not work and never will have the opportunity of working for this money. This statement is applicable to other towns and cities.

I am, Sir, yours faithfully,

FREDERICK PORTER,

Edinburgh, July 15th, 1919.

Honorary Secretary.



## THE ORIGIN OF LIFE: THE WORK OF THE LATE CHARLTON BASTIAN.

*To the Editor of THE LANCET.*

SIR,—Dr. Albert Mary's letter in *THE LANCET* of June 28th is most interesting, and his experiments show that Dr. Bastian's results are probably due to chemical actions of a catalytic nature; but the influence of osmotic pressure, by diffusion effects in colloid solutions, is also an important factor that must not be neglected in such operations. Dr. Stéphane Leduc has obtained some very remarkable results in this connexion.<sup>1</sup> Artificial bodies, known since Butschli's day as *simulacra*, can be brought about apparently without the aid of life.<sup>2</sup> In many chemical reactions, as well as purely physical ones, there is a swift passage of electrons, both positive and negative, through the medium in which the reaction takes place. I may perhaps mention in this connexion the very beautiful experiments by Emil Hatschek,<sup>3</sup> which show on a larger scale that the swift passage of a body, or even a drop of liquid, through a "gel" can give rise to motions of the nature of vortices in the "gel," resembling organisms; and I conceive that many chemical reactions and the emission of  $\alpha$  and  $\beta$  particles from radioactive substances, immersed in colloid mediums, should do so likewise, producing such vortex motions resembling bacteria on a much smaller scale. In fact, I have described phenomena of this kind in *Nature* (May 25th, 1905), and in the *Fortnightly Review* (September, 1905), as well as in my book "The Origin of Life," 1906. These bodies, which I called at the time *radiobes* owing to their mongrel origin, differ considerably from the precipitated products of barium, strontium, or lead, as might have been expected. But this is a point that some observers seem to have overlooked, for the products of radium are something more than mere precipitates as their behaviour shows, and have many of the properties of living organisms, though not all of them, since they do not produce subcultures, perhaps owing to the medium being unsuitable, as in Dr. Mary's experiments. It seems to me, then, that both Dr. Bastian and Dr. Mary's results may be explained by the setting up of such vortex motions through catalysis and the rapid interchange of electrons which it involves, whilst in some cases by mere diffusion and osmosis, as in the experiments of M. Leduc already referred to. But, as I have found, the immersion of a radio-active substance in a colloid medium facilitates their production, and this, no doubt, for the dynamical reasons which I have just endeavoured to explain.

I am, Sir, yours faithfully,

Kingston Hill, July 17th, 1919.

J. BUTLER BURKE.

## QUININE AS A PROPHYLACTIC IN MALARIA.

*To the Editor of THE LANCET.*

SIR,—When serving at Sierra Leone about ten years ago I came across the following extract from the medical history of the war in the Gold Coast Protectorate in 1873, written by Deputy Surgeon-General Sir A. D. Home, V.C., K.C.B.:—

"The use of quinine as a prophylactic against 'fever' to the troops on the Gold Coast had been one of the sanitary instructions of the D.G. issued to the P.M.O. on his assuming charge.

It need not be said that the use of the drug in this way to men employed on duty on malarious coasts is an established practice in the Navy, one recommended by the authority of high professional opinion as to its value. Accordingly, Army medical officers serving on the Coast were requested in Departmental orders to give quinine daily in a prophylactic dose.

It was not possible to procure the information asked for as to the influence of quinine in warding off attacks of fever, as medical officers had been changed so frequently and the composition of the detachments had varied so much that continuous observation of the same individuals, even for one month, was unattainable.

On so important a subject, however, in the absence of precise data, it may be desirable to state the conclusions come to with respect to it from observation.

With regret, and heartily wishing that my opinion may be overthrown by others, I have to say that I did not recognise any value in quinine given prophylactically. It neither seemed to ward off attacks or to mitigate the severity of malarious fevers in those attacked. With the exception that in some men a daily 3 gr. dose produced transient deafness, and in a few others nausea, no untoward symptoms followed the use of the medicine. On the other hand, I was unable to agree with the startling opinion seriously propounded to me by some men of the West India Regiment encamped at Fort Napoleon, that the quinine given daily as a prophylactic had given them the ague from which they suffered."

During the year I acted as senior medical officer every soldier stationed at Freetown got 10 gr. on Thursday and

<sup>1</sup> See his "Mechanism of Life," translated by Dr. Deane Butcher, 1911.

<sup>2</sup> Microscopic Foam and Protoplasm, 1894.

<sup>3</sup> Proc. Roy. Soc., Series A, vol. xcv., No. 669.

15 gr. on Friday. I kept its administration in the hands of one officer whom I placed in charge of the Tower Hill Hospital, and in order that there should be no break I arranged to keep him there for the whole year.

He reported 25 per cent. less attacks than during the previous year!

I consider that if he had been able to report a diminution of, say, 75 per cent., one would have been justified in thinking that quinine in these doses had acted as a prophylactic. The number of cases might easily vary to the extent reported from other causes.

Curiously enough, a soldier of the West India Regiment told me that his bi-weekly dose of quinine was invariably followed by an attack of ague.

I am, Sirs, your faithfully,

F. J. W. PORTER,  
Major, R.A.M.C. (retd.).

Bombay, June 14th, 1919.

## PROFESSIONAL SECRECY IN THE EYE OF THE LAW.

*To the Editor of THE LANCET.*

SIR,—Sir John Tweedy's letter in your issue of July 5th, dealing with the accepted canons of the medical profession in disclosing the confidences of patients, suggests an analogy with confidences made to the clergy. Some of your clientele are old enough to recall the "Road" murder, which for a long time baffled detection. Then the Rev. A. D. Wagner, who was vicar of St. Paul's, Brighton, and who ran an Anglican Conventual establishment in that town, induced one of his penitents, who had confessed to him that she was guilty of the crime, to make a clean breast of it to the civil authorities. If I remember rightly, for it was in the early "sixties," the line that this clergyman took was that he himself was unable to divulge what had been told to him under confessional secrecy, but that he made it very patent to this poor unfortunate girl that if she was truly penitent she should make an open confession of the murder she had committed, which confession at the same time would exonerate such as were still under suspicion of having been the perpetrators.

Even now there is being discussed in the United States a very interesting example of a refusal to betray trust. Four years ago Judge Lindsey, of Denver Juvenile Court, had before him a certain boy with whom he had talked in his capacity as Juvenile Judge, and to whom he had given his solemn promise that he would not disclose any statement the boy made to him. Plainly the element of confidence between the judge and the child is essential to the success of the Juvenile Court. As plainly, to destroy this relationship would be, in effect, to nullify and set aside the chief end and purpose of the Juvenile Court.

I am, Sir, yours faithfully,

THEODORE P. BROCKLEHURST,

July 14th, 1919.

Rector of Giggleswick-in-Craven.

## PENTOSURIA.

*To the Editor of THE LANCET.*

SIR,—With reference to your annotation under the above heading in *THE LANCET* for July 19th (p. 117), my experience may be interesting as bearing on the frequency with which this condition is met with. During the month of June I saw 56 cases diagnosed as diabetes mellitus, and of these 11 proved to be passing pentoses in their urine; 9 were found to be of the alimentary type, the characteristic diphenylhydrazone and para-bromophenylosazone of l-arabinose being recovered from the urine; and 2 were cases of true, or essential, pentosuria, the first examples of this condition met with in England, I believe. One of these cases of essential pentosuria passed l-arabinose alone; the other excreted a mixture of this sugar with dextrose and pseudo-lævulose. Under treatment the dextrose and pseudo-lævulose soon disappeared from the urine of the latter, leaving the inactive pentose. These cases are being investigated further, but it is interesting to note that both of them had been treated for diabetes for some time before I saw them, one for 16 years and the other for one year. In 4 of the cases of alimentary pentosuria l-arabinose was the only sugar found in the urine, in 4 it was associated with more or less dextrose, and in 1 there was a small percentage of true lævulose. My observations suggest that alimentary



pentosuria is commonly associated with hepatic disturbances, and it is partly to this that the lowered tolerance for pentose is probably due. The amount of fruit taken by these patients was in no case large, and in all of them analysis of the urine revealed evidence of hepatic insufficiency. I am, Sir, yours faithfully,

P. J. CAMMIDGE.

Nottingham-place, Marylebone, W., July 13th, 1919.

## THE ABILITIES OF THE DISABLED.

To the Editor of THE LANCET.

SIR,—On Friday, July 25th, a meeting has been arranged in Central Hall, Westminster, at 3 P.M., specially designed to interest and encourage men who have suffered some physical disability during the war. The meeting is under the joint auspices of the British Red Cross and the London War Pensions Committee, and Sir Laming Worthington Evans will preside. Two of the speakers, both of whom have suffered the loss of more than one limb and have "made good" in the face of incredible handicaps, will give demonstrations of what is possible with the simplest of artificial appliances. Interesting cinematograph films will be shown, and all discharged, disabled, and demobilised men will be heartily welcome; admission is free.

I am, Sir, yours faithfully,

(Mrs.) ETHEL M. WOOD,

Secretary, London War Pensions Committee.

Bloomsbury-square, W.C., July 16th, 1919.

## SUPERANNUATION OF SCOTTISH POOR-LAW MEDICAL OFFICERS.

To the Editor of THE LANCET.

SIR,—A deputation will shortly wait on the Secretary for Scotland with the object of having the Scottish Poor-law medical officers placed on a similar footing as respects superannuation with their English and Irish brethren. The Poor-law medical officers of the Highlands and Islands who serve under the Highlands and Islands Medical Service Board stand on a different footing from other Scottish Poor-law medical officers, their returns from private practice being very small and their income being mainly derived from Government sources. It is therefore desirable for this group of Poor-law medical officers to come under a separate scheme of superannuation, similar to that which at present obtains in the case of medical officers serving in the Navy and regular Army. I am, Sir, yours faithfully.

July 16th, 1919.

VOX.

## ENCEPHALITIS LETHARGICA.

To the Editor of THE LANCET.

SIR,—In the course of your article on this subject in THE LANCET of July 19th (p. 118) the following sentences occur:—

"Many observers are of the opinion that it is a disease allied to poliomyelitis; while others, mainly those who have made a special study of the history of the disease, incline to the view that encephalitis lethargica is associated in some intimate causal manner with influenza.<sup>6</sup> The latter point out that previous recorded epidemics of lethargy have been associated in point of time with epidemics of influenza, and they suggest that an attack of influenza either predisposes the patient to the lethargy or in some unexplained way activates the virus of lethargic encephalitis."

As the number (6) bears reference to an historical paper by myself, I have ventured to italicise several words, and will be obliged if you allow me the opportunity of saying (a) that I can myself form no idea of what is meant by the "view" that encephalitis lethargica is associated in some "intimate causal manner" with influenza; and (b) that I would be the last to claim credit for the amusing "predisposition" and "activation" hypotheses that someone has put forward in explanation of what is indisputable.

My belief is, simply, that no one who has studied the historical evidence can deny the "clinical affinities and epidemiological liaison between what we now call forms of epidemic encephalo-mylitis and meningitis ..... and the epidemic catarrhal fever, or influenza."

It is, moreover, just those who have studied the historical as well as the clinical and pathological evidence who support

the view that you have allowed me to put forward in your columns (May, 1918)—namely, that the epidemic of "encephalitis lethargica" last year was really a manifestation of Heine-Medin disease, or (to use the term which seems to give least offence) of epidemic encephalo-mylitis and meningitis, of which "acute anterior poliomyelitis" represents but a particular phase.

This view, as it appears from the special report of the Local Government Board on "encephalitis lethargica" (pp. 2 and 63), is substantially that held by Sir William Osler, and Dr. Draper of the U.S. Army—a fact which, rather singularly, has hitherto escaped comment.

I am, Sir, yours faithfully,

Wimpole-street, W., July 19th, 1919.

F. G. CROOKSHANK.

## The Services.

### MENTIONED IN DESPATCHES.

The names of the following are amongst those mentioned for distinguished and gallant services in a very lengthy despatch received from the Commander-in-Chief of the British Forces in France, covering the period from Sept. 16th, 1918, to March 15th, 1919:—

*Army Medical Service.*—Col. J. D. Alexander, D.S.O.; Capt. (acting Maj.) T. H. Boulton, M.C.; Col. F. W. Begbie; Lt.-Col. (temp. Col.) W. Bennett, D.S.O.; Temp. Capt. (acting Major) W. S. Berry; Col. W. W. O. Beveridge, C.B., D.S.O.; Col. R. J. Backham, C.M.G., C.I.B.; D.S.O.; Lt.-Col. (acting Col.) W. R. Blackwell, C.M.G.; Capt. (acting Maj.) H. E. A. Boldero; Capt. and Bt. Maj. (acting Maj.) L. G. Bourdillon, D.S.O., M.C.; Lt. Col. (temp. Col.) A. W. N. Bowen, D.S.O.; Lt.-Col. and Bt. Col. F. J. Brakenridge, C.M.G.; Col. H. A. Bray, C.M.G.; Temp. Capt. (acting Maj.) L. R. Broster; Maj. and Bt. Lt.-Col. C. G. Browne, D.S.O.; Lt.-Col. (temp. Col.) B. B. Burke, D.S.O.; Maj. Gen. (temp. Lt.-Gen.) C. H. Burtchall, K.C.B., C.M.G., K.H.S.; Lt.-Col. (temp. Col.) J. H. Campbell, D.S.O.; Maj.-Gen. H. arr, C.B.; Col. J. Clay; Lt.-Col. (acting Col.) H. Collinson, C.M.G., D.S.O.; Maj. D. M. Corbett; Capt. (acting Maj.) W. V. Corbett; Capt. (acting Maj.) J. Dale; Lt.-Col. B. R. Dennis, O.B.E.; Lt.-Col. (acting Col.) T. F. Dewar, C.B., T.D.; Capt. (acting Maj.) R. F. O. T. Dickinson; Lt. Col. and Bt. Col. (temp. Col.) H. E. M. Douglas, V.C., C.M.G., D.S.O.; Capt. (acting Maj.) C. R. Dudgeon, M.C.; Col. H. N. Dunn, C.M.G., D.S.O.; Maj. J. S. Dunne, D.S.O.; Lt.-Col. (temp. Col.) O. W. A. Elsner, D.S.O.; Lt.-Col. (temp. Col.) H. B. Fawcett, C.M.G., D.S.O.; Capt. (acting Major) A. McL. Ferrie, M.C.; Col. R. H. Fifth, C.B.; Lt.-Col. (acting Col.) Fitzg. G. Fitzgerald, D.S.O.; Lt.-Col. (temp. Col.) T. Fraser, D.S.O.; Capt. (acting Maj.) T. L. Fraser; Capt. (acting Maj.) R. Gale, D.S.O.; Lt.-Col. (temp. Col.) J. S. Gallie, C.M.G., D.S.O.; Maj.-Gen. J. J. Gerrard, C.B.; Col. T. W. Gibbard, C.B., K.H.S.; Capt. (acting Maj.) G. F. P. Gibbons; Capt. (acting Maj.) A. J. Gibson, D.S.O.; Lt.-Col. (acting Col.) G. M. Goldsmith; Col. H. W. Gratton, D.S.O.; Capt. (acting Maj.) W. T. Hare, M.C.; Lt.-Col. (temp. Col.) J. A. Hartigan, C.M.G., D.S.O.; Capt. (acting Maj.) S. M. Hattersley, M.C.; Maj. A. H. Heslop, D.S.O.; Col. (temp. Maj.-Gen.) Sir S. Hickson, K.B.E., C.B., K.H.S. (R.P.); Maj. (temp. Lt.-Col.) F. D. G. Howell, D.S.O., M.C.; Lt.-Col. (acting Col.) C. H. Howkins, D.S.O.; Col. W. E. Hudleston, C.M.G., D.S.O.; Lt.-Col. (temp. Col.) L. Humphry, C.M.G.; Lt.-Col. (temp. Col.) D. O. Hyde, D.S.O.; Col. (temp. Maj.-Gen.) Sir J. M. Irwin, K.C.M.G., C.B.; Temp. Capt. (acting Maj.) F. P. Joscelyne, M.C.; Col. F. Kelly, T.D.; Lt. (temp. Capt.) (acting Maj.) M. B. King, M.C.; Temp. Capt. (acting Maj.) C. Kingston; Capt. (acting Lt.-Col.) F. R. Luing; Maj. (acting Lt. Col.) R. W. D. Leslie; Maj. (acting Col.) M. C. Lindsay, C.M.G., D.S.O.; Capt. (acting Maj.) D. C. Macdonald, M.C.; Lt.-Col. (temp. Col.) T. C. Mackenzie, D.S.O.; Lt.-Col. (acting Col.) A. M. MacLaughlin; Col. R. L. R. Macleod, C.B.; Capt. (acting Maj.) W. W. MacNaught, M.C.; Capt. (acting Maj.) E. B. Marsh, M.C.; Lt.-Col. (acting Col.) W. R. Matthews, D.S.O.; Lt.-Col. (temp. Col.) E. M. McDonnell, D.S.O.; Lt.-Col. (acting Col.) F. McLennan, D.S.O.; Capt. (acting Lt.-Col.) O. W. McSheehy, D.S.O.; Col. J. Meek, C.B.; Capt. (acting Maj.) R. A. Mills; Capt. (acting Maj.) J. M. Milne, M.C.; Lt.-Col. (acting Col.) E. C. Montgomery-Smith, D.S.O.; Col. F. J. Morgan, C.M.G.; Col. G. A. Moore, C.M.G., D.S.O.; Col. (temp. Maj.-Gen.) S. G. Moores, C.B., C.M.G.; Maj.-Gen. Sir M. W. O'Keefe, K.C.M.G., C.B.; Capt. (acting Maj.) M. W. Paterson, M.C.; Col. R. H. Penton, D.S.O.; Col. C. E. Pollock, D.S.O.; Lt.-Col. (temp. Col.) J. Powell, D.S.O.; Col. H. V. Prynn, D.S.O.; Maj. J. D. Richmond, D.S.O.; Maj. M. B. H. Ritchie, D.S.O.; Capt. (acting Maj.) R. I. Ritchie; Capt. (acting Maj.) A. L. Robertson; Capt. (acting Maj.) W. H. Rowell; Maj. and Bt. Lt.-Col. (temp. Lt.-Col.) E. Ryan, C.M.G., D.S.O.; Lt.-Col. (temp. Col.) A. H. Safford; Lt.-Col. (temp. Col.) J. P. Silver, D.S.O.; Temp. Capt. (acting Maj.) G. W. Smith; Lt.-Col. S. B. Smith, D.S.O.; Col. J. C. B. Statham, C.M.G.; Lt.-Col. G. N. Stephen; Capt. (acting Maj.) A. D. Stirling, D.S.O.; Maj.-Gen. H. N. Thompson, C.B., C.M.G., D.S.O.; Maj.-Gen. J. Thomson, C.B.; Col. H. S. Thurston, C.B., C.M.G.; Capt. (acting Maj.) L. R. Tossell (T.F.); Maj. (acting Lt.-Col.) W. F. Tyndale, C.M.G., D.S.O.; Temp. Capt. (acting Maj.) F. B. Winfield; Lt.-Col. (acting Col.) E. A. Wraith, D.S.O.

*Consultants.*—Col. H. A. Ballance, C.B.; Lt.-Col. S. G. Barling; Temp. Maj.-Gen. Sir A. A. Bowlby, K.C.M.G., K.C.V.O., C.B.; Temp. Maj.-Gen. Sir J. R. Bradford, K.C.M.G., C.B.; Temp. Col. W. P. S. Branson; Col. H. A. Bruce; Temp. Lt.-Col. H. Burrows, O.B.E.; Temp. Lt.-Col. R. H. Cooper; Col. S. L. Cummins, C.M.G.; Col. T. R. Elliott, D.S.O.; Temp. Col. C. H. S. Frankau, D.S.O.; Temp. Capt. (acting Lt.-Col.) F. Fraser; Maj. (temp. Lt.-Col.) A. M. H. Gray; Temp. Maj.-Gen. Sir W. P. Herringham, C.B.; Temp. Lt.-Col. G. M. Holmes, C.M.G.; Temp. Col. W. T. Lister, C.M.G.; Maj. (acting Lt.-Col.) H. MacCormac; Temp. Col. C. H. Miller; Temp. Col. W. P. MacCormac; Col. E. M. Pitcher, C.B., D.S.O.; Lt.-Col. W. Thorburn, C.B.; Temp. Maj.-Gen. C. S. Wallace, C.B., C.M.G.; Temp. Col. A. E. Webb-Johnson, D.S.O.

<sup>1</sup> Proc. Roy. Soc. Med., 1919, vol. xii., Sect. Hist. Med.



*Royal Army Medical Corps.*—Maj. (temp. Lt.-Col.) D. Ahern, D.S.O.; Maj. (acting Lt.-Col.) R. B. Ainsworth, D.S.O.; Temp. Capt. (acting Maj.) R. C. Alexander; Temp. Capt. F. J. Allen, M.C.; Temp. Capt. T. S. Allen; Capt. (acting Maj.) W. B. Allen, V.C., D.S.O., M.C.; Maj. A. C. Amy, D.S.O.; Temp. Capt. (acting Maj.) J. R. Anderson; Temp. Capt. W. Anderson; Temp. Capt. (acting Maj.) W. B. G. Angus, M.C.; Lt.-Col. M. H. Babington, D.S.O.; Temp. Capt. L. W. Bain, M.C.; Maj. J. I. Barbour; Temp. Capt. R. F. Bashford; Lt.-Col. (temp. Col.) H. R. Bateman, D.S.O.; Temp. Capt. (acting Maj.) F. G. Bell, M.C.; Maj. (acting Lt.-Col.) W. J. E. Bell, D.S.O.; Temp. Capt. G. W. Beresford; Capt. A. W. Bevis; Capt. (acting Lt.-Col.) F. B. Bissell; Temp. Capt. G. W. Bissett; Temp. Capt. (acting Maj.) P. L. Blaber; Maj. R. B. Black, D.S.O. (R. of O.); Temp. Capt. E. W. Blake; Capt. and Bt. Maj. (acting Lt.-Col.) H. H. Blake; Temp. Capt. V. H. Blake; Capt. (acting Lt.-Col.) J. D. Bowie, D.S.O.; Temp. Capt. C. B. Boyce; Maj. (acting Lt.-Col.) W. W. Boyce, D.S.O.; Temp. Capt. A. B. Brook; Temp. Maj. H. W. Bruce; Maj. (acting Lt.-Col.) J. C. G. Carmichael; Temp. Capt. (acting Maj.) A. M. Caverhill; Capt. (acting Lt.-Col.) C. Clarke, D.S.O.; Temp. Capt. (acting Maj.) G. Clarke; Temp. Capt. H. B. Clutterbuck; Maj. (acting Lt.-Col.) T. S. Coates, O.B.E.; Capt. (temp. Maj.) F. E. Collard; Temp. Capt. (acting Maj.) J. R. Collins; Temp. Capt. C. G. Colyer; Temp. Capt. (acting Maj.) J. D. Cooke; Temp. Capt. (acting Maj.) R. C. Cooke, D.S.O., M.C.; Col. R. J. Copeland; Temp. Capt. W. J. Corbett; Temp. Capt. C. C. Court; Temp. Capt. J. Coutts; Temp. Hon. Maj. E. G. Crabtree; Maj. and Bt. Lt.-Col. (acting Lt.-Col.) B. A. Craig; Temp. Capt. J. G. Craig; Temp. Capt. W. Craig; Maj. (acting Lt.-Col.) J. M. C. Crawford; Temp. Hon. Maj. B. Crothers; Temp. Capt. J. Cruickshank; Temp. Capt. A. J. W. Cunningham; Maj. J. F. Cunningham; Temp. Capt. W. B. Dalgleish; Temp. Qrmer. and Lt. J. G. Darke; Temp. Capt. (acting Lt.-Col.) H. S. Davidson; Temp. Capt. H. R. Davies; Capt. (acting Lt.-Col.) R. M. Davies; Temp. Capt. S. T. Davies; Temp. Capt. G. de H. Dawson, M.C.; Temp. Capt. (acting Maj.) W. Deane; Maj. (acting Lt.-Col.) G. De la Cour; Temp. Capt. A. W. Dennis; Temp. Capt. E. R. Dermer; Temp. Capt. R. S. Dobbin; Temp. Capt. (acting Maj.) A. W. H. Donaldson; Lt.-Col. C. G. Douglas, M.C.; Maj. J. H. Douglass; Maj. (acting Lt.-Col.) C. M. Drew; Temp. Hon. Lt.-Col. G. Dreyer; Temp. Capt. J. D. Driver, M.C.; Temp. Capt. C. E. Dukes; Temp. Capt. (acting Maj.) J. G. Duncan; Temp. Capt. E. C. Dutton; Temp. Capt. H. H. Elliott, M.C.; Maj. (acting Lt.-Col.) A. C. Elliott; Temp. Capt. C. M. G. Elliott; Capt. (acting Maj.) R. Ellis, M.C.; Maj. (acting Lt.-Col.) H. H. A. Emerson, D.S.O.; Lt.-Col. and Bt. Col. (temp. Col.) H. Easor, C.M.G., D.S.O.; Lt.-Col. (acting Col.) C. R. Evans, D.S.O.; Temp. Capt. M. du B. Ferguson; Maj. (acting Lt.-Col.) E. G. French; Temp. Capt. G. Fildes; Temp. Hon. Capt. E. S. Fish; Temp. Capt. A. Fleming; Capt. (acting Lt.-Col.) J. H. Fletcher, D.S.O., M.C.; Maj. (acting Lt.-Col.) A. D. Fraser, D.S.O., M.C.; Temp. Capt. J. E. Frere; Temp. Capt. T. F. S. Fulton; Temp. Capt. (acting Maj.) H. W. Gabe; Capt. (acting Lt.-Col.) R. W. Galloway; Temp. Capt. G. C. Gell; Temp. Capt. (acting Maj.) W. E. Gemmell; Capt. (acting Maj.) C. de W. Gibb; Capt. and Bt. Maj. H. G. Gibson; Temp. Capt. E. C. Girling; Temp. Capt. S. R. Maj. H. G. (T.F.); Temp. Capt. (acting Maj.) H. Goodman; Lt.-Col. (acting Col.) W. R. P. Goodwin, D.S.O.; Temp. Capt. C. B. Goulden; Maj. (acting Lt.-Col.) A. C. H. Gray; Temp. Maj. K. E. L. G. Gunn; Capt. (acting Lt.-Col.) H. A. Harrison, M.C.; Temp. Capt. J. H. Harker; Temp. Capt. D. T. Harris; Temp. Capt. J. N. J. Hartley; Maj. (acting Lt.-Col.) W. J. S. Harvey, D.S.O.; Temp. Capt. T. A. Hawkesworth; Lt.-Col. E. C. Hayes; Temp. Capt. E. D. F. Hayes; Maj. (acting Lt.-Col.) A. F. Heaton (R. of O.); Temp. Capt. A. G. Henderson; Capt. (acting Maj.) R. A. Hepple, M.C.; Temp. Capt. W. Herbertson; Temp. Capt. E. Hesterlow; Temp. Capt. (acting Maj.) T. Higgins; Temp. Capt. R. McC. Hill, D.S.O.; Temp. Capt. (acting Lt.-Col.) G. D. Hindley, M.C.; Temp. Capt. A. N. Hooper; Temp. Hon. Maj. C. W. M. Hope; Temp. Capt. E. I. Horsburg; Temp. Hon. Maj. T. Houston; Capt. (acting Lt.-Col.) I. H. Huerton; Maj. and Bt. Lt.-Col. (acting Lt.-Col.) G. W. G. Hughes, D.S.O.; Lt.-Col. E. T. Inksun, V.C., D.S.O.; Temp. Capt. (acting Maj.) J. W. Innes; Temp. Lt.-Col. G. S. Jackson, D.S.O., T.D.; Temp. Capt. C. W. W. James; Lt.-Col. J. C. Jameson; Temp. Capt. J. G. Johnston; Temp. Capt. (acting Maj.) A. C. Keep, M.C.; Temp. Hon. Maj. R. F. Kennedy; Capt. (acting Maj.) G. L. Keynes; Temp. Capt. C. King; Temp. Maj. C. F. Knight, D.S.O.; Temp. Hon. Maj. L. F. Knuthsen; Capt. (acting Lt.-Col.) E. C. Lang, D.S.O.; Capt. (acting Lt.-Col.) H. H. Leeson, M.C.; Temp. Capt. T. P. Lewis; Temp. Capt. (acting Maj.) S. J. L. Lindeman, M.C.; Temp. Capt. (acting Maj.) E. O. Lindsay; Temp. Capt. W. S. Lindsay; Temp. Capt. P. C. Litchfield, M.C.; Temp. Capt. J. S. Lloyd; Temp. Capt. (acting Maj.) A. L. Lockwood, D.S.O., M.C.; Temp. Maj. (acting Lt.-Col.) C. E. M. Lowe; Temp. Capt. N. P. L. Lumb; Temp. Capt. F. C. MacDonald; Maj. (acting Lt.-Col.) W. MacD. Macdowall; Temp. Capt. W. MacEwen; Temp. Capt. (acting Maj.) R. B. Macfie; Temp. Capt. (acting Maj.) C. Mackenzie; Maj. (acting Lt.-Col.) D. F. Mackenzie, D.S.O.; Temp. Capt. D. Mackinnon; Temp. Capt. J. W. MacLeod, O.B.E.; Temp. Capt. A. S. L. Malcolm; Temp. Capt. B. C. Malden; Temp. Capt. A. C. Mann, M.C.; Temp. Capt. (acting Maj.) P. B. Manser; Maj. (acting Lt.-Col.) P. J. Marett; Temp. Capt. O. de B. Marsh; Temp. Capt. R. P. Marshall; Temp. Capt. (acting Maj.) W. S. Martin, M.C.; Temp. Capt. (acting Maj.) R. Massie; Temp. Capt. H. N. Matthews; Temp. Capt. O. S. Maunsell; Capt. (acting Maj.) C. A. R. McCay; Temp. Lieut. T. McLaren; Temp. Capt. G. McLeod, M.C.; Temp. Capt. D. McNeill; Temp. Capt. J. P. McVey, M.C.; Maj. A. A. Meaden, D.S.O.; Lt.-Col. T. I. N. Mears, D.S.O.; Temp. Capt. C. H. Medlock; Temp. Capt. A. U. Miller, M.C.; Temp. Capt. H. C. D. Miller; Temp. Capt. E. T. C. Milligan; Temp. Capt. J. H. Moir, D.S.O., M.C.; Capt. (acting Lt.-Col.) H. G. Monteith, D.S.O.; Temp. Capt. A. T. Moon; Maj. E. H. M. Moore, D.S.O.; Capt. (acting Maj.) J. Y. Moore; Temp. Capt. R. F. Moore; Maj. (acting Lt.-Col.) C. R. M. Morris, D.S.O.; Temp. Capt. (acting Maj.) J. Morrison; Temp. Capt. J. T. Morrison; Temp. Capt. H. H. P. Morton; Temp. Capt. (acting Maj.) F. H. Moxon; Temp. W. P. Mulligan, O.B.E.; Lt.-Col. C. D. Myles, O.B.E.; Temp. Capt. F. L. Napier; Temp. Capt. G. L. Neil; Maj. (acting Lt.-Col.) R. E. U. Newman, M.C.; Capt. (acting Maj.) C. V. Nicoll; Temp. Capt. (acting Maj.) A. A. O'Connor; Lt.-Col. C. J. O'Gorman, D.S.O.; Maj. (acting Lt.-Col.) D. de O. O'Grady; Temp. Capt. W. B. Oliver; Temp. Capt. H. B. Owens; Maj. (acting Lt.-Col.) G. R. Painton; Temp. Capt. (acting Maj.) A. C. Palmer; Maj. J. S. Pascoe, D.S.O.; Temp. Capt. (acting Maj.) J. A. Paterson, M.C.; Temp. Capt. E. J. Peill; Maj. H. M. J. Perry; Temp. Capt. (acting Maj.) W. de M. Peyton; Capt. (acting Lt.-Col.) E. Phillips, M.C.; Temp. Capt. S. E. Picken, M.C.;

Temp. Capt. (acting Maj.) B. Pickering; Temp. Capt. A. K. Pluniger; Temp. Capt. G. Pirie; Capt. (acting Lt.-Col.) A. M. Pollard, D.S.O.; Temp. Capt. (acting Maj.) H. W. Powell; Temp. Capt. (acting Maj.) R. G. C. Price; Temp. Capt. J. Pryce-Davies; Temp. Capt. G. R. B. Purce, M.C.; Temp. Capt. E. H. Rainey; Capt. (acting Lt.-Col.) H. C. D. Rankin; Temp. Capt. S. P. Rea; Temp. Capt. W. A. Rees; Lt.-Col. (acting Col.) W. R. R. C.M.G.; Temp. Capt. J. E. Richards; Temp. Capt. (acting Maj.) J. E. H. Roberts; Temp. Capt. R. C. Robertson; Temp. Capt. G. Robinson; Temp. Capt. W. J. Roman; Maj. (acting Lt.-Col.) F. E. Rowan-Robinson; Temp. Lt.-Col. H. J. Rowlette; Maj. (acting Lt.-Col.) G. F. Rudkin, D.S.O.; Temp. Capt. (acting Maj.) J. C. Sale, D.S.O., M.C.; Maj. (temp. Lt.-Col.) F. C. Sampson, D.S.O.; Temp. Capt. (acting Maj.) H. H. Sampson, M.C.; Temp. Capt. (acting Maj.) H. W. Scawin; Temp. Capt. A. Scott; Temp. Capt. (acting Maj.) E. J. Selby; Temp. Capt. H. P. Shackleton; Temp. Capt. W. Shanks; Temp. Hon. Maj. G. C. Shattuck; Temp. Capt. H. L. Shelton; Temp. Capt. H. J. Shone; Maj. (acting Lt.-Col.) H. C. Sidgwick; Lt.-Col. (acting Col.) H. Simson; Temp. Capt. A. F. S. Sladden; Temp. Capt. J. M. Smeaton; Capt. (acting Lt.-Col.) J. C. Sproule; Temp. Capt. C. M. Stallard; Temp. Capt. (acting Maj.) E. G. Stanley; Temp. Maj. F. N. G. Starr; Temp. Capt. K. S. S. Statham; Temp. Capt. W. Stirling; Temp. Capt. A. Stokes, D.S.O.; Temp. Capt. (acting Lt.-Col.) H. Stokes; Temp. Capt. C. P. A. Scranaghan; Capt. (acting Lt.-Col.) J. W. C. Stubbs, M.C.; Temp. Capt. E. J. Stuckey; Temp. Capt. (acting Maj.) C. Sullivan; Maj. (acting Lt.-Col.) G. G. Tabut-au, D.S.O.; Temp. Capt. R. J. Tait; Temp. Capt. (acting Maj.) D. C. Taylor, M.C.; Temp. Maj. G. Taylor; Lt.-Col. (temp. Col.) W. Taylor; Temp. Capt. L. H. Terry; Maj. (acting Lt.-Col.) W. I. Thompson, D.S.O.; Temp. Capt. (acting Lt.-Col.) F. R. Thornton, M.C.; Temp. Capt. (acting Maj.) K. Tindall, M.C.; Temp. Capt. (acting Maj.) A. T. Todd; Temp. Capt. R. S. Topham; Temp. Capt. R. H. Tripe, M.C.; Temp. Capt. C. N. Vaisey; Temp. Capt. (acting Maj.) B. Varvill, M.C.; Temp. Capt. (acting Maj.) P. N. Vellacont; Temp. Capt. (acting Maj.) H. M. Vickers; Capt. F. S. Walker; Temp. Capt. J. C. Walker; Temp. Capt. A. B. Walter; Temp. Capt. (acting Maj.) H. H. Warren; Maj. (acting Lt.-Col.) W. J. Waters; Temp. Capt. E. J. M. Watson; Temp. Capt. (acting Maj.) H. C. Watson, M.C.; Capt. (acting Lt.-Col.) L. F. K. Way; Temp. Capt. F. E. Webb; Temp. Capt. (acting Maj.) F. W. Wesley; Temp. Capt. F. Whitty; Maj. C. F. White; Temp. Capt. M. H. Whiting; Temp. Capt. A. K. Wightman; Maj. (temp. Lt.-Col.) A. J. Williamson; Temp. Capt. J. Williamson; Temp. Capt. G. R. Wilson; Temp. Capt. J. A. Wilson; Temp. Capt. F. A. Winder; Maj. J. L. Wood; Temp. Capt. (acting Maj.) P. R. Woodhouse, D.S.O., M.C.; Temp. Capt. E. W. N. Wooler; Temp. Capt. H. Yellowies; Temp. Capt. C. R. Young, D.S.O., M.C.

*Royal Army Medical Corps (S.R.).*—Capt. (acting Maj.) S. R. Armstrong; Capt. (acting Maj.) R. G. Battersby; Capt. H. C. Bazett, M.C.; Capt. E. Bramley; Capt. J. L. D. Buxton; Capt. (acting Maj.) T. W. Clarke, M.C.; Capt. W. H. Cornelius; Capt. W. J. F. Craig; Capt. F. A. Dufield; Capt. (acting Maj.) F. G. Foster; Capt. (acting Lt.-Col.) W. R. Gardner, D.S.O.; Capt. (acting Maj.) A. J. Gilchrist, M.C.; Capt. (acting Maj.) B. Goldsmith; Capt. (acting Lt.-Col.) C. N. Gunter, M.C.; Lt. G. N. Groves; Capt. M. St. C. Hamilton; Capt. (acting Maj.) R. L. Horton; Capt. F. Jefferson; Capt. J. L. Kilbride; Capt. (acting Maj.) D. M. Marr; Capt. (acting Maj.) G. Marshall; Capt. (acting Lt.-Col.) W. H. L. McCarthy, D.S.O., M.C.; Capt. D. Mitchell; Capt. M. K. Nelson; Capt. (acting Maj.) H. D. Rollinson; Capt. (acting Maj.) A. F. L. Shields; Capt. (acting Maj.) G. H. Stevenson, M.C.; Capt. (acting Maj.) L. S. B. Tasker, M.C.; Capt. (acting Maj.) J. Walker, M.C.; Capt. (acting Maj.) W. J. Webster, M.C.; Capt. (acting Maj.) A. Wilson, M.C.; Capt. T. Wilson.

*Royal Army Medical Corps (T.F.).*—Capt. G. W. McE. Andrew; Maj. (acting Lt.-Col.) W. Archibald; Capt. R. A. Askins; Maj. A. Ayre-Smith; Capt. (acting Maj.) H. T. Bates; Capt. (acting Lt.-Col.) A. Baxter; Capt. W. F. B. Bensted-Smith; Maj. (acting Lt.-Col.) G. N. Biggs; Capt. (acting Maj.) E. J. Boome; Capt. A. M. Brown; Qrmer. and Lt. H. M. Browne; Capt. (acting Lt.-Col.) J. Bruce; Capt. (acting Lt.-Col.) H. N. Burroughes; Lt.-Col. and Bt. Col. J. P. Bush, C.M.G.; Lt.-Col. E. M. Callender, T.D.; Maj. (acting Lt.-Col.) D. G. Campbell; Maj. (acting Lt.-Col.) T. M. Carter; Capt. R. C. Clarke; Capt. (acting Maj.) T. C. Clarke, M.C.; Capt. (acting Maj.) F. Clayton; Capt. L. Colledge; Capt. D. R. Cramb; Capt. (acting Maj.) C. H. Crawshaw; Capt. J. D. Davidson; Capt. (acting Maj.) R. G. Dixon; Capt. (acting Maj.) G. W. Deeping; Capt. A. D. Downes; Lt.-Col. A. D. Ducat, T.D.; Maj. J. M. Duncan; Capt. (acting Lt.-Col.) W. Duncan; Capt. (acting Maj.) J. F. Edmonst; Maj. A. Elliott; Lt.-Col. C. I. Ellis, C.M.G.; Capt. (acting Maj.) R. Ellis, M.C.; Capt. (acting Maj.) J. Everidge; Maj. A. H. Falkner; Capt. H. N. Fletcher; Capt. C. Forbes; Maj. M. G. Foster; Capt. (acting Maj.) C. J. Fox; Capt. (acting Lt.-Col.) J. H. P. Fraser, M.C.; Maj. W. H. Galloway; Capt. (acting Maj.) H. J. Gorrie; Maj. (acting Lt.-Col.) D. J. Graham; Lt.-Col. A. G. Hamilton; Capt. F. G. Harner, M.C.; Lt.-Col. J. R. Harper, T.D.; Capt. L. Hawkes; Capt. W. H. H. Haddy; Capt. (acting Maj.) H. Henry; Lt.-Col. (acting Col.) F. W. Higgs; Capt. W. H. Hill; Capt. (acting Maj.) S. J. C. Holden; Capt. (acting Maj.) A. J. Jex-Blake; Maj. (acting Lt.-Col.) F. W. Johnson; Capt. W. Johnston; Capt. (acting Lt.-Col.) E. Knight; Capt. R. A. Lennie; Capt. (acting Lt.-Col.) A. W. B. London; Capt. G. E. Loveday; Capt. (acting Maj.) H. A. Lucas; Capt. (acting Maj.) A. M. Mackay; Capt. (acting Maj.) H. A. Macmillan, M.C.; Capt. (acting Maj.) I. C. Marshall; Maj. C. J. Martin; Capt. G. E. Martin; Maj. S. Martyn; Capt. E. K. Matthews; Capt. (temp. Lt.-Col.) G. K. Maurice, M.C.; Capt. (acting Lt.-Col.) A. C. H. McCallum; Capt. (acting Maj.) W. G. McKenzie, M.C.; Capt. J. C. W. Methven; Capt. (acting Lt.-Col.) J. Miller, M.C.; Capt. (acting Maj.) J. Morham; Qrmer. and Lt. F. W. Newbould; Maj. D. C. L. Orton; Capt. (acting Maj.) W. R. Pierce; Capt. E. B. Pike; Maj. (acting Lt.-Col.) A. J. D. Riddett; Maj. (acting Lt.-Col.) H. B. Roderick; Capt. (acting Lt.-Col.) P. T. Rutherford; Capt. (acting Maj.) C. F. M. Saint; Capt. (acting Lt.-Col.) D. J. Scott, M.C.; Lt.-Col. G. C. E. Simpson; Capt. (acting Lt.-Col.) W. Simpson; Capt. T. S. Slessor; Capt. T. H. Somervell; Capt. R. W. E. Stickings; Capt. (acting Maj.) W. Stobie; Capt. (acting Maj.) R. W. Swayne; Capt. (acting Maj.) E. S. Taylor; Capt. (acting Maj.) A. G. G. Thompson; Maj. (acting Lt.-Col.) W. A. Thompson; Capt. F. S. Tresawna; Capt. (acting Maj.) C. A. Webster; Lt.-Col. and Bt. Col. F. H. Westmacott; Capt. (acting Maj.) K. D. Wilkinson; Capt. (acting Maj.) F. E. Withers; Capt. J. M. Wyatt; Capt. (acting Maj.) A. L. Yates, M.C.

*Canadian Army Medical Corps.*—Capt. W. F. Abbott, M.C.; Capt. (acting Maj.) M. H. Allen; Lt.-Col. W. H. K. Anderson, D.S.O.



Maj. (acting Lt.-Col.) W. A. G. Bauld, D.S.O.; Maj. (acting Lt.-Col.) A. E. H. Bennett; Capt. H. Black; Lt.-Col. G. J. Boyce, D.S.O.; Capt. R. S. R. Carruthers; Capt. H. E. Connolly; Capt. C. K. Downs; Col. L. Drum; Col. J. M. Elder, C.M.G.; Maj. A. W. M. Ellis; Capt. J. M. Fowler; Maj. G. W. Hall, D.S.O.; Maj. (acting Lt.-Col.) R. H. M. Hardisty, M.C.; Lt.-Col. E. V. Hogan; Maj. K. E. Hollis; Maj. A. L. Jones, M.C.; Capt. (acting Maj.) L. F. Jones; Lt.-Col. D. P. Kappel, D.S.O.; Maj. B. E. Kelly, D.S.O.; Lt.-Col. T. M. Leask, D.S.O.; Maj. A. F. Macaulay; Lt.-Col. R. H. Macdonald, M.C.; Maj. J. A. MacMillan; Lt.-Col. C. Malcolm, M.C.; Capt. J. F. S. Marshall, M.C.; Capt. H. W. Martin; Capt. R. B. Mitchell; Lt.-Col. H. E. Munroe, O.B.E.; Maj. B. A. Neff; Capt. J. I. O'Connell; Capt. G. P. Parker; Maj. S. Paulin, D.S.O.; Col. C. A. Peters, D.S.O.; Maj. (acting Lt.-Col.) G. A. Platt; Lt.-Col. C. H. Reason, D.S.O.; Capt. J. W. Reynolds; Capt. W. A. Richardson; Maj. R. B. Robertson; Brig.-Gen. A. E. Russ, C.B., C.M.G.; Maj. (acting Lt.-Col.) E. R. Selby; Col. R. M. Simpson, D.S.O.; Maj. P. D. Stewart; Maj. S. J. S. Freight; Lt.-Col. (acting Col.) C. P. Templeton, D.S.O.; Maj. G. W. Treloven, D.S.O., M.C.; Capt. C. Tull; Maj. W. H. Tylder; Capt. H. L. Walker; Maj. E. L. Warner.

*Australian Army Medical Corps.*—Lt.-Col. J. K. Adey, O.B.E.; Col. G. W. Barber, C.M.G., D.S.O.; Capt. B. McN. Beith; Capt. (temp. Maj.) G. Bell; Maj. J. C. Campbell, D.S.O.; Maj. L. R. Cook; Maj. D. D. Couette, D.S.O.; Maj. R. F. Craig, D.S.O.; Maj. A. S. Curtin; Col. M. H. Downey, D.S.O.; Maj. A. P. Drummond; Col. T. P. Dunhill; Lt.-Col. and Bt. Col. W. L. R. Eames, C.B.; Maj. J. W. Farrar; Lt.-Col. P. Fiaschi; Capt. H. W. Franklands; Lt.-Col. A. H. Gibson; Capt. J. W. Grievie; Maj. (temp. Lt.-Col.) J. A. James; Maj. D. H. B. Lawton; Lt.-Col. H. B. Lewers, O.B.E.; Capt. E. I. Littlejohn; Col. F. A. Maguire, D.S.O.; Col. A. H. Marks, D.S.O.; Maj. L. E. May, D.S.O., M.C.; Capt. A. L. McLean, M.C.; Capt. F. Meldrum; Maj. (temp. Lt.-Col.) J. R. Mairhead; Maj. R. B. North; Capt. P. J. F. O'Shea, D.S.O., M.C.; Capt. C. A. Oxley; Capt. R. L. Park; Col. E. K. Shepherd, D.S.O.; Maj. J. S. Smyth; Maj. M. V. Southey; Maj. (temp. Lt.-Col.) V. O. Stacy; Lt.-Col. G. W. Thompson; Capt. W. J. Trewhella; Maj. C. T. Turner; Maj. F. T. Wheatland; Maj. K. M. Whiting; Maj. H. H. Willis; Lt.-Col. F. C. Wooster.

*New Zealand Medical Corps.*—Capt. P. A. Ardagh, D.S.O., M.C.; Maj. F. T. Bowerbank; Capt. E. M. Finlayson; Capt. P. G. Horsburgh; Maj. (temp. Lt.-Col.) P. J. Jory; Capt. J. Mitchell; Lt.-Col. J. H. Neil, D.S.O.

*South African Medical Corps.*—Capt. J. Drummond; Capt. W. L. Gordon; Lt.-Col. G. R. Thomson; Lt.-Col. G. H. Usmar.

*American Expeditionary Force Medical Corps.*—Capt. G. R. Carl; 1st Lt. C. E. Hamilton; 1st Lt. S. B. Hinton; Lt. D. W. Kramer; Capt. L. Little; Lt. H. W. Mahon; 1st Lt. J. McCalt; 1st Lt. A. W. Thomas; Lt. J. C. Willis; Mr. H. W. Marsh, Harvard Unit.

*British Red Cross Society.*—Temp. Hon. Capt. D. H. D. Cran; Dr. J. Stewart.

*Civilian.*—Dr. A. H. Fardon.

#### ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. E. A. Shaw (retired) to be Surgeon Captain (retired) in recognition of services rendered during the war.

Surg. Lieut.-Comdr. F. C. Alton is placed on the Retired List.

R. Granger to be temporary Surgeon Lieutenant.

Temp. Surg. Lieut. G. Aubrey is transferred to permanent list of Surgeon Lieutenants.

#### ARMY MEDICAL SERVICE.

Temp. Major-Gen. Sir B. E. Dawson, G.C.V.O., C.B. (Captain, R.A.M.C., T.F.), relinquishes his temporary commission on re-posting.

Temp. Col. J. H. Parsons, C.B.E., and R. Davies-Colley relinquish their commission and retain the rank of Colonel.

Col. C. C. Reilly, C.B., is placed on retired pay.

#### ROYAL ARMY MEDICAL CORPS.

Lt.-Col. FitzG. G. Fitzgerald, D.S.O., relinquishes the acting rank of Colonel on re-posting.

The undermentioned relinquish the acting rank of Lieutenant-Colonel on ceasing to be specially employed: Majors J. E. Carter, A. E. S. Irvine; Temp. Major A. F. Hurst.

The undermentioned to be acting Lieutenant-Colonels whilst specially employed: Major E. C. Phelan; Temp. Major C. E. Ligertwood; Capt. R. M. Dickson.

The undermentioned relinquish the acting rank of Major: Capt. C. T. V. Beuson, E. G. H. Cowen; Temp. Hon. Capt. O. H. Stansfeld; Temp. Capt. C. M. Kennedy; G. R. E. Colquhoun, A. G. McLeod, N. M. Grace, P. W. Dove, R. M. Fenn, R. Edwards, W. J. D. Bromley, W. F. Dunlop, J. E. Power, C. Clyne, P. L. Hope, J. W. Applegate, G. S. Mill, G. J. Arnold, F. J. Thorne, B. Sweeten, N. F. Norman, A. C. Parsons, C. C. Lord, R. F. Pearse, P. A. Leighton, A. E. Seller, J. V. Bates, R. R. Wallace, H. T. Mant, W. T. Hedley, M. McLeod, B. Hart, F. E. Fielden, A. Dingwall-Fordyce, G. T. Gifford, G. H. Darlington, W. A. Wheldon, J. F. Venables, J. P. Lawson, A. E. Marsack, G. A. Skinner.

To be acting Majors: Capt. and Bt. Major J. D. Kidd; Capt. C. E. L. Harding; Temp. Capt. H. H. Dummire, A. L. Lockwood, R. K. Robertson, W. C. Sharpe, A. Grant, C. B. Tudehope.

Officers relinquishing their commissions:—Temp. Capt. J. G. Johnston (granted the rank of Lieutenant-Colonel). Temporary Captains granted the rank of Major: J. E. Power, R. B. Blair, A. Grant, J. Alexander, R. Feltou, N. F. Norman, J. E. Davies, P. W. Dove, H. E. Day. Temporary Captains retaining the rank of Captain: W. J. Nisbet, J. A. Delmege, T. W. Heywood, T. J. Lyons, S. G. Billington, J. A. MacLeod, G. N. Montgomery, C. M. Foster, E. C. Myott, H. Cardin, H. Atinseow, F. W. Daniels, A. Evans, G. B. Charnock, J. H. McAllum, J. S. Bookless, D. Fisher, H. C. D. Miller, J. P. MacDonald, T. R. Phipps, A. C. Major, J. B. Fairclough, W. Leggett, J. A. N. Scott, J. T. Bowman, A. Davies, J. N. L. Thoseby, T. W. R. Strode, I. R. King, H. A. Rynn, E. P. H. Vickery, H. Mohan, B. E. A. Batt, S. P. Bedson, A. G. Winter, P. L. T. Bennett, J. B. Hunter, J. S. Coldwell, W. A. L. Dunlop, A. W. Gill, F. C. Macdonald, E. L. Steele, M. J. Macauley, H. E. M. Baylis, M. P. Emrys-Jones, J. MacKinnon, A. S. Holden, G. Fleming, R. Stipe, J. A. R. Wells, J. W. Pell, A. C. Parsons, R. L. Bell, R. M. Rowe, J. E. T. Jones, F. Corner, J. W. Coulter, A. Topping,

D. J. Evans, W. F. Dunlop, F. D. Walker, J. P. Brennan, T. C. Findlater, F. W. Hayes, W. M. T. Wilson, S. P. Rea, J. G. Willmore, W. D. Wilkins, R. W. Russell-Jones, W. J. Spearing, J. M. Adams, S. M. Vassallo, S. D. Adam, R. R. Archibald, C. S. Tennant, F. M. Gardner-Medwin, D. H. Jones, C. D. Kean, C. Harris, B. W. Wibberley, R. W. L. Wallace.

#### Canadian Army Medical Corps.

Temp. Major W. J. McAlister, M.C., to be acting Lieutenant-Colonel while employed in command of C.C.O.H., Matlock Bath.

Temp. Capt. (acting Major) J. A. M. Hemmion retains the acting rank of Major.

Temporary Captains (acting Majors) relinquishing the acting rank of Major: J. S. Huison, T. W. Sutherland.

Temp. Lieut. L. G. Hillier to be temporary Captain.

#### Canadian Army Dental Corps.

H. Jackson, Canadian Forestry Corps, to be temporary Lieutenant.

#### SPECIAL RESERVE OF OFFICERS.

Capt. C. S. Staddon and J. D. Dickson relinquish the acting rank of Major.

#### TERRITORIAL FORCE.

Major (acting Lieut.-Col.) T. A. Barron relinquishes the acting rank of Lieutenant-Colonel on ceasing to be specially employed.

Captains (acting Lieutenant-Colonels) relinquishing the acting rank of Lieutenant-Colonel on ceasing to be employed: G. C. E. Simpson, R. A. Stark.

Capt. (acting Major) C. B. Baxter, O.B.E., to be Major.

Capt. H. J. A. Longmore to be acting Major whilst specially employed. Captains (acting Majors) relinquishing the acting rank of Major on ceasing to be specially employed: H. J. A. Longmore, C. E. W. McDonald, H. M. Calder, C. Burrows, W. J. Hirst, T. W. H. Downes.

2nd London General Hospital: Lieut.-Col. (Hon. Major-Gen.) Sir G. H. Makins, G.C.M.G., C.B., is retired, having attained the age limit. 2nd Eastern General Hospital: Capt. H. Gervis is restored to the establishment.

1st Southern General Hospital: Lieut.-Col. H. G. Barling, C.B., is restored to the establishment on ceasing to hold a temporary commission in the Army Medical Service. Capt. (acting Major) A. R. Bearn relinquishes the acting rank of Major on ceasing to be specially employed.

2nd Southern General Hospital: Major J. Swain is restored to the establishment on ceasing to hold a temporary commission in the Army Medical Service.

3rd Scottish General Hospital: Lieut.-Col. A. G. Hay is restored to the establishment.

#### ROYAL AIR FORCE.

*Medical Branch.*—Major F. H. Stephens (Staff Surgeon, R.N.) relinquishes his commission on reverting to R.N. Medical Services.

The undermentioned are transferred to unemployed list: Capt. N. F. Stallard; Lieuts. E. S. Sharpe, R. W. Stephenson, N. C. Cooper.

#### INDIAN MEDICAL SERVICE.

Col. W. E. Jennings to be Major-General.

Temporary Lieutenants to be temporary Captains: E. T. N. Taylor, Govind Shivram Mandlik, Har Gobind Dayal Mathur, Ram Narain Sud, Jehangir Curseji Bhurucha, Sher Singh, Hirnaya Kumar Sen, Shapoor Dinsna Vania, Peruvemba Ayyaami Ayer Ramanathan, Kshetra Mohan Ray, Satindra Chandra Basu, Bidhu Bhushan Chatterjee, Padmanabha Rangappa Bhandarkar, Raghupati Bauerji, Kaikhu-roo Rust mji Dalal, Susanta Kumar Sen, Kantilal Kalyaji Mankodi, Suresh Chandra Sarkar, Amar Nath Madhok, Hantwall Shankar Rau, Gopal Krishna Ramrao Paddidri, Paskal De Souza, Jehangir Hormasji Clarke, Keralapuram Sreenayasa Subramanyam, Duriseti Narayanarao.

#### Indian Defence Force (Medical Corps).

Temporary rank has been granted as follows:—To be Lieutenant-Colonel: E. A. C. Hindmarsh. To be Captains: J. H. Sheldon, W. R. Taylor. To be Lieutenants: Satish Chandra Ghosh.

Capt. Radha Madhab Prasad relinquishes his temporary rank.

#### BOOKS, ETC., RECEIVED.

BLACKIE and SON, London.

Life and its Maintenance. A Symposium of Biological Problems of the Day. Pp. 297. 5s.

CRYSTAL PRESS, LTD., 91, Regent-street, London.

Healing by the Realisation of God or True Prayer for Doctors. By F. L. Rawson, M.I.E.E., A.M.I.C.E. Pp. 62. 1s.

HEADLEY BROS., London.

Practical Butter-making. By C. W. Walker-Tisdale, F.C.S., and T. R. Robinson, F.S.I. Pp. 144. 5s. 6d.

LONGMANS, GREEN, and CO., London.

The Metals of the Rare Earths. By J. F. Spencer, D.Sc. Pp. 280. 12s. 6d.

MARCUS, A., and WEBER, E., Bonn.

Die Behandlung der Haut- und Geschlechtskrankheiten. Von Dr. E. Hoffmann. Pp. 150. M. 5.60.

ORPHAN-APPRENTICE SCHOOL, 40, Rue La Fontaine, Paris.

De l'Orthopédie Instrumentale. By Dr. G. Bidou. Pp. 132.

SPON, B., and F. N., London.

Induction Coils in Theory and Practice. By Professor F. E. Austin, E.E., U.S.A. Pp. 64. 5s.

WILLIAM and NORGATE, London.

Problems of Life. By Rev. R. J. Campbell. Pp. 217. 5s.

Messrs. H. K. Lewis and Co., Ltd., have removed their publishing, wholesale, and advertisement departments to 28, Gower-place, W.C.1. The change should provide more convenient accommodation for publishing work, while the space vacated in the old premises will afford additional room for the library, to which a new reading room will be added.



# Parliamentary Intelligence.

## HOUSE OF COMMONS.

TUESDAY, JULY 15TH.

### Public Health Propaganda.

To a written question if he would appoint a publicity committee to consider how best by posters, leaflets, lectures, and other means to educate the nation in the principles of health, Major ASTOR (Parliamentary Secretary to the Ministry of Health) replied: The Minister of Health has recently appointed a Committee to advise him on the dissemination of information in regard to housing, whether by the means indicated in the question or otherwise. I will send the honourable Member the names of the Members and the terms of reference to the Committee. My right honourable friend proposes to await their advice before proceeding to consider the question of publicity in relation to other problems affecting health.

WEDNESDAY, JULY 16TH.

### Dental Reform.

Mr. JESSON asked the Minister of Health whether an amending Bill to the Dentists Act, 1878, was in course of preparation; if so, whether this Bill would appoint, in accordance with the recommendations of the Departmental Committee of Dentistry, an ad hoc Committee to inquire into the eligibility of unregistered dentists for registration; whether the personnel of this ad hoc Committee had already been decided upon; whether the Incorporated Dental Society, Ltd., would have representatives upon it, and how many; and whether he could state why the National Dental Association, an organisation which represented at the present moment over 300 unregistered dental practitioners, who each, by the terms of his agreement with the association on assuming membership, undertook not to canvass or advertise for patients, and made a declaration that he had been in practice for a period of five years as a dental assistant or practitioner wholly engaged in operations on the mouth before Feb. 5th, 1919, had not been accorded equality of treatment with the Incorporated Dental Society, Ltd.—Dr. ADDISON replied: No, Sir; most of the proposals referred to in the Report of the Committee must form part of the general scheme for improved health services for the nation which the Ministry of Health are concerned to develop as soon as possible, but there has not yet been sufficient time to work out such a scheme, nor to consider adequately the various recommendations of the Committee in question as regards dental registration. The other points in the question, therefore, do not arise.

THURSDAY, JULY 17TH.

### Paddington Military Hospital.

Captain WEDGWOOD BENN asked the Secretary for War whether he was aware that upwards of 500 wounded men, the majority of whom were cases that had lost one or more limbs, had recently been transferred from various military hospitals, in particular from the King George Hospital, to the Paddington Military Hospital, in the Harrow-road; whether he was aware that the Paddington Military Hospital, a converted workhouse, was quite unsuited for the reception of such cases both by construction and situation.—Mr. CHURCHILL replied: Complaint has been made, especially regarding the situation of this hospital, and for sometime past endeavours have been made to obtain another suitable building, but, I regret to say, so far without success. I hope, however, that arrangements may be made to enable the hospital to be vacated within the next few weeks.

### Disturbance of Military Patients.

Major GLYN asked the Secretary for War if the position of those officers and men who were at present undergoing treatment in those military hospitals that were to be taken over by the Ministry of Pensions on August 1st had been fully considered; whether it was proposed that patients were to be removed from those hospitals to others remaining under War Office control, in spite of the fact that their treatment was liable to be detrimentally affected if such transfer to nurses, doctors, and surgeons who had not supervised their cases from the first was carried out; and whether it was possible for the War Office and the Ministry of Pensions to come to such a financial understanding in regard to these cases that would permit these patients to remain undisturbed and to continue their treatment under the existing medical and nursing staff.—Mr. FORSTER (Financial Secretary to the War Office) replied: No transfer will take place when injury to the patient's health would be likely to be caused thereby.

### Veneral Disease.

Mr. LUNN asked the Minister of Health whether inquests were required to be held after all cases of sudden death of persons undergoing treatment for venereal disease; and, if not, whether he would issue instructions with a view to

securing that inquests should be held on all such cases in future.—Dr. ADDISON replied: Section 2 of the Coroners Act, 1887, requires an inquest to be held whenever there is a violent or unnatural death, or a sudden death of which the cause is unknown. There is no power under the statute enabling any Minister to issue instructions that inquests shall be held in any cases not covered by the section to which I have referred.

MONDAY, JULY 21ST.

### Invalided Officer: Statement by Pensions Minister.

Mr. BOTTOMLEY asked the Pensions Minister whether he would give an explanation of the circumstances in which a lieutenant invalided out of the Army suffering from neurasthenia was recently directed by telegram, sent to a hotel at which he was staying, to proceed to the London Lock Hospital, Harrow-road, which was an institution for women suffering from venereal disease; whether, having been certified by two medical men employed at his own expense as free from such disease and having protested against being sent to the men's branch of the Lock Hospital, situated in Soho, to which he had been referred from the women's institution, he was informed by the Ministry of Pensions that an officer's unreasonable refusal to undergo treatment rendered him liable to have his pension reduced by half; whether he would say who was responsible for this course of action; and what reparation was being made to the officer in question.—Sir L. WORTHINGTON-EVANS replied: I am glad to have the opportunity of expressing publicly my deep regret for the annoyance and trouble given to this officer. The doctors are not able to decide affirmatively what is the cause of his illness. He was sent to a tuberculosis specialist and examined by him, but the report was negative; he advised that the officer should be admitted to hospital and kept under medical observation in case the illness was occasioned by general paralysis. Arrangements were made for a private room at the Lock Hospital, where it was intended that the specialist in general paralysis should make the desired observations so as to exclude general paralysis, as tuberculosis had been excluded, if such turned out to be the case. The telegram never ought to have been sent, although no serious consequence would have arisen if it had been opened by the officer. It was, however, opened at his request and read to him on the telephone by someone at his hotel. With regard to the letter the officer came to the Ministry after the letter was written and before it was delivered and saw one of the doctors. The doctor heard his explanation and withdrew the letter and apologised for the telegram. The letter ought not to have been sent, but being in the post could not be recalled. There was no question of unreasonable refusal to undergo treatment; no treatment had been decided upon. The officer was asked to go to the hospital for observation. Treatment could not be decided upon until after the result of the observation was known. The officer himself has since proved that there is not the slightest reason to suppose that he is suffering from general paralysis due to venereal disease. I fully accept that conclusion. The clerk at the Ministry who was responsible for the letter will not in future be engaged in this class of work, and steps have been taken to ensure that no warnings of withdrawal or reduction of pension shall be made until the case has been considered by a principal medical officer. I have myself seen this officer when he called at the Ministry. I have expressed to him my deep regret for both the telegram and the letter, and I have offered to refund to him the expenses to which he has been put in obtaining the medical certificates referred to. I explained to him what I have now told the House, and I trust that the blunder made by an administrative clerk will not discredit the really excellent and efficient work done for thousands of officers and men by the medical officers employed at the Ministry.

TUESDAY, JULY 22ND.

### Case of Paralysis Agitans.

Mr. RAPER asked the Financial Secretary to the War Office if he would state what steps were being taken definitely to settle the compensation claim of Mr. Thomas Clark Barcliff, in view of the fact that Mr. Barcliff had been discharged as incurable from five hospitals and had also been declared to be suffering from paralysis agitans by every nerve specialist who had examined him.—Mr. FORSTER replied: Mr. Barcliff has received the maximum compensation payable under the scheme framed under the Injuries in War Compensation Act, 1914 (Section 2), which applies to his case. In the opinion of the Treasury medical referee Mr. Barcliff would benefit from a course of special treatment suitable for the malady from which he is suffering, and arrangements are being made for him to receive such treatment.

### National Health Insurance Bill.

The House considered on Report the National Health Insurance Bill, which had passed through Standing Committee without amendment. The Bill was read a third time.



## Medical News.

**UNIVERSITY OF CAMBRIDGE: THE PSYCHOLOGICAL LABORATORY.**—It has been decided by the managing committee for the Cambridge diploma in psychological medicine to recognise 12 months' clinical experience in a military neurological hospital as qualifying a candidate to enter for Part II. of the examination for this diploma. Part I. is open to all persons whose names are on the Medical Register. A course in preparation for these examinations will be held at the psychological laboratory, Cambridge, during August next. Information may be obtained by writing to Dr. J. P. Lawson, at the Psychological Laboratory.

**ROYAL COLLEGE OF PHYSICIANS OF LONDON.**—An extraordinary Comitia of the Royal College of Physicians of London was held on July 17th, Sir Norman Moore, the President, being in the chair. A letter was received from the Minister of Health, dated July 4th, inviting the College to place before him the names of persons who, in the opinion of the College, are specially suitable to serve upon the Consultative Council which will advise upon "Medical and Allied Services." A provisional list was laid before the College and approved.

**LONDON UNIVERSITY.**—The Senate has sanctioned the granting of the M.S. degree in two additional branches—namely: (1) ophthalmology; and (2) laryngology, otology, and rhinology; and the regulations have been modified in accordance with this decision.

**UNIVERSITY OF EDINBURGH.**—At the summer graduation ceremony held on Thursday, July 10th, in the M'Ewan Hall, Edinburgh, the honorary degree of Doctor of Law was conferred upon Sir Thomas R. Fraser, F.R.S., emeritus professor of materia medica in the University, and upon Mr. Rutherford Morison, lately professor of surgery in the University of Durham.

The following degrees in Medicine were awarded:—

### DOCTOR OF MEDICINE.

\*Arthur Cecil Alport (in absentia), †Robert George Archibald, \*Robert George Baerman, Frederick Adolphus Fleming Barnardo (in absentia), †Edwin Bramwell, Frederick Russell Bremner (in absentia), Arthur William Tremblheere Bulst (in absentia), †Duncan Macnab Callender (in absentia), \*Disney Hubert Dusch Cran, \*Gerald Fitzgerald, Walter Benjamin Harry, Kenneth Goodall Heaume, James Burnett Hogarth, Matthew James Johnston, \*Robert Lawson, Edward Loggie Middleton, Ronald Roderick Murray (in absentia), \*William Henry Parkes (in absentia), Dhanavada Samuel Ramachandra Rao (in absentia), Archibald Romanes, Alan William Stuart Siebel, Robert Scott Stevenson, Samuel Henry Stewart, and \*Edmund Leigh White.

\* Commended for thesis. † Highly commended for thesis.

### MASTER OF SURGERY.

James Methuen Graham (awarded gold medal for thesis).

### BACHELOR OF MEDICINE AND BACHELOR OF SURGERY.

Henry Morris Anderson, Adam Armit, Alfred Badenoch, Harry Berelowitz, John James Rouse Binnie, Alice Bloomfield (first-class honours), Charles George Booker, Peter Martin Brodie (second-class honours), Cecil Carron Brown, Robert M'Call, Leybourne Stanley Patrick Davidson (first-class honours), Frederick John Deane, Arthur Armstrong Denham, Robert Lightbody Galloway, Kurt Gillis, Morris Goldberg (second-class honours), Arthur Trevenning Harris, Marjorie Harris, Cecil Edith Lyster Hole, Jiwanda Ram Katarlyia, Marjorie Hamilton King, Raymond Leslie Langley (first-class honours), Robert Kho Seng Lim, Harry Stephenson Lucraft (first-class honours), John Charles Macartney, James M'Intyre, Ella Grace Florence MacKenzie, Ronald Douglas MacKenzie, Robert Macnair, Mona Macnaughton, Elizabeth M'Vicker, Mabel Stevenson, Martin, George Henry Hope Maxwell (in absentia), Jacobus Hugo Meiring, Abraham Marais Moll, John Oliver Murray, Arthur Vincent Treadwell Musto, Edward Paul O'Dowd, Aerath Nanyanan Nanoo Panicker, Clifford William Patterson, John Redwood Payn, Howard Sidney Plozman, Eric Haldane Ponder, Mary Simpson Poole (née Paterson), William Gordon Robson (second-class honours), Beatrice Annie Sybil Russell, Richard Sandilands, Mahmoud Zaky Sheriff, Bertie Soutar Simpson, William Augustus Slack, Valentine Alexander Stooks, Arthur Kinsey Towers, Maung Sein Tun, Petrus Cornelius Uys, Jakob Rudolph de Villiers, George Ronald Waller, Robert Boog Watson, Alfred George Norton Weatherhead, John Sinclair Westwater, James Leslie Wilson, and Duncan Ferguson Yuille.

**SUMMER SCHOOL OF CIVICS AND EUGENICS.**—The second Summer School of Civics and Eugenics, organised by the Civil and Moral Education League and the Eugenics Education Society, will be held at Cambridge during the fortnight from Saturday, August 2nd to 16th. The aim of the school is to give teachers, social workers, and others interested in educational and social reconstruction opportunities for study and discussion. The fee for the fortnight's course is 2 guineas. Board-residence varies from £2 2s. to £3 3s. The committee have at their disposal a small bursary fund, which is to be used to cover the expenses of such people as find themselves unable to defray the whole cost of their course at the school. Further particulars can be obtained from the Summer School Secretary, 11, Lincoln's Inn-fields, London, W.C. 2.

**QUEEN'S UNIVERSITY OF BELFAST.**—The Senate of Queen's University of Belfast on July 16th appointed Mr. A. W. Stewart, D.Sc., professor of chemistry, in place of the late Dr. A. Letts; Dr. Thomas Walmsley professor of anatomy, in place of Dr. J. Symington, resigned; and Dr. J. W. C. Gunn lecturer in pharmacology, in the vacancy created by the retirement of Sir William Whitla. All these new teachers come from Scotland, the first two from Glasgow University, the third from the University of Edinburgh. Dr. P. T. Crymble has been reappointed lecturer in applied anatomy. It was announced at the meeting that a sum of £8000 is to be placed by the Treasury at the disposal of Queen's University for expenditure during the current financial year on certain pressing wants (salaries of professors and lecturers, urgent improvements in various teaching departments, &c.). So far, it was said, no actual money had passed from the Treasury to the finance committee of the University.

**DEVON RED CROSS AND VOLUNTARY AID ORGANISATION.**—During the late war this association was responsible for the organisation of 34 hospitals and equipped 3905 beds, which received 45,007 patients, with a staff comprising 2735. The funds administered amounted to £261,585, the cost of administration being £1912.

**BOGNOR WAR MEMORIAL COTTAGE HOSPITAL.**—The Bognor War Memorial Cottage Hospital, towards which Mr. James Fleming gave £7000, was opened on July 16th. After a short dedication service Mrs. Fleming was presented with a silver key, with which she unlocked the door amid an enthusiastic scene. The hospital was formerly a large residence situated on the Chichester-road, and the greater part of the £7000 has been spent in its conversion into a hospital of 5 wards and 15 beds, with, of course, all the necessary concomitants. A roll of honour carved in oak, which will bear the names of all those from Bognor who have fallen in the war, has been placed in a conspicuous position in the entrance hall.

Dr. C. H. Browning, director of the Bland-Sutton Institute of Pathology at the Middlesex Hospital, has been elected to the Gardiner Chair of Bacteriology in the University of Glasgow.

**CROWNHILL CONVALESCENT HOME, NEAR PLYMOUTH.**—The annual meeting of the friends of this institution was recently held under the presidency of Lord Mount Edgumbe. It was stated that during the past year 149 patients had been admitted, about half the number in pre-war days. The financial statement was satisfactory. The chairman alluded to the excellent work of the home and reminded the subscribers that the charming building had been presented by Dr. C. A. Hingston.

**THE LATE DR. B. A. PALMER.**—The death is announced of Benjamin A. Palmer, M.B. Glasg., J.P., of Millvale House, co. Armagh, in the Newry Hospital. Dr. Palmer, an Armagh man, was born on March 30th, 1852. He studied in Glasgow, where he graduated M.B. in 1880 and became also L.R.C.S. Edin. In the same year he was appointed dispensary medical officer of the Crossmaglen District of the Castleblaney Union, a position he occupied until 1890, when he became medical officer of the Mullaghglass Dispensary District of the Newry Union, an office he held at the time of his decease. For over 33 years he was a justice of the peace for county Armagh, and for 11 years for the county of Down. Dr. Palmer was a well-known and much respected figure in the life of Newry and the surrounding district, and a large circle of friends and patients now mourn his loss. He leaves a widow and three daughters.

## Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions and others possessing information suitable for this column, or invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

BANFORD, Miss A., has been appointed House Surgeon to the North Devon Infirmary, Barnstaple.

GEFFEN, D. H., M.B., B.S. Lond., Second Assistant Medical Officer to the Marylebone Guardians.

GLAISTER, J., M.D. Glasg., one of the Medical Referees under the Workmen's Compensation Act for the Sheriffsdoms of Ayr, Renfrew and Bute, and Stirling, Dumbarton, and Clackmannan.

HALLONS, NORMAN F., M.D. Oxon., D.P.H., Medical Officer to Marlborough College, Wilts.

WADE, R., M.R.C.S., I.R.C.P., Assistant Administrator of Anæsthetics to St. Bartolomew's Hospital.

Certifying Surgeons under the Factory and Workshop Acts: ROBERTS, A. H., M.R.C.S., L.R.C.P. Lond. (Malling); WALKER, W. N., M.B., Ch.B. Dubl. (Manorunningham and Letterkenney); WATSON, F. H., M.B., B.C. Cantab. (Sheerness).



## Vacancies.

For further information refer to the advertisement columns.

- Barnsley, Beckett Hospital.—First and Second Res. 11 S's.  
 Bermouth Medical Mission for Women and Children.—Med. Woman. £150.  
 Birmingham City.—Municipal Bacteriologist. £700.  
 Birmingham General Hospital.—Asst. P. £50 Surgical Registrar. £200. Two Asst. S. £50. Also H.P. H.S., Obstet. H.S., H.S. to the Ear and Throat and Venereal Dept. £100.  
 Birmingham, Rubery Hill Asylum and Annexe at Hollymoor.—Med. Supt. £1250.  
 Bolton, Townleys Hospitals, Farnworth, near Bolton.—Med. Supt. and Asst. Med. Supt.  
 Bournemouth, Royal Victoria and West Hants Hospital, Boscombe Branch.—Res. M.O. £250. Also Second Res. M.O. £200.  
 Cairo, Egyptian Government School of Medicine.—Professors and Lecturers. ££1000 and ££600. Also Radiologist and Lect. in Radiology, ££550, Anaesthetist and Lect. in Anaesthetics, ££500, and Registrar and Tutor, ££600.  
 Canterbury, Kent and Canterbury Hospital.—Jun. Res. M.O. £150.  
 Cape Town University, Faculty of Medicine.—Profs. of Medicine, Surgery, Obstetrics, and Gynaecology. £1250.  
 Cardiff, Glam. Ely Hospital.—Asst. Res. M.O. £300.  
 Cheam, Surrey, St. Anthony's Hospital.—Res. M.O.  
 Coventry and Warwickshire Hospital.—Hon. Surg. Staff.  
 Devon and Cornwall Sanatorium for Consumptives, Didworthy, South Brent.—Female Asst. M.O. £200.  
 Devonport, Royal Albert Hospital.—Res. H.S. £300.  
 Dorset County Council.—Asst. County M.O. £400.  
 Ely, Isle of Ely County Council.—Asst. Tuberc. O., M.O.H., and School M.O. £450.  
 Great Yarmouth Hospital.—H.S. £200.  
 Huddersfield County Borough Education Authority.—Full-time Dent. Surg. £350.  
 Hull Education Committee.—Asst. Sch. M.O. £150.  
 Hull Royal Infirmary.—Hon. P. and Two Hon. S's.  
 Kingston-upon-Thames Borough Education Committee.—School M.O. £300.  
 Leeds Public Dispensary, North-street.—Res. M.O. £200.  
 Leeds University.—Lect. in Experi. Phys. £500. Demonstr. in Phys. £250. Demonstr. in Hist. £250.  
 Leicester Poor-law Infirmary.—Res. M.O. £250. Also Sec. Res. M.O.  
 Liverpool School of Tropical Medicine.—Asst. Lect. in Parasitology. £250.  
 Liverpool, Stanley Hospital.—H.P. and H.S.  
 Liverpool University.—Chair of Anatomy, £900.  
 Maidstone, Kent County Asylum.—Jun. Asst. M.O. £300.  
 Manchester, Ancoats Hospital.—H.P. £150. Also Hon. P. and Radiologist.  
 National Hospital for Diseases of the Heart, Westmoreland-street, W.—Res. M.O. £100. Also Non-Res. M.O. £50.  
 Newcastle-upon-Tyne, Royal Victoria Infirmary.—Res. Anæsth. £120. Also Four Non-Res. Anæsth. £50.  
 Newcastle-upon-Tyne, University of Durham College of Medicine.—Demonstrators of Anatomy and Physiology. £350 to £500 and £300.  
 Newport Borough Asylum, Caerleon, Mon.—Asst. M.O. £300.  
 Newport, Mon., Royal Gwent Hospital.—Third Res. M.O. £200.  
 New Zealand.—Path. and Bact. for Pub. Health Dept., Auckland. £700.  
 Otago University, New Zealand.—Prof. of Syst. Med., Prof. of Clin. Med. and Therap., and Lect. on Clin. Med. £600, £500, and £400 respectively.  
 Queen Mary's Hospital for the East End, Stratford, E.—Asst. Hon. P.'s., Hon. Ophthal. S. and Hon. Aural S.  
 St. Helens County Borough.—Asst. M.O.H. £500.  
 Seychelles Government.—Asst. M.O. and Visiting Magistrate. Rs. 6000.  
 Sheffield City Education Committee.—School Dent. Surgeons. £350.  
 Sheffield Royal Infirmary.—Asst. H.P. £150.  
 Smyrna Mission and Beaconsfield Memorial Hospital.—Medical Missionary. £250.  
 Taunton and Somerset Hospital.—Hon. S.  
 Taunton, Somerset and Bath Asylum, Gifford.—Asst. M.O. £300.  
 Tynwald, Whiteness, and Weisdale Parish.—M.O. and Pub. Vac. £45.  
 Twickenham, St. John's Hospital.—Hon. Con. Surgeon.  
 West African Medical Staff.—Number of appointments. £400.  
 West Riding County Council, Treatment of Venereal Diseases.—Asst. £550. Also Sch. Oculist. £450.  
 The Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Soham (Cambridge).

## Births, Marriages, and Deaths.

### BIRTHS.

HARNETT.—On July 16th, at Devon House, Barnet, the wife of W. G. Harnett, M.A., M.D., of a son (stillborn).

### MARRIAGES.

DUNCAN—McEWAN.—On July 22nd, at St. Wilfrid's Church, Harrogate, William Henry Duncan, F.R.C.S. Edin., to Ida, elder daughter of Mr. and Mrs. J. H. McEwan, Crimble House, Harrogate.  
 ORR-EWING—ROSS.—On July 16th, at Parbold, Archibald Orr-Ewing, M.B., B.C. Cantab., to Gladys Mary, second daughter of Mr. and Mrs. Alex. Ross, of Clifton, Parbold.

### DEATHS.

PEILE.—On July 14th, at Phillimore, Sidmouth, William Hall Peile, M.D., aged 50.  
 RANDALL.—At Park-street, Bridgend, Wyndham Randall, L.R.C.P. Edin., M.R.C.S. Eng., in his 73rd year.  
 N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

## Notes, Short Comments, and Answers to Correspondents.

### THE BATHS OF OLD LONDON.

By SEPTIMUS SUNDERLAND, M.D. BRUX.

#### PART III.

#### Spas, Wells, and Springs.

THE preceding account of the few baths of Old London, the former existence of which I have been able to trace, will be sufficient to show that some attempt was made to treat diseases of the skin by balneo-therapeusis in London during the past few centuries.

#### Spas.

But there remains something to be said about the spas and wells of Old London in connexion with bathing. During the time when existed the vogue of drinking the waters at the various London spas—roughly speaking, from the latter half of the seventeenth to the early period of the nineteenth century, no provision was made for bathing at these spas with the exception of one or two minor ones already mentioned; although in many instances, no doubt, the water was used locally by affusion. Those best known of the spas (the waters being taken internally) were: St. Chad's for "scrofula" (near the present King's Cross); Pancras, for "obstinate cases of scurvy, king's evil, leprosy, and all other skin diseases"; Powis Well (near the Foundling Hospital, Guilford-street), for "sore legs, inflammation of the eyes"; Sadler's Well for "scurvy"; Shadwell Spa for "scorbutic and cutaneous diseases" (by drinking or bathing); Hoxton Well for "those afflicted with wounds, ulcers, fistulas, sores, scabs, sore eyes, sore legs, leprosy," &c.; Marylebone Spa for "scorbutic disorders"; The Well in Restoration Spring Gardens (St. George's Fields) "for the cure of all cancerous and scorbutic tumours"; St. George's Spa, Lambeth, by Dr. John Fothergill in 1695 for "most cutaneous disorders and preventing cancerous affections"; Biggin Hill Spring, Norwood, for "scrofulous complaints." Sydenham Wells were referred to by Dr. John Peter as Lewisham Well. He wrote:—

"This water outwardly used is very good for most cutaneous distempers as leprosy, itch, scabs, pimples, ringworms, scurvy. It also dissolves tumours, and cureth old ulcers if the parts ill-affected be washed or bathed therewith, or if a curd made by boiling milk therewith be applied; and I am persuaded, it being used by way of a warm bath, it would be of great efficacy to consume hydropical tumours, to ease or cure gouty and rheumatic dolours, as I far more effectual also in the above-said cutaneous distempers."

#### Springs and Wells.

Other old springs and wells of London which may be mentioned as having some connexion with the subject of dermatology, although they did not achieve the fame of being considered "spas," or even "spurious spas" are the following: "Crowder's Well (Cripplegate) "for sore eyes"; Highgate Spring "for bathing eyes"; St. Agnes Well, Hyde Park, "for bathing eyes"; Vauxhall Well "for eye troubles"; Ladywell, Lewisham, "for sore eyes"; East Sheen Well "for eye troubles and for bathing the legs."

#### Holy Wells.

I will not weary you by enumerating the names of the 23 so-called "Holy Wells" of London, about which I gathered information some years ago, although, of course, all the "Holy Wells" were attended by people suffering from skin troubles as well as from every other ailment.

#### Conclusion.

I do not know to what extent ordinary bathing and washing may prevent the acquirement of skin diseases, but assume that most modern dermatologists agree with Crocker's statement in the 1903 edition of his book that "the key-note of modern dermo-therapeutics is antisepticism." I imagine, therefore, that skin specialists approve of ordinary bathing and washing in moderation for people with healthy skins, with the hope of prevention of some at least of the various cutaneous disorders, in spite of the views of Dr. Samuel Johnson and of the apostle of the doctrine of vaccine treatment. Of course, everyone knows that bathing to excess and the use of certain soaps may cause skin irritation.

At the present day the value of bath treatment in phases of certain skin diseases is recognised and is recommended by dermatologists, but not, perhaps, to the extent that it may deserve. It is possible that in the near future, when the practice of hydrology will be systematically taught either in post-graduate courses or as part of the medical student's curriculum, that the attention of skin specialists will be still more directed to the subject, and that hydrological methods of treatment may be elaborated which will be even more beneficial to sufferers from skin diseases than those practised at the present time.



In conclusion, I should like to offer the suggestion that it might be advisable that a fuller investigation should be made by dermatologists on the effects of bath-treatment in skin diseases. It appears to me that its value may not be adequately recognised, that its possibilities may not have been sufficiently explored, and that no very earnest endeavours have been made of late years to attempt further progress.

To the Editor of THE LANCET.

SIR,—My good friend Septimus Sunderland, in his excellent description of the baths of Old London, refers to the bath in Strand Lane as a "Roman bath." In doing this he is only voicing the commonly received opinion. There is, however, no evidence that the bath dates back to Roman times. It does not resemble a Roman bath, which was, I believe, usually a square excavation in the floor, lined with tessellated pavement, and descended into by one or more steps; whereas the bath in Strand Lane, as Dr. Sunderland points out, resembles the ordinary plunge bath of modern times, but of large size. Moreover, it is very strange, as pointed out by Besant and others, that, if this bath is Roman, it is not mentioned by Stow and other antiquaries.

I am, Sir, your faithfully,  
S. D. CLIPPINGDALE.

Holland Park-avenue, W., July 21st, 1919.

#### HEALTH OF THE GERMAN NAVY DURING THE WAR.

WITH a few noteworthy exceptions German ships stayed in port during the war, so that the conditions of health obtaining among the personnel cannot have differed greatly from those of peace times. The daily ration strength of the German navy—the number of men in that navy—is calculated<sup>1</sup> to have been in the first year of the war, 202,123; in the second, 235,267; in the third, 254,347; and in the fourth, 383,071 men. Amongst these there came under treatment in each year ("new cases") per 1000, first year, 472; second year, 442; third year, 441; and fourth year, 497. As the average annual number, per 1000, for the five years before the war was 525, it appears that fewer men fell sick in the German navy in war than in peace. The increase in the figures for the fourth year is largely due to the influenza epidemic (92 cases per 1000). Tuberculosis of the lungs is the only disease quoted as more prevalent during the war (per 1000 before the war, 1.37 cases annually, during the war in successive years 1.45, 2.06, 2.81, and 2.09), while the mortality, too, was much increased (11.1 per cent. in the first year, 10.4 in the second, 13.6 in the third, and 18.4 in the fourth year) (August, 1917–August, 1918). The number of men killed at once, without medical treatment, is not mentioned, but of the sick and wounded who were seen by doctors 4073 died; also 5899 were invalided up to August 1st, 1918.

#### THE GAZETTE OF THE THIRD LONDON GENERAL HOSPITAL, WANDSWORTH.

AMONG the many publications which the various war hospitals have issued for the benefit of the patients and the amusement of both patients and public, the *Gazette* of the 3rd London Hospital holds a prominent place, and it is with feelings of regret that we announce its forty-sixth and last number, though that regret is tempered by the fact that the signing of Peace has rendered the hospital no longer necessary. The hospital, which has done most excellent service for the wounded, had from the first a wealth of artistic and literary talent among its staff and patients, and the *Gazette* has borne witness to the lavish way in which that staff has placed its talents at the disposal of the patients, and in providing for them and the public, under the past and present editors, Corporal Ward Muir and Sergeant Noël Irving, a magazine of high merit. This last and enlarged number maintains that high standard, and both as a souvenir of Peace and an entertaining journal is more than worth the 1s. which is charged for it. Many of the old contributors cater for this issue, Corporal J. H. Dowd illustrating among other productions the emotions of a hospital visitor on receiving final instructions from a disabled patient as to the writing of a letter: "Love to yourself and Bahs. P.S. Please excuse the scribble."

#### COLONIAL HEALTH REPORTS.

*Gilbert and Ellice Islands.*—According to the official report for 1917–18 there were during the year in 12 of the islands of the Gilbert Group, having a population of 18,014, 579 births and 528 deaths. In two of the islands the deaths exceeded the births, there being 64 deaths to 44 births in Butaritari (population 1133) and 63 deaths to 25 births in Oceau Island (population 1100). In the latter instance the high death-rate, it is suggested, is largely due to the unnatural conditions under which the natives live and to the use of European foodstuffs, whilst the low birth-rate is attributed to "the scarcity of wives among the company's labourers."

In seven islands of the Ellice Group (population 3131) there were 171 births and 95 deaths. Fanning Island reported 17 births and only 3 deaths. From certain other islands returns have not been received. The erection of the Central Leper Asylum on the island of Tarawa has been completed. It has not as yet been found possible to collect the lepers from the other islands owing to the lack of a Government vessel. Efforts are being made to charter a leper vessel from Australia. A suggestion has been put forward for an improved Government hospital for Ocean Island and for a water-borne drainage system for the native villages and Government station. The continued prevalence of dysentery on Ocean Island is causing anxiety. The native death-rate on that island is far too high, especially amongst the resident population as opposed to native imported labour. The following record of the rainfall at Ocean Island for the last five years shows the remarkable variation on the Line Islands:—

	Inches.		Inches.
1913-14 .....	131.05	1916-17.....	6.63
1914-15 .....	137.85	1917-18.....	26.62
1915-16 .....	18.41		

The drought broke in May, 1918, and in the last two months of the year some 20 inches were recorded.

#### THE NATIONAL COUNCIL FOR THE UNMARRIED MOTHER AND HER CHILD.

THE annual report of the first year's work of this Council shows useful progress. The legal recommendations on the preventive side of the work as laid down at the Mansion House Congress in 1918 have resulted in the drafting of a Bill which is likely to form the basis of legislation, while the provisions of the Maternity and Child Welfare Act open up unlimited opportunities for the curative side of the work. Prejudice remains in certain quarters against helping the unmarried mother, but it is noteworthy that the constructive policy of the Council has evoked a large measure of sympathy in the efforts made to restore the mother to good citizenship, and to make effective the responsibilities of the father. The greater activities of the Council depend upon increased financial support, but, as at present constituted, the Council has no reliable source of income. Since its inception the work has depended very largely on the generosity of the honorary treasurer, Sir Charles Wakefield, but if the work is to continue generous financial help must be given. The British Red Cross Society has, we are glad to note, accepted an invitation to join the Central Council for Infant and Child Welfare, of which the National Council for the Unmarried Mother is a constituent part.

J. R. L. is advised to take counsel with one or two professional colleagues before acting.

*Prevention of Hydrophobia.*—A person who talks of the arguments of opponents as "imbecilic rot," and who states that "Pasteurism (*sic*) has been proved an utter imposture," clearly needs no reply.

#### Communications, Letters, &c., to the Editor have been received from—

- A.—Mr. R. J. Albery, Lond.
- B.—British Dental Association;
- B.—Dr. A. Balfour, Lond.; Sir J. Barrett, Melbourne; Mr. J. B. Burke, Lond.; Board of Education, Sir J. W. Byers, Belfast; Dr. A. E. Boycott, Lond.; Col. R. J. Blackham, I.M.S.; British Fire Prevention Committee; Mr. I. Back, Lond.; Dr. Blondel, Paris.
- C.—Dr. P. J. Cammidge, Lond.; Dr. F. G. Crookshank, Lond.; Dr. B. M. Cowell, Croydon; Dr. S. D. Clippingdale, Lond.; The Co-operative Sanatoria, Ltd., Billericay; Dr. J. R. Collins, Cheltenham; Dr. W. F. Croll, Aberdeen; Chief Inspector of Factories.
- E.—Dr. R. Eager, Exminster.
- F.—Mr. P. J. Franklin, Lond.; Dr. R. Fielding-Ould, Lond.
- G.—Mr. B. Glandwing, Aspley Guise; Mr. H. T. Gray, Lond.; Dr. Ida M. Guillaume, Torquay; Dr. W. E. Gallie, Lond.; Dr. R. Goodall, Whitechurch.
- H.—Home Office; Mr. J. H. Hart, East Molesey; Lt.-Col. A. R. Hinchley, R.A.M.C.; Prof. I. Walker Hall, Bristol.
- J.—Mr. H. M. Johnston, Newcastle-on-Tyne.
- K.—Dr. B. G. Klein, Chislehurst.
- L.—Dr. A. Lewers, Melbourne; London War Pensions Committee; Liverpool Medical Institution, Sec. of; Livingstone College, Principal.
- M.—Dr. J. F. D. Macara, Lairg; Medical Guild, Hon. Sec. or; Mrs. M. McConnell, Petersfield; Ministry of Health, Sec. of; Miss A. R. Martin, Eastbourne.
- N.—Mr. L. E. C. Norbury, Lond.; National Council for the Unmarried Mother, Hon. Secs. of.
- R.—Royal Fern Company, Florida; Dr. W. C. Rivers, Barnsey; Registrar-General, Edinburgh.
- S.—Dr. S. P. Sunderland, Lond.; Summer School of Civics and Eugenics; Société de Biologie, Paris; Dr. M. B. Shipsey, Birmingham; "Sea-Pie," Publishers of; Save the Children Fund, Lond.; Mr. S. Stephenson, Lond.; South London Hospital for Women, Sec. of; Colonel A. W. Sheen, A.M.S.
- T.—Dr. A. H. Thompson, Lond.; Mr. O. P. Turner, Hastings; Mr. L. C. Thorburn, Lond.
- W.—Dr. F. P. Weber, Lond.; Dr. L. A. Weatherly, Bournemouth; Dr. F. J. Waldo, Lond.

Communications relating to editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C.2.

<sup>1</sup> Arch. f. Schiff- und Tropen-Hygiene, xxiii., 7, p. 136.



# An Address

ON

## X RAY THERAPY.

*Delivered before the Hampstead Medical Society*

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MR. PRESIDENT AND GENTLEMEN,—The proper appreciation of the value of radiations in practical therapeutics is, to those unacquainted with the subject, very difficult. Opinions vary amongst surgical and medical experts to an astonishing degree. Such opinions are sometimes expressed on scanty knowledge of the matter, especially of the technique and the action of radiations upon the tissues, and oftener on the results obtained in the treatment of quite unsuitable cases. Perhaps a still more confusing factor is presented by the conflicting opinions of experienced radiologists who may be over-enthusiastic in their claims for the efficacy of the agents they employ, and who may not have had a very extensive clinical knowledge of the diseases they are called upon to treat. Lastly, the new agents were quite early in their history called upon to cure diseases which had completely baffled all other known methods. Little wonder that the results should have been scanty, and that so many conflicting opinions on value have been formed and expressed.

In this paper I shall endeavour to give a summary of X ray therapeutics and describe the technique for a number of diseases which benefit from radiation treatment. It will be impossible to discuss the instrumentation or the physics of the subject. The former is best learned by a few visits to an X ray department. The latter calls for an extensive practical knowledge of physics.

### THE X RAYS AND THE STRUCTURE OF MATTER.

The far-reaching effects of the discovery of X rays and the subsequent isolation of radium were at the outset hardly recognised. Kaye, in his introduction to his admirable book on X rays, says:—

"In the early nineties it was not infrequently maintained that the science of physics had put its house in complete order, and that any future advances could only be along the lines of precision measurement. Such pessimism has been utterly confounded by a sequence of discoveries since 1895 unparalleled in their fundamental nature and promise. Even many not specially concerned have had their attention directed to the recent attempts at solving the riddle which has excited interest and taxed ingenuity since the beginning of civilisation—the problem of the ultimate structure of matter.

The chemist and physicist have long built upon a theory of atoms and molecules, though information as to the existence and behaviour of individual atoms was only based on speculation, however justifiable.

But within the last decade we have not only isolated the atom but we have learnt a great deal about its internal structure. Radio-activity has, for example, introduced us to an electrically charged atom of helium (the  $\alpha$  ray) with characteristics such that it can, in spite of its extreme smallness, make individual appeal to our senses.

The speed of the  $\alpha$  rays is so abnormally high that, if, for instance, they are allowed to strike a fluorescent screen, as in the spintharoscope of Sir William Crookes, each atom possesses enough energy to record its arrival by a single flash of light. Rutherford and Geiger have actually recorded the arrival of atoms by means of a delicate electrometer. C. T. R. Wilson has succeeded in rendering visible and photographing the paths, not only of single charged atoms but of electrons and X rays as well.

These are interesting phenomena, and the closer study of their production and characteristics led to the further discovery of electrons by J. J. Thomson and of the X rays by Röntgen.

Through the efforts of a band of workers the Röntgen rays have thrown a search-light on many phases of atomic physics not susceptible to other methods of attack. Quite recently X rays have come to the aid of the crystallographer and displayed in the hands of Laue, Friederich and Knipping, Bragg, and others, the regular grouping of the atoms in a crystal.

The Geissler discharge tube known as the Plücker Hittorf or Crookes tube—the former beautiful plaything of the scientist—has proved the pioneer of some of the most wonderful discoveries and speculations that physical science of this or any generation has known."

That is, in brief, a summary of the events leading up to, and including, the discovery of X rays. These have, as can readily be seen, revolutionised our conception of the atom.

### ACHIEVEMENTS AND POSSIBILITIES OF RADIATIONS IN MEDICINE.

The great advances in physics rendered possible by the accidental discovery of X rays by Roentgen have their analogues in the field of practical and experimental medicine. The immediate adoption of X rays all over the world by medical men working with physicists soon led to an appreciation of the value of the new agent.

No one at the outset could have foretold the immense strides the new agent would make in the short space of two decades. The use of X rays in diagnosis has been increased, and many important advances have been made as experience accumulated and apparatus was improved.

Far more interesting has been the gradual unfolding of the possibilities of radiations in therapeutics. The developments up to the present have been enormous. Still greater discoveries may lie before us, especially when, as a result of more extensive and intensive research, better understanding of the method of action of radiations in their application to the treatment of disease is arrived at.

It is necessary to indicate the ever-increasing field of activity before we attempt to deal with the technique and description of cases suitable for treatment. X rays when skilfully used can influence practically all the tissues which go to make up the living organism, the degree of action depending solely upon the quantity of radiation used and the response to it of the tissue affected. Here we have the possibility of acting upon one or all of the tissues by an agent of great power. Obviously the action must be a general one, whose activities are at present only vaguely understood. So far we know that definite results follow upon definite doses of radiations, and if this fact is grasped we go a long way towards a comprehension of the governing principle of radiation therapeutics.

Medicine, however, is not an exact science, and rules or laws which have a definite value in physics are not so readily applied to the practice of medicine. So far the applications of radiations in medicine are more or less empirical.

As already stated, the striking discoveries in physics have gone a long way towards explaining problems which have perplexed the human mind since the dawn of early civilisation. Possibly when our knowledge extends, and a thorough grasp of the physics of these agents and the underlying principles which govern their action has been obtained, it will lead to the development of a thorough technique and to a great improvement in the results obtained by their application to morbid conditions.

The developments may even be as revolutionary in medicine as they have been in physics. It may be even that the discovery of an underlying principle in cell metabolism may give us (by the aid of physics) the clue to the causation of certain diseases which have been the torment of many generations of medical men. Certainly the future teaching in the medical sciences must take more notice of physics. Medical education may be revolutionised in this way, and many of the now recognised and apparently well-established laws in medicine may, in the light of further research, require to be reviewed and possibly seriously modified.

### EFFECTS OF RADIATIONS ON THE LIVING CELL.

A great deal of valuable work has already been done in regard to the behaviour of the living cell when exposed to radiations. Colwell and Russ have given us a valuable work in "X rays, Radium, and the Living Cell," which clearly sets forth the great effect which can be produced by radiations on cellular structures.

A thorough appreciation of the action of radiations upon the normal tissues will be valuable when we come to deal with morbid conditions. What we know now is very limited, and the result of the application of measured doses. Dealing with the subject broadly, it may be stated that if a particular cell or a group of cells be exposed to a beam of radiations



from any source, and in this example we will assume that the radiations emanate from an X ray tube, certain events may follow: (a) The cell may be stimulated; (b) its activities may be inhibited; (c) the cell may be destroyed.

The determining factor in the production of any of these ends so far as the radiations are concerned is the intensity of the radiation and the duration of the exposure. The former is governed by certain physical data which it is unnecessary to enumerate now.

In regard to the cell, the determining factor will be the resistance the cell possesses to external stimuli. Cells vary enormously in this respect, and, further, individual cells of the same type vary in a direct ratio to the stage of activity they are in when treated by the radiations. This is, in fact, the most difficult of the problems one encounters when estimating dosage.

It can readily be seen from a consideration of these facts how many and varied may be the results from a single exposure to radiations. It also indicates that treatment by radiations must of necessity be solely in the hands of experts whose training will enable them to obtain the maximum of good, and, what is of equal importance, the minimum of harm in the treatment of diseased conditions.

It is clearly demonstrated that changes can be induced in cellular structures, and these might be described as the direct effects. There are, however, *indirect effects* produced which may have a far-reaching influence upon the metabolism of the organism. The human frame is a complex machine with many systems in full activity, each acting in sympathy or coördination with the others. Consequently when a particular group of cells which go to make up the area treated is acted upon by a measured dose of radiations various effects of an indirect nature are induced. If the dose is excessive, cell activity is arrested and the cellular structures die. The destroyed cells are absorbed or rendered inert by the activity of the surrounding tissues. When absorption takes place the products of disintegration are carried by the lymphatics to other organs in the body. Far-reaching effects may follow. The term "reaction" is applied to this phenomenon. The reaction may be severe and a rise of temperature lasting for several days may occur. This is obviously due to a powerful action upon the tissues. Products of disintegration of tissues may be circulated in the blood and serum and produce beneficial or harmful effects. If the former, the tissues are toned up and the patient improves. If the latter, the patient may be reduced to an extreme degree. This is specially liable to occur in the treatment of diseases of the blood, such as leukaemia, where, if care is not exercised, a rapid fall of the white cells may lead to a fatal leucopenia.

There are many interesting phenomena induced by radiations which could be discussed at great length, but time forbids.

In dealing with a subject of such scope and interest it is somewhat difficult in a single lecture to give an adequate description of all the points of interest, and much of value must be left to another occasion. What, I imagine, will be of the greatest value will be a brief consideration of the practical application of radiations to the treatment of disease, with short descriptions of technique and a summary of the value of the radiations in their application to particular diseases. These are numerous, since, as has been shown, X rays may influence practically all the tissues which go to make up the complex mechanism of the human frame.

#### THE TREATMENT OF DISEASES OF THE SKIN.

The diseases of the skin are particularly responsive to regulated doses of X rays. The proof of this lies in the fact that many skin specialists include in their armamentarium an X ray outfit, and, judging from the results produced by its use, it is not the least valuable of the agents employed. The treatment of skin diseases by X rays has led to the production of the radio-dermatologist, because it is evident that in this branch of medicine there is ample room for another specialist. I shall, therefore, not labour the point.

Suffice it to state that in the treatment of *ringworm of the scalp* X rays are very valuable. The technique has to be very thorough to produce accurate results. The method is not free from danger. Untoward results are not unknown. These are dermatitis and permanent alopecia. In view of the possibility of such results it is well to caution the

parents of children undergoing X ray treatment that there is danger. The percentage of accident is small but it does occur, and we must admit the possibility of such regrettable consequences. The technique is readily carried out. The following diagram illustrates the manner in which the treatment is administered.

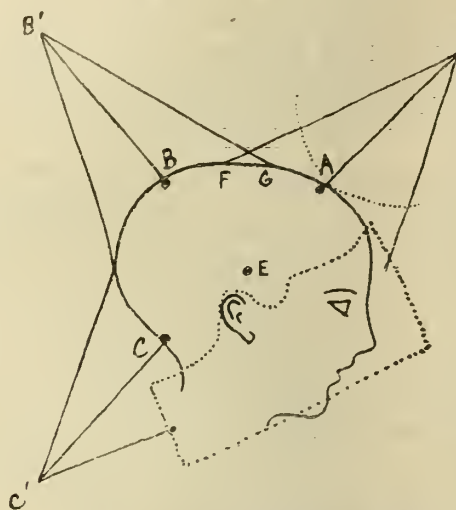


Diagram showing centres of areas to be rayed.

Dr. Adamson is responsible for the introduction into this country of a method of exposure which in skilled hands yields satisfactory results. It consists briefly of the division of the scalp into five areas, each of which gets a measured dose. The diagram shows four of the areas marked on the scalp; the fifth is given to a corresponding area opposite.

A number of other diseases of the skin are amenable to skilfully applied doses of X rays.

*Rodent ulcer* very frequently calls for X ray treatment, and the results are, on the whole, an improvement on those obtained by other methods. Operation offers in the early case a better prospect of cure. X rays, however, quickly heal the ulcer. There is a tendency to recurrence, and it is not at all uncommon for a case to require treatment extending over several years at intervals. On the whole it is better to treat rodent ulcer with radium. The dosage is more accurately controlled, and the results are better and tend to be more permanent.

*Malignant disease of the skin.*—The technique employed should be that for malignant disease generally, though in cases of superficial epithelioma and a number of cases of rodent ulcer unfiltered radiations may be used for the earlier doses, a gradual increase of the thickness of the filter being employed to ensure the adequate irradiation of the deeper structures.

*Hyperidrosis.*—This troublesome condition readily yields to radiations. It should be more widely employed than it is at present. The result can be obtained by one or two large doses at an interval of two to three weeks between the exposures, but it is sound policy to aim at a slower production of the effect. Three or four exposures of each axilla at intervals of three weeks should lead to an arrest of the excessive perspiration. The aim should always be to control rather than to suppress the secretion. The technique is simple. The patient lies on a couch with the arm extended over the head, and the axilla is thoroughly irradiated with unfiltered radiations. Subsequent doses should be given through an aluminium filter.

#### THE TREATMENT OF ENLARGED LYMPHATIC GLANDS.

The growing experience in the treatment of enlarged glands is forcing upon us the conviction that in X rays we possess a remedy of great power. During the course of investigations, extending over many years, into the action of radiations upon tissues, I have found that the behaviour of the enlarged lymphatic glands, of whatever nature, is such as to indicate unmistakably that the effects may be far-reaching. X rays and radium have been extensively employed in these investigations. Either will succeed if the proper



dosage is administered. The response in a large number of cases has been very marked and almost invariable, the chief matter being the selection of the suitable radiation for each condition dealt with.

#### *Diagnostic Value of X Rays in Enlarged Glands.*

It is so certain that several types of enlarged glands will respond to radiations that we might employ the rays in a diagnostic as well as in a therapeutic sense. It has been observed that enlarged glands respond in somewhat like the following order to estimated doses of radiations.

1. Enlarged glands due to simple inflammatory conditions give a very rapid response if suppuration has not set in and the condition is becoming chronic.

2. Lymphadenomatous glands give a fairly rapid response, but not so rapid as the simple inflammatory ones.

3. Sarcomatous and lympho-sarcomatous glands give a rapid response in the majority of cases treated, leading to a rapid diminution in the size, but the effect is rarely permanent, there being a tendency to recurrence, and an ultimate refusal to respond to further treatment.

4. Tuberculous glands give a slow response as a rule. When treated early enough the glands become quiescent and slowly subside, but if not completely fibrosed they tend to break out at a later period.

5. Carcinomatous glands give a very slow response. They hardly ever completely disappear, but they may be arrested in their growth. It is, then, sound practice to remove the glands surgically.

6. Enlarged glands due to a mixed infection are fairly common. For example, in a patient suffering from carcinoma in an adjoining area the glands may enlarge in groups and yet no secondary cancer be present, or the glands on the opposite side from the lesion may become enlarged. These will quickly subside under radiation treatment. All, or nearly all, may disappear, or one or more in a group of enlarged glands may persist. These may ultimately be found to have invading cancer cells in their substance. Only a few groups of cells may be found, the bulk of the enlargement being due to inflammatory reaction, and there may be a secondary infection due to other organisms. The same condition may occur in tuberculosis. A group of glands may have only one or two which are actually invaded by the tubercle bacillus. In both of these instances, if the glands are treated by X rays, a mixed response is obtained.

From a consideration of the above statements it is obvious that in X rays we possess a differential diagnostic test which may be extremely useful when we are in doubt regarding the nature of the causal condition.

#### *Therapeutic Radiation of Tuberculous Glands.*

The irradiation of enlarged tuberculous glands is useful for other purposes than that of the glands alone. Coexistent or chronic tuberculosis of the lungs may at the same time receive benefit from the radiations, and it is a matter for serious consideration whether all such cases should not have radiations applied as a part of the routine treatment.

A considerable amount of this class of work is being done, and it will be interesting to have later a report from sanatoriums which have adopted the method. The general tonic action of radiations should also be helpful in these cases.

The treatment in all cases of enlarged glands must be thorough. In sanatoriums where the patient is at rest and under observation daily doses may be given, a fresh area being selected each day and the exposure repeated to the same area not oftener than once in 14 days. The aim in tuberculosis cases should be to include the thoracic contents, particularly the mediastinal gland, in the field of irradiation, so that all deep glands may receive adequate exposures. In less acute cases the treatment may be given once or twice a week. The dose at each visit will vary with the condition requiring treatment. Tuberculous glands require to be treated for a lengthy period of time extending over many months.

#### ENLARGEMENT OF THE THYROID AND THYMUS GLANDS.

There are no groups of clinical symptoms, such as occur in exophthalmic goitre or Basedow's disease, which call for more skilful treatment than those associated with disorders of the thyroid and thymus glands. The combined skill of the clinician and the radiologist is necessary to combat successfully the complex phenomena exhibited in this

disease. There can be no question that a combined attack, using all the measures available, will enable us to check the symptoms and ultimately cure the disease in a number of cases. These vary in the degree of acuteness, and the treatment will require to be varied accordingly, if a successful issue is to be looked for. Sanatorium treatment combined with medicinal measures and radiations affords us the treatment *par excellence*.

The very acute case demands absolute rest in bed, quiet, careful diet, fresh air, and practically a continuous action from radiation treatment. Small doses of the latter daily may be required over several weeks before any sign of improvement shows itself. Later, when the severity of the symptom abates, the treatment should be gradually diminished in intensity and frequency, and when the metabolic balance is gradually restored the dosage may be reduced to three times a week, and, later, given at longer intervals.

#### *X Ray Treatment in Exophthalmic Goitre.*

Three areas of the thyroid gland should be irradiated, one on the right side, another on the left, and a central large area should include the isthmus of the gland and the upper thoracic region, the object being to include the thymus gland, which is generally enlarged in these cases. Experience has shown the value of including the thymus in the irradiated area. It is well to use filters of 2 or 3 mm. of aluminium, and in addition a secondary filter to protect the skin. The latter should always be carefully protected from over-dosage, because if this should occur, even to a slight extent, it may be followed later by teleangiectasis, which is a troublesome complication.

Treatment should be continued at intervals over a long period of time in these acute cases. Patients complain of a tendency to relapse if this is not done, and it is quite possible to maintain the balance of activity of the gland by such treatment.

Fortunately the majority of cases treated do not require such systematic treatment. There are many patients who are not acutely ill, and though these would improve more rapidly under the stricter regime, circumstances may not allow of such vigorous treatment and it may be necessary to treat these patients at an out-patient clinic. Several hundreds of such cases have been treated by visits of once, twice, or three times a week. The dosage is similar to that described for the more acute cases, and the treatment requires to be carried on over many months. In the majority of cases the progress is satisfactory, there being a gradual restoration of balance of health, a diminution of the symptoms, and a slow but steady reduction in the size of the enlarged gland.

Better results in the more chronic cases have been obtained by the administration of small doses at frequent intervals than were formerly met with when the larger doses were given at intervals of three to four weeks. It is not necessarily cases of very large thyroid glands which respond most readily. The aim of treatment is to regulate the secretion from the gland, and a small gland may be very active. A regulating dose may check the activity, and so influence the condition.

#### *Parenchymatous Goitre and Other Conditions.*

Another form of enlarged thyroid met with is the parenchymatous goitre, where the chief disturbance is due to the enlargement, with few or none of the general disturbances. These cases require careful treatment, the gland being very difficult to treat, and the reduction in size being very slight and very slowly induced.

A number of these cases appear to respond more rapidly when radium is used. Possibly the tissues are more resistant because the enlargement is due to a general increase of the structural tissues as against the glandular hyperplasia with over-secretion in the cases of exophthalmic goitre. In parenchymatous goitre the claim of surgery should always come first in treatment.

Malignant disease is another form of enlargement of the thyroid. This is very untractable to radiation treatment. Operation, if possible, offers the best chance of cure in those cases. Failing this, radium should be used. Large quantities of radium are required, and the filtration should be through 3 mm. or 4 mm. of lead or 2 mm. of platinum, and long exposures given. X rays of a penetrating type may also be useful.

Enlargement of the thymus in children frequently requires treatment. X rays will be found useful in these cases.



### THE TREATMENT OF DISEASES OF THE BLOOD AND DUCTLESS GLANDS.

X rays may be employed in the treatment of a number of these conditions. In dealing with the diseases of organs affected by morbid growths the skin receives a large percentage of the radiation, and it has been noted that in this way the blood while circulating in the tissues receives a dose which may exercise an influence far-reaching in its action not only upon the constituents of the blood but on the tissues through which the blood circulates.

It is, therefore, a good practice to irradiate large areas of skin surface as well as the spleen and the bone marrow when dealing with diseases such as leukaemia. When it is necessary to get a rapid action the greater part of the surface of the body may be utilised for this purpose. Patients who have been treated for other diseases show upon examination a marked improvement in the blood. This is known by an increase in the percentage of hæmoglobin and a raising of the colour index, and if a blood count is taken it may show a marked increase in the percentage of the red blood corpuscles. Patients who have been treated by X rays for fibroid of the uterus frequently show this marked improvement in the condition of the blood. The change is, however, due to other causes. For instance, the checking of the excessive hæmorrhage induces an arrest of the secondary anaemia which accompanies it.

Patients treated for cancer also frequently show an improvement in the blood condition, evidenced by an increase in the number of red cells and a nearly normal colour index. These improvements undoubtedly occur, though they may be only temporary.

Most of the diseases in which there are blood changes have been subjected to radiations in the hope that benefit might accrue. Evidence exists which proves that it is possible to exercise a considerable influence upon a number of these diseases. Leukaemia generally responds for a time at least to radiations, and there is no reason to assume that the improvement is only a variation in the course of the disease. The effects are too marked and exist for too long a period for this to be so.

#### *Technique for Diseases of the Blood and Ductless Glands.*

This will vary with the effects we wish to produce. If a rapid action is required it should be the aim to induce a profound effect upon the blood cells. This can best be done by irradiating large areas of the skin surface with very lightly filtered rays. The first inch of tissues below the skin absorbs about 75 per cent. of the total of these rays, and consequently if the blood-supply is up to the normal the percentage of radiation absorbed will be considerable. When deeper effects are likely to be more helpful than more penetrating radiations may be employed. A filter should be used to absorb a percentage of the softer radiations.

For the irradiation of the spleen and other deep organs filtered rays are employed, the filter in this case being used to protect the skin, which is likely to receive large doses of rays if repeated applications are required.

### THE TREATMENT OF DISEASES OF THE PELVIC ORGANS.

Early in its history the extension of radiation treatment took in the diseases of the uterus, and attention was particularly directed to the enlargement of the uterine arising from fibromyoma. The effect upon these structures was led up to by experimental work carried out in 1905 by Halberstädter, who first noticed atrophic changes in the ovaries of rabbits as a sequel to irradiation by X rays.

Similar observations were made by Bergonié, Tribondeau, and Recamier. Reifferscheid described changes occurring in the human ovary as a sequel to irradiation by X rays. These effects were observed in cases treated by X rays and subsequently operated upon. Many other observers have recorded changes produced in the ovary as a result of prolonged X ray treatment. The majority of the results given are presumably those produced by relatively small doses of X rays, and no details are submitted as to the penetrative quality of the ray or the filtration employed. Albers Schönberg, Henish Bordier, and later Gauss and Lembcke, give results obtained by the more intensive form of treatment, the latter having worked out a very extensive technique, using filtered rays of moderate penetration, and giving results showing improvement as the intensity of the dosage increased.

Later work in America and England on intensive lines has given improvement in results altogether greater than was at one time thought of. The advent of the Coolidge tube and apparatus capable of exciting it adequately have further improved the technique and put within our reach the possibility of administering fairly large doses at a considerable depth from the surface of the body. Further, the introduction of many ports of entry and the angling of the tube to focus the beam of rays upon a given part have rendered it possible to increase greatly the dose at a given spot. The ovary on either side is taken as the landmark upon which the rays should be focussed.

#### *Mode of Action of the Radiation.*

The action of the rays appears to be primarily exercised on the ovary and its blood supply, suppression of function leading to atrophy of the structure and cessation of the menstrual hæmorrhage. The latter is the most troublesome symptom arising from fibromyoma. The improvement in the patient's health may in fact be attributed to the cessation of the hæmorrhage. The atrophy of the ovaries is, however, accompanied in a number of cases by a diminution in the size of the tumour. It is reasonable to assume that an action is exercised on the tumour itself. It is, therefore, advisable when treating the ovarian areas, to include the tumour as well.

The anterior abdominal wall is mapped out into a number of areas. The tube is arranged in treating each area so that the beam of rays may be focussed upon a given spot. If each ovary gets the maximum effect from those "ports of entry" on the side in which it lies, the tumour also receives a very large proportion of the radiations passing through it. A part of these radiations being absorbed by the tumours, changes must therefore occur in its structure as a result of the dosage it receives.

Whatever the action may be and upon whichever structure the rays act most, there is no doubt whatever that in the treatment of those conditions many marked beneficial results can be obtained by carefully applied courses of radiations. It will therefore be necessary to describe in some detail the technique now employed, the type of case likely to benefit, and to analyse the results obtained.

#### *Technique for the Treatment of Fibromyoma of the Uterus and Other Conditions of the Pelvic Organs.*

The technique, although chiefly employed for the treatment of fibromyoma, may be also applicable to such conditions as tumours of the other pelvic organs, the ovary, malignant disease of the pelvic organs, and in the prophylactic treatment of cases of new growth after removal. It is also applicable in a modified form for the treatment of conditions such as endometritis, fibrosis of the uterus, and for the production of sterility in conditions requiring such treatment.

With a modern installation the Coolidge tube offers advantages over any other tube in use. By using a high tension transformer with the tube a uniform series of exposures can be readily and rapidly carried through. The heating current is adjusted to give the desired penetration and the whole series of irradiations can be administered under precisely the same conditions. The dose should be measured by the Sabouraud and Noiré pastille, or by a photographic paper, or by any method which is known to be reliable.

A filter of at least 3 mm. of aluminium is used, and it should be placed, if possible, midway between the tube and the patient's skin. The secondary filter, consisting of chamol leather, several layers of thick paper, and loofah sponge enclosed in a linen bag for convenience, is placed upon the skin under the tube box. The time taken to produce the tint B varies with each installation, and the current it is capable of passing through the tube. An average of about five minutes to each dose can easily be obtained, using 2-3 ma. in the coil circuit. If the current is increased the time will be shortened proportionately to the amount of the increase in the intensity. A "hard" ray is necessary. Between 8 and 9 on the Bauer qualimeter is a useful radiation to employ in these pelvic conditions.

The anterior abdominal wall is marked out into a predetermined number of areas, the landmarks used being the level of the umbilicus and the pubic arch. As many as 2 ports of entry can be utilised in this way. In addition, the areas may be extended into the lateral wall of the abdomen.



and the posterior aspect. These extra areas are useful when it is necessary to get in a very large dose quickly in acute cases. Each area receives the same dose of radiations.

#### *The Question of Dosage.*

It is advisable to commence the treatment just after the cessation of the menstrual period in cases where that is possible. The whole of the areas may be treated at one seance where it is necessary to do so, but from experience it has been found that it is better to divide the dose into two or three days. This diminishes the exhausting action on the patient arising from the continuous treatment of one or two hours or more, and lessens the after-effects upon the patient.

The aim of treatment is to produce the result gradually, so it is necessary to give three or more seances before the patient is really benefited. It is quite possible to produce a result in one or at the most two seances, but the effect on the patient is often very injurious for a time, as serious reaction may be induced when the very intensive line of treatment is adopted. As a rule, in the average case a satisfactory result may be looked for in from 3 to 6 seances, each consisting of 10 to 12 areas. It is not at all uncommon for the period after the first seance to be more excessive than those before the treatment, so it is necessary to caution the patient on this point if she is not to be discouraged and discontinue the treatment.

The improvement is gradual, beginning, as a rule, after the second series of treatment. The menstruation or hæmorrhage generally ceases after the third series and may not be seen again. It is, however, advisable to administer one or two further series in order to keep up the action.

#### *Immediate and Later Effects.*

There are certain conditions produced by the treatment of which the practitioner should be cognisant if he is to be in a position to advise his patients on these and other points of importance arising in the course of treatment. Of these the most important is the so-called reaction induced by the effects of the radiation. These may be divided into (a) immediate effects, (b) later effects (reaction, &c.).

Of the *immediate effects* nausea is most common. This is probably due to the inhalation of highly ionised air which is invariably found in the vicinity of high-tension electrical machinery and possibly to the generation of ozone in the vicinity of the active X ray tube. Headache is often met with and is attributable to the same causes. Giddiness is a common symptom and may be directly traced to change of posture, most patients suffering temporarily and briefly from this when they arise from the X ray couch. Patients frequently go to sleep while being treated. This is possibly due to the monotonous hum of the active electrical apparatus.

The remedy for most of these conditions is simple. For faintness a small dose of sal volatile will suffice. Eau-de-Cologne sprinkled on a towel and laid over the patient's face will serve to minimise the effects of the ozone and ionised air. An electrical fan in the near vicinity of the tube will quickly change the air and carry off some of the ionised air. In prolonged treatments a little oxygen in an inhaler will revive the patient.

The *later effects* come on several days after the treatment, and their appearance has a direct relationship to the intensity of the dose. In large doses it comes on earlier, possibly the next day, but in the average not for two or three days. In cases where the dosage has been very heavy intense prostration may follow, with rapid pulse, raised temperature, and feelings of malaise. The temperature may rise to 103° and 104° and remain at this limit for some time, when patients may become extremely ill. The treatment consists of rest in bed and careful attention to diet. Medicinal treatment should be used as the symptoms indicate.

The patient generally recovers in time for the next series of treatment, which is due, as a rule, in about a month from the preceding one. Generally a degree of tolerance to the treatment develops and the patient shows hardly any reaction to subsequent doses, but a number of patients never acquire this tolerance and dread the repetition of the treatment on account of the distressing symptoms it produces. In these cases it is probable that the dosage has been too great for the patient's general resistance. The after-effects may in these cases be minimised by giving the treatment at longer intervals, or giving smaller doses and carrying the total amount over a longer period.

#### *Type of Case likely to Benefit from X Ray Treatment.*

Although it may be assumed that tissue changes may be induced in practically any form of pelvic disease, and that in a number of these the action will be beneficial, yet for practical guidance it is necessary to survey carefully the field of usefulness and indicate where radiation treatment is likely to give better results than other methods such as the operative, where it is likely to help towards a cure when combined with the operative and other forms of treatment, and particularly to indicate when it is wise to hold one's hand and decide against X ray treatment. This involves a résumé of the conditions met with, particularly in the present instance with regard to fibro-myoma.

While it has been admitted that up to the present the interstitial fibroid is the most suitable for radiation treatment, several writers have pointed out that practically all forms of fibroid respond favourably. The small tumour is more likely to become amenable to treatment than the very large tumour which fills the pelvis and the greater part of the abdomen. It is also worthy of note that the majority of the patients submitted to X ray treatment have been for one reason or another unsuitable for operation. Hence the results secured in a number of cases have been obtained in patients who were too bad for operation, and therefore presumably not favourable subjects for any form of treatment from the curative point of view.

A typical instance of this is found in the case of a patient who was rapidly sinking from profuse hæmorrhage, and who in the earlier stage of her malady refused to submit to operation. Later, when she was willing to do so her condition was so grave that the surgeon refused to operate. As a last resource she was taken to an X ray department in an ambulance. Treatment was pushed vigorously and in a short time the patient was out of danger. Later she made a complete recovery.

Sir John Phillips in a valuable paper<sup>1</sup> states that he has used X rays in nearly all forms of fibroid with beneficial results.

Any case of fibroid tumour will be benefited by radiation treatment if the symptoms are not urgent enough to call for immediate operation. The need for operation may be determined by: 1. The amount and frequency of the hæmorrhage and the secondary effects upon the patient. 2. The size of the tumour and rate of growth. 3. The pressure effects upon other structures. Even in this class of case radiotherapy may achieve results if the patient is willing to risk the effect of very intensive treatment and any other danger incident to its use.

There are other factors, such as the age of the patient, which may be taken as a guide to the practitioner in these cases. Till recently it has been said that patients under 40 years should not be treated by X rays or radium. More recently it has been found that at any age the patient may be beneficially influenced, and that if modified results are all that are required it is possible to produce them. Instances of this kind will be met with in severe dysmenorrhœa associated with an infantile type of uterus. Such patients should be warned of the probable complete cessation of menstruation if the treatment is pushed to its limit.

There are other conditions than fibroids, such as menorrhagia from any cause and endometritis, which may be influenced by treatment.

Put briefly, the advantages the treatment possesses over other forms are that it is quite painless, and, if it fails, operative measures may be employed under the same conditions as before or even under improved conditions. It is not accompanied by so much risk as the operative, and the after-effects are not so disturbing or lasting. Reaction may, however, in a number of cases be rather disturbing. The final result is brought about gradually and the patient is not so seriously affected by the climacteric symptoms induced in both methods of treatment. It is perhaps obvious that if the patient has the whole matter put clearly before her she may decide upon the radiation method in preference to the operative.

#### THE TREATMENT OF MALIGNANT DISEASE.

The treatment of malignant disease by radiations, as has been shown, is now widely recognised. The indiscriminate use of the method has in the past somewhat detracted from its value. In the earlier days X rays were tried in hopeless

<sup>1</sup> THE LANCET, 1918, i., 427; Archives of Radiology and Electrotherapy, 1918.



cases. Even now we are compelled to resort to their use in cases which we recognise as beyond the reach of any therapeutic agent so far as cure is concerned.

#### *Palliative Treatment.*

This leads us to the consideration of the palliative use of X rays in cases which are quite hopeless. Pain may be relieved, tumours are reduced in size, and the general health of the patient improves. The treatment is palliative in another sense, because it must be recognised that in bad cases of cancer, where it is known that the patient cannot be cured, the mental state of the patient has to be considered. Careful use of X rays in these cases will give an amount of comfort to the patient which is altogether out of proportion to any physical benefit received.

It is pathetic to have to deal with these patients. The hope of benefit, even cure, from, to them, a wonderfully powerful agent, takes possession of them to the end. Patients will struggle to the X ray room when it is obvious to all that they cannot possibly be relieved of their troubles. How far it is justifiable to encourage these patients I leave to the practitioner to decide. It is, however, noticeable that if nothing at all is done to help these victims they soon lose hope, become depressed, and quickly succumb to the malady.

In this relationship it is remarkable how much response may be obtained in extensive superficial carcinoma involving the skin and adjacent structures. I have seen extensive involvement of the skin clear up under practically continuous X ray treatment. By this is meant daily doses to numerous areas of skin. The treatment may be carried on for several weeks in this way.

#### *Possibility of Good Results in Very Grave Cases.*

Cases which are apparently hopeless respond well to the radiations, and a period of good health results. A striking instance of this kind may be quoted.

A man of about 35 had a sarcoma of the right testicle removed by operation. I saw him about two years after the operation. He was nearly in extremis, the abdomen was enormously distended, and there was serious engorgement of the superficial vessels of the anterior abdominal wall. The abdominal cavity was filled by a large mass of new growth, this being nodular and very hard. The legs were oedematous, and, to judge from the physical condition of the patient, treatment seemed as if it would be useless. However, it was thought advisable to attempt to help the man. Large doses of X rays were administered to several areas of the abdomen—back, front, and laterally—the idea being to get in a large dose rapidly. Improvement soon set in, the tumours diminished, and the swelling of the legs subsided slowly, this being aided by regular massage to the limbs.

In about three to four months the patient was able to walk. He attended as an out-patient for over a year, receiving treatment at intervals. It is now over a year since treatment was commenced. The patient is at work and is able to carry on, the condition being quiescent. He remained well for over 18 months, when he returned for further treatment.

The next case, although not one of malignant disease, illustrates the degree of influence which can be exercised over a very large tumour.

A patient attended the Great Northern Central Hospital over eight years ago suffering from an enormously enlarged spleen, the organ reaching down nearly to the pubic arch. He was anæmic and appeared to be rapidly going down hill. He was admitted to the hospital and received doses of radiations three times a week for a month. At the end of that time there was no visible improvement and the question of removal of the spleen was discussed. I asked that a continuation of the treatment should be advised after a short interval. This was done, the spleen steadily reduced in size, and in about a year had returned nearly to the normal. Treatment at intervals of three or four weeks was administered. When last heard of about a year ago the patient was in good health and had been actively engaged in business for about eight years.

These cases are, I admit, exceptionally good from the point of view of treatment. The prognosis in both was as grave as it could be, yet both responded to treatment in a remarkable way. I quote them in support of the treatment of hopeless cases by palliative measures, because we cannot say when a patient will not respond in some measure to the radiations.

In our endeavour to obtain results in these cases we resort to combined treatment by X rays or radium and the injection of salts of metal in a colloidal form. Theoretically the proposition is a sound one, since it is possible to obtain

secondary radiation effects from this method. I am quite of an open mind in regard to the value of colloidal salts of metals. I have seen good results obtained, but, on the other hand, the results obtained by radiations alone are equally good.

I am often asked about the value of potassium and magnesium salts in this connexion. No objection should be raised to their use, since theoretically, if we can saturate the tissues with the salts, the radiation effects may be enhanced. The only proviso I make is that they should be discontinued if the patient's health is affected by their use.

Salvarsan and its substitutes may be used, good results being sometimes seen when it is combined with radiations.

#### *Prophylactic Treatment.*

It is reasonable to assume that if it is possible to bring about the disappearance of a small superficial nodule of new growth by X ray treatment, it should be possible to effect a similar change in structures more deeply situated in the body.

In the first place, after an operation for the removal of a cancerous growth the tissues in an area spreading from the seat of the growth are damaged by the manipulations of the surgeon, and therefore more prone to become infected. Secondly, the fluid from the growth itself may contain cancer cells in an active condition, and these, if squeezed into the tissues along with the lymph, may settle on damaged tissue, and so at a later date give rise to what is known as a "recurrence." Thirdly, the lymphatics spreading out from the region of the tumour may already be infected or deep-seated glands may be involved. It is in the hope of checking the development of one or other of the above complications that we resort to prophylactic treatment.

In view of the above facts it is logically certain that the sooner the treatment is commenced after operation the more probable is it that a beneficial influence will follow. Indeed, several authorities advocate the pre-operative treatment in addition to the post-operative. A number of workers advocate the administration of the first treatment at the operation when the tissues are fully exposed. The only objection to doing so is the time it takes thoroughly to irradiate the whole area of the wound, the lymphatics in the axilla and superclavicular areas and the deep mediastinal glands. If this method is employed the first dose should be confined to the open wound. Later, in a day or so, the patient will be able to submit to further treatment if the apparatus can be brought to the bedside.

In whatever way the treatment is commenced it must be thoroughly administered so as to cover all possible sites of recurrence, and the treatment should be kept up for about one year or longer from the time of the operation. Opinions differ in regard to the frequency of the dosage. Some good results have been seen in patients who have had many weekly doses, followed at a later date by fortnightly treatments. The dose in these instances has to be rather smaller at each séance than in those treated at longer intervals. The technique should be similar to that described for the treatment of uterine diseases.

It may be asked what proof have we that prophylactic treatment does any good at all, and the question is a pertinent one. We can produce no proof that recrudescence is actually prevented, but we know that, in the experience of radiologists, a result of the treatment is that the percentage of superficial recurrence is somewhat smaller in the later years of treatment than it was in the earlier when the technique had not been perfected. Manifestations still appear in the deeper structures—i.e., in the thoracic walls and glands of the neck, axilla, and mediastinum. The time has not yet come when we can make any positive statements on this point. Years may elapse before we can prove by statistics that any good is being done in the way of preventing recrudescence, but in the meantime we can definitely state that radiation treatment helps the patients in other ways. A general tonic action is evident, scar tissue is rendered pliant, the recovery of limb movements is facilitated, and, lastly, the patient is encouraged to help herself and is supported in this effort by the fact that others are endeavouring to help her.

#### *Curative Treatment.*

The last and not the least important of the uses of radiations in dealing with malignant disease brings us to a consideration of the value of these in an attempt at the cure of a particular case. How far have we reached towards this



end? Great care and judgment are necessary in arriving at a decision to rely solely on either X rays or radium for the cure of a new growth.

The first consideration is whether there is any prospect of curing an early case. Undoubtedly a number of cases have been cured by a thorough exposure to X rays or radium. Such cases are naturally early ones where the lesion is superficial, and therefore readily accessible to the radiations. Rodent ulcer can be so dealt with, and superficial epithelioma may also disappear after treatment and remain cured for lengthy periods.

Sarcoma is another condition in which success may be obtained.

One particular case occurs to me in which a recurrent growth on the face was completely cured by a course of radium exposures. The original growth had affected the eyelid. Recurrence had been dealt with on two occasions by operation, as had also the primary manifestation. The glands on the affected side in the cervical region had become involved. The patient was treated eight years ago and, so far as is known, remains healed. When last heard of about a year ago she was quite well.

The final judgment is, however, in favour of operation in all early cases of cancer, because the balance of opinion is against an attempt to cure by radiations when an operation can so easily be performed and a radical excision offers the best chance of cure. Delay in these cases is always dangerous, because it is not yet possible to be certain that radiations will invariably yield a successful result, and surgery may ultimately have to be employed under much less favourable conditions if we fail to bring about a disappearance of the growth by X rays and radium.

AN ACCOUNT OF  
AN INFECTION IN MESOPOTAMIA DUE TO  
A BACILLUS OF THE GAERTNER-  
PARATYPHOID GROUP.

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EXPEDITIONARY FORCE.

(A Report to the Medical Research Committee.)

A SERIES of inagglutinable organisms culturally and morphologically indistinguishable from *Bac. para. B* have been isolated from the blood stream by the writer in Bagdad between July and December, 1918, and it is learned that similar findings have been recorded in a number of cases in other areas of Mesopotamia. In view of the bacteriological results obtained and pathological lesions revealed at autopsy in three fatal cases which occurred, an account of the findings, along with a note on the clinical history of the series of cases, has been deemed worthy of record to draw attention to the possibility of other cases of fever with or without marked pulmonary lesions being due to the same organism, as well as to raise the question of its relationship to the infections of the classical "enterica" group, especially paratyphoid B fever.

Characters of the Organism Isolated from the Blood and from  
the Various Organs.

The several strains of the organism under review all have the cultural and morphological characters of the Gaertner-paratyphoid group. It is most closely related to *Bac. para. B* and, as will be shown, it does not appear to belong to the *Bac. aertrycke* type. Up to the present the organism has been obtained from nine cases, from seven of which it was isolated during routine blood-culture investigation of "P.U.O.'s." In the remaining two cases it was isolated at autopsy from the lungs and spleen, no blood culture having been carried out during life. The organism has so far not been isolated from the urine or stools in spite of numerous examinations, but at one of the autopsies it was obtained in pure culture from the bile.

All the strains give similar microscopic appearances—an actively motile short, stout, Gram-negative bacillus or coccobacillus, with some tendency to pleomorphic formation. The growth on agar is less transparent and oily in appearance than the usual paratyphoid cultures, and is usually more profuse. There is no liquefaction of gelatin. On

MacConkey's medium the colonies are indistinguishable from the paratyphoids. Biochemically the organism produces acid and gas in mannite, glucose, dulcitol, maltose, galactose and arabinose, no change occurring in lactose, saccharose, and inulin. Litmus milk becomes at first slightly acid, changing to alkalinity on the fifth to seventh day; there is no production of indol.

Serological Characters.

On isolation, all the strains were inagglutinable even in low dilutions of the high-titre sera (Lister Institute) for *B. typhosus*, *B. para. A*, *B. para. B*, and *B. enteritidis* (Gaertner). After eight subculturings in broth spread over a fortnight, all the strains had become agglutinable to para. B serum in dilution of 200 and 250; while in the case of four of the strains, each of which was subcultured on 30 occasions, agglutination was obtained in considerably higher serum dilutions. Fine soft flocculi with a distinctly opalescent supernatant fluid were present in dilutions ranging up to 1000 and 2000 (titre of the para. B serum 6000), but marked sedimentation was never present in dilutions higher than 200 or 250. In none of the tests with para. B serum did I obtain the clear supernatant fluid which usually results in similar tests with *Bac. para. B*. Consistently negative results were obtained in the agglutination tests with all other high-titre sera (Dreyer's method slightly modified being the technique adopted).

Specific sera for three of the strains have been obtained by the immunisation of rabbits, a titre of 6000 to 10,000 being reached without any difficulty. All the nine strains were agglutinated to practically the full titre, whereas two stock strains of *Bac. para. B* never showed any signs of clumping in higher dilution than 1 in 250. For example, strain No. 6, which was obtained in pure culture from the lungs at autopsy by plating the lung juice on MacConkey's medium (as also from the heart blood and spleen), was agglutinated immediately after isolation by the rabbit immune sera for the strains No. 3 and 4 in dilutions of 8000 and 10,000 respectively, while para. B. sera (Lister Institute, titre 6000) failed to produce any reaction with this strain in dilution 1 in 50. "Zones of inhibition" were occasionally met with in the agglutination experiments both with the specific para. B serum, as well as with the sera obtained from the immunised rabbits, but no reference need be made to them in the present connexion.

It has unfortunately not been possible to obtain from England subcultures of recognised *B. aertrycke* strains, but through the kindness of Lieutenant-Colonel Ledingham, R.A.M.C., I was enabled to compare the reactions of a strain of presumed *Bac. aertrycke* isolated from an epizootic among guinea pigs by Major Glöster, I.M.S., at Amara. The behaviour of this bacillus with the sera produced from the immunised rabbits was very different from that of all the nine strains of the organism under review. Agglutination with sedimentation was present up to the 250 dilution, while the same indeterminate type of clumping associated with the fine soft flocculi as was obtained with the stock *B. para. B* was present up to a dilution of 1 in 1000. Nor did this *B. aertrycke* strain become more agglutinable after repeated subculturings, while it may be noted that it clumped with the Lister para. B serum practically up to titre. Thus it appears improbable that the series of organisms under investigation belong to the *B. aertrycke* group, although the evidence is meantime incomplete in the absence of experiments with specific *B. aertrycke* sera.

Agglutination of organism with patient's serum.—One case—No. 1—is of special interest, in that it was possible to

Dilutions of Serum of Case No. 1.

	25	50	100	200	250	500
No. 1 ... ..	++	++	++	±	±	—
No. 2 ... ..	+	+	±	±	±	—
No. 3 ... ..	++	++	±	±	±	—
No. 4 ... ..	++	++	+	—	—	—
No. 5 ... ..	++	+	+	—	—	—
Stock <i>B. para. B</i> ...	+	+	—	—	—	—
Stock <i>B. para. A</i> ...	+	—	—	—	—	—
Stock <i>B. typhosus</i> ...	+	+	—	—	—	—

carry out agglutination tests with two lots of this man's serum against his own organism as well as against the others of the series. Unfortunately no serum was obtained before the twenty-fourth day of illness. On this occasion the



serum gave negative results. On Oct. 28th, 1918—i.e., the forty-second day from the onset of No. 1's illness—blood was again obtained, and the following results were obtained in macroscopic agglutination tests with the serum against five of the strains and against our stock T.A.B. emulsions. This patient has been inoculated with T.A.B. vaccine in November, 1916, and again in February, 1918.

**Absorption tests.**—Although it was not to be expected that much information was to be gained from absorption tests when the Para. B agglutinogens of all the strains of the organism are relatively slight in character and produce such atypical flocculi as compared with those of the homologous organism, yet a number of such tests have been carried out. Out of six experiments with Strain No. 4 immune serum the following result was recorded in two instances:—

Strain No. 4 rabbit immune serum (titre 6000). Titre before and after absorption with (A) *Bac. para. B* and with (B) Strain No. 3:—

	(A)		(B)	
	Original titre.	After absorption	Original titre.	After absorption.
<i>B. para. B</i> ... ..	250	<50	250	<50
Strain No. 4 ... ..	6000	6000	6000	500
Strain No. 3 ... ..	6000	5000	6000	> 500 <1000

It is seen that *Bac. para. B* removed all the para. B co-agglutinins from the rabbit immune serum, but did not touch the agglutinins for the homologous or similar organism, whereas after absorption with a presumably similar bacillus (Strain No. 3) more than five-sixths of the agglutinins for the homologous organism were removed, as also were all the para. B co-agglutinins. In the other four tests such removal of the para. B co-agglutinins, by the strain presumably similar to the homologous organism, did not occur. This may have been due to the use of an insufficiency of organisms in the saturation of the serum, although from the extent of the removal of the homologous agglutinins this does not appear probable. The atypical character of the flocculi present in the ordinary agglutination tests and the incompleteness of the reaction, as shown by the persistent opalescence in the supernatant fluid, may throw some light on the inconstant results obtained, and further investigation in this direction is required.

In four experiments in which para. B. high-titre serum was saturated with strains No. 1 and 4 there was no absorption of the agglutinins for those organisms or for the homologous organism *B. para. B*. It is very probable, therefore, that we are dealing with a specific organism the serological characters of which are quite distinct from those of *B. para. B*.

#### Pathogenicity to Animals.

No special experiments to test pathogenicity have been carried out owing to the small number of experimental animals available. Some observations were made, however, during the course of preparation of immune sera in rabbits. One animal, which had previously received two intravenous injections of 225 and 900 million of dead bacilli, was found dead on the third morning after an intravenous dose of 500 million living organisms; while another rabbit died after 300 million live bacilli following on three doses of 300, 1200, and 3000 millions respectively of killed organisms, all given intravenously.

Post-mortem examination showed that both animals had died of a hæmorrhagic septicæmia. Petechial hæmorrhages were present on the pleural surfaces, as well as in the substance of the lungs. Some were larger than petechiæ, and in the case of the second rabbit one extensive hæmorrhage involved a third of the right lower lobe. Small hæmorrhages were present in both spleen and kidneys.

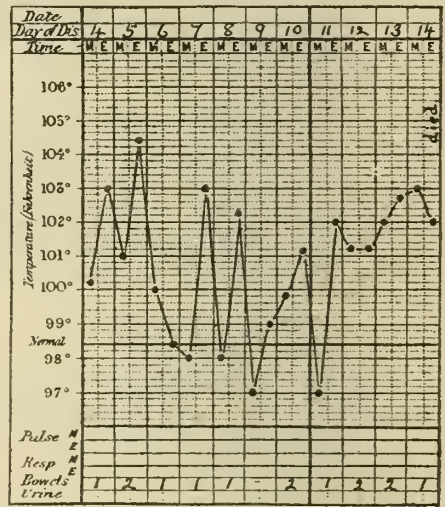
The intestinal tract also showed lesions of considerable interest. Discrete hæmorrhagic areas ranging in size from a pinhead to a millet seed were to be seen in the lower part of the duodenum, while in the jejunum and ileum they were well marked over a length of three inches, and extending in less degree for nine inches below. There was some associated œdema of the mucous membrane, but there was no naked-eye involvement of the lower part of the ileum or of the appendix. The great intestine appeared normal.

#### The Clinical Aspects of the Infection with Some Notes on the Morbid Anatomy.

The clinical history, &c., along with the post-mortem findings in the three fatal cases, is as follows:—

**CASE 3.**—Pte. W., aged 30, was admitted to hospital at Bagdad on Sept. 16th, 1918, with a fever, the temperature curve being suggestive of malaria, and the clinical symptoms of "influenza," of which there was an epidemic in Bagdad at the time. The man had been transferred from a convalescent camp, having been invalided from Persia for debility following clinical malaria. No malaria parasites had been found previous to admission, nor were any detected during several examinations while the patient was in hospital. After five days' intermittent temperature (98° to 104°) (see Chart 1) there appeared definite signs of a right

CHART 1.



basal pneumonia, spleen being palpable on deep inspiration. Condition became very critical and six days later patient died. There was no paratyphoid eruption. Leucocyte count on day before death 12,000 per c.mm.

**Autopsy** (10 hours after death). Lungs: Right middle and lower lobes in state of grey hepatization. Upper lobe acute congestion. Left lung normal. Pleura: Right cavity contains 8 ounces clear serous fluid with a recent exudate of lymph over the affected lobes. Heart: Signs of dilatation. Myocardium soft and friable. Spleen: Twice the normal size, soft and diffident. No pigment deposit to be seen by the naked eye or in smears. No malarial parasites detected. Intestines: Peyer's patches apparently perfectly healthy. Nothing abnormal seen in any part of the alimentary canal.

**Bacteriology.**—Cultures from the spleen and consolidated lung made direct on to MacConkey's medium gave a pure culture of the cocco-bacillus described above. This organism was agglutinated by its homologous serum obtained from an immunised rabbit in 1 in 6000 dilution. Originally inagglutinable to all the specific sera, after numerous subcultures, it reacted with para. B serum (titre 6000) as follows: Dilution 1 in 1000 +; 1 in 2000 ±.

**CASE 4.**—Sgt. G., aged 40, had been 12 days in hospital suffering from vague nervous symptoms, having suffered from shell shock in France in 1915, from which he had never completely recovered. Patient appeared to be doing well during his 12 days' residence, when his temperature suddenly shot up to 102° (Chart 2) and there developed symptoms of bronchitis and rhinitis. On the third day of fever signs of a right apical pneumonia developed. Five days later the right lower lobe and also the left apex showed signs of involvement. No suggestive rose spots were seen. Restlessness and delirium latterly became a marked feature, the patient dying on the fifteenth day of illness.

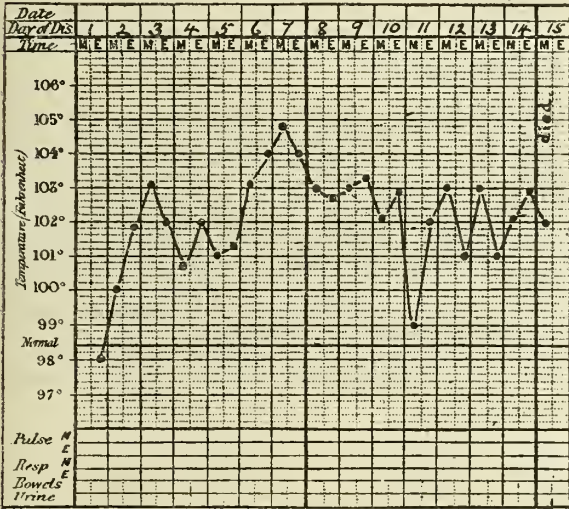
**Autopsy** (14 hours after death).—Emaciation slight with moderate hypostatic lividity. Pleura: Right sac contains 8 oz. blood-stained fluid. No adhesions or lymph exudation. Left sac normal. Lungs: Consolidation of greater part of right lung—viz., whole of lower lobe, middle lobe, and posterior portion of upper lobe. In section the colour was yellowish grey, the consistence distinctly friable, with a suggestion of softening, while there was a purulent exudate on squeezing the consolidated areas. Left lung healthy except for marked congestion, especially of upper lobe.



Heart: Showed dilatation of the left ventricle with a large antemortem clot in the corresponding auricle. Myocardium pale, flabby, and easily friable. Spleen: Slightly enlarged, softish. Stomach and intestines (great and small): Normal in appearance except for a pink oedematous condition of the jejunum and upper part of the ileum. This may have been associated with the presence of several ascarides in the small intestine. Kidneys: Marked cloudy swelling with some fatty changes.

Bacteriology.—Three blood examinations for malaria during life were all negative. Blood culture on the ninth day of illness gave a pure culture of a Gram-negative coccobacillus with the characters above described, while at autopsy the same organism was obtained from spleen, lung, and contents of gall-bladder. Although originally inagglutinable, all four strains after a week's subculturing were agglutinated by para. B serum in 1:2000 dilution, tests with the other specific sera being negative. The serum of the animal immunised with this strain easily reached a titre of 10,000. Smears from the sputum during life, as well as from the lung juice at autopsy, showed some Gram-positive cocci in addition to numerous Gram-negative bacilli, but no organism morphologically resembling the pneumococcus was seen.

CHART 2.



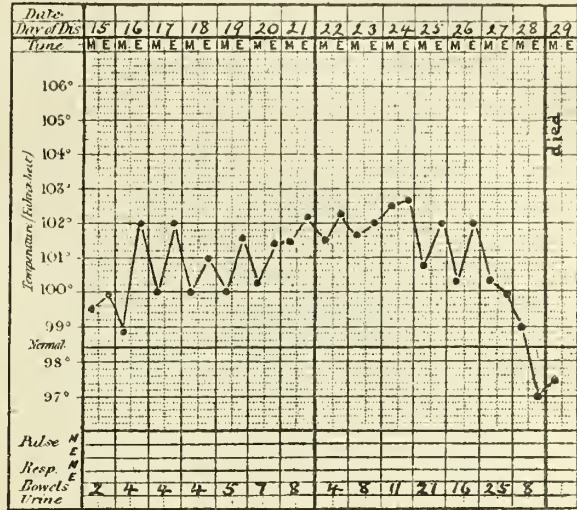
CASE 6.—Pte. D., aged 32, admitted to hospital on Nov. 20th, 1918, as suffering from anæmia, thought to be due to bleeding hæmorrhoids, gave a recent history of diarrhoea and colicky pains for the preceding 12 days. History of intermittent bleeding from the bowel during the previous two months was elicited, blood with clots being passed along with formed stool, while the occasional occurrence of prolapse on defæcation was reported. Four days after admission patient developed a condition which was diagnosed as acute bacillary dysentery. Fever asserted itself so that the patient's temperature reached 102° (Chart 3), while 4-6 non-fæculent motions were passed daily consisting chiefly of bright red blood associated with blood clots and a little mucus in the form of sago-like granules. Their appearance was altogether much more suggestive of intestinal hæmorrhage than of the usual acute dysenteric "B. and M." stool. On microscopical examination the cytology did not suggest bacillary dysentery, very few cellular elements being present apart from blood cells. No entamoebæ were seen while on cultivation on MacConkey's medium on three occasions, no non-lactose fermenters were in evidence. Blood films failed to reveal the presence of any malarial parasites. The blood picture did not suggest a primary blood disease. The only striking feature was the pallor and distortion of the red cells, but no megalocytes or nucleated red cells were seen.

At first the sigmoid felt definitely thickened and was acutely tender, but after several days this feature completely disappeared. The patient's general condition suggested marked toxæmia. He was treated with antidyenteric serum, but no improvement ensued. On Nov. 28th—i.e., the twenty-first day of fever—severe watery diarrhoea set in, the stools being pea-soup like with flecks of blood. On Dec. 4th the temperature fell, collapse set in, patient falling into a comatose condition, and death took place on Dec. 6th.

Autopsy (performed 20 hours after death).—Body considerably emaciated; blood watery. Respiratory system normal. Cardio-vascular system: Pericardium normal; dilatation of right ventricle. Myocardium pale and fatty

Nothing else of note. Alimentary tract: Stomach: Small erosions in the mucosa. Lower part of duodenum and upper part of jejunum—mucous membrane oedematous with signs of acute congestion. Scattered petechial hæmorrhages but no erosions. Ileum normal. Large intestine: Congestion of transverse and descending colon with numerous small

CHART 3.



erosions and hæmorrhages in the mucosa. No marked ulceration and no thickening present. Liver and kidneys: Marked cloudy swelling with fatty changes. Spleen: Normal in size, soft and diffuent. Suprarenals and thyroid normal. Red marrow of sternum and ribs—no marked hyperplasia.

Bacteriology.—A bacillus with the morphology and cultural characters of the other organisms of the present series was obtained in pure culture from the spleen and heart blood. In the first agglutination tests with this organism after isolation the findings were: Against immune serum of strain 4, ++ in 5000, + in 10,000. Against Lister Institute para. B serum (titre 6000), nil in 50.

Summary of Chief Symptoms.

As for the cases in general, some of the clinical data have been tabulated in Table A, while a summary of the notes on the chief symptoms observed is given below. No special stress can be laid on any clinical feature which may not occur in the course of enteric group infections, although the prominence of respiratory symptoms has been somewhat striking in the present series of cases.

Course of the fever.—The fever, which was in most instances of sudden onset, appears to be of variable duration, depending partly on the relative severity of the infection, partly on the extent of involvement of the respiratory tract. The milder cases lasted 5-7 days on the average. Two patients (Nos. 1 and 7) each ran an 11-days' fever, at first intermittent and latterly of the continued type (see Chart 4). Of the fatal cases one of the pneumonias (No. 4) ran a continued fever during the whole 15 days' illness. The other (No. 3) showed a markedly intermittent course for ten days, becoming of the continued high type on the onset of extensive lung consolidation four days before death. The fatal "hæmorrhagic" case (No. 6) ran a 28-days' pyrexia, and was of the continued type during the 14 days he was under observation.

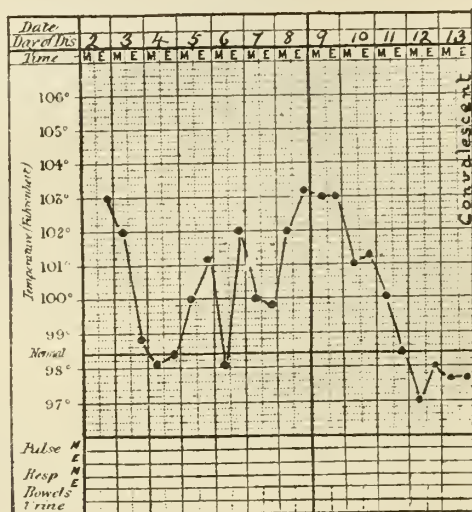
As regards relapses, none occurred while the patients were convalescing in hospital or subsequent to discharge, as far as could be learned from their after history.

Respiratory system.—Marked involvement of the respiratory tract was a feature of all the cases except three. Thus in four instances in which this inagglutinable paratyphoid-like organism was obtained by blood culture, the infections were of a mild character and of short duration, while bronchial catarrh was so prominent a feature that all four cases had been labelled "bronchitis" or "influenza with bronchitis." As already described, two of the fatal infections appeared clinically to be suffering from lobar pneumonia, as was subsequently proved at autopsy (Cases 3 and 4). Of the three cases with no respiratory symptoms two of them had been considered enteric infections, while the third was



regarded as a markedly toxic type of bacillary dysentery. Smears and cultures of throat swabs from a number of the patients gave nothing of pathogenic importance.

CHART 4.



**Alimentary system.**—Gastric and intestinal symptoms were in most instances inconspicuous. Vomiting, except in case No. 6, was absent, while constipation was the rule. Case No. 5, considered clinically an "enterica" infection, suffered from diarrhoea in the early period of the illness, while in the fatal "pneumonias" (Nos. 3 and 4) there was no lesion of the intestinal tract except that one showed a pink cedematous condition of the jejunum and upper part of the ileum. The Peyer's patches and solitary glands appeared quite normal.

albuminuria was present in the cases examined. The presence of pus cells or other cellular elements was not observed.

#### Discussion.

The question as to whether this bacillus found associated with the present series of cases is an aberrant type of *Bac. paratyphosus B* or whether it is an undescribed organism (which for convenience may be called *Bac. paratyphosus C*) belonging to the Gaertner-paratyphoid group is a matter for discussion. The fact that, after as many as 30 subculturings, none of the strains of the organisms are agglutinated by specific para. B serum (Lister Institute) in any dilution at all approaching its maximum titre is important, especially when it is remembered that the isolation of readily agglutinable para. B bacilli during the course of routine blood-culture work in Bagdad has been far from uncommon. Consideration must also be taken of the unusual nature of such agglutination as was obtainable with high-titre para. B serum—viz., the very fine soft flocculi which seldom produced much sedimentation and which never left a clear supernatant fluid. Nor do the serological observations, described above, point to the organism having closer affinities to the *Bac. aertrycke* group, although it has to be noted that unfortunately it has not yet been possible to obtain from Europe any of the recognised high-titre *B. aertrycke* sera.

Clinically, although it is well recognised that marked respiratory symptoms may be a common accompaniment of paratyphoid B infections and, indeed, have been the chief feature of certain enteric epidemics, yet the local microbic infection in these cases is still a matter of dispute. Bacilli of the Gaertner-paratyphoid group have been reported on various occasions as having been isolated from the sputa, but as to whether they were originally present or were merely secondary invaders does not appear to have been conclusively settled. It has not been possible to consult the literature on the subject, hut Miller,<sup>1</sup> in his recent Goulstonian lectures (1917) on Paratyphoid Infections, says:—

"The paratyphoid bacilli apparently do not attack the lungs and pleura themselves. Lahhé, however, mentions

TABLE A.—Statement of Clinical Data.

No.	Clinical diagnosis of case.	Duration of fever.	Day of disease of positive blood culture.	Isolation of organism from other sources.	Probable place of infection.	Character of infection.
1	Bronchitis (N.Y.D. enteric group).	11 days.	9th day.	—	Bagdad.	A somewhat severe attack, the course suggesting an enteric infection.
2	Influenza with bronchitis.	6 "	3rd "	—	"	A short but, very acute fever.
3	"Clinical malaria" followed by lobar pneumonia.	14 "	No culture made.	Lungs, spleen, heart blood.	Kermanshab.	Both very severe and fatal infections with all the signs of lobar pneumonia.*
4	Bronchitis followed by lobar pneumonia.	15 "	9th day.	Lungs, spleen, bile.	Bagdad.	
5	Bronchitis.	7 "	4th "	—	Kifri.	A mild infection.
6	Acute dysentery (bacillary?).	28 "(?)	No culture made.	Spleen, heart blood.	Tekrit.	A very severe toxic infection, with a hæmorrhagic colitis ending fatally.†
7	Bronchitis (N.Y.D. enteric group).	11 "	9th day.	—	Bagdad.	Nothing of special note. Clinically very suspicious of an enteric infection.
8	Bronchitis.	5 "	4th "	—	"	Both mild short fevers.
9	"	7 "	4th "	—	"	

\* See p.m. notes.

† See detailed notes on clinical history and autopsy.

The third fatal case (No. 6), however, showed distinct intestinal lesions, which have been described above. This patient had complained of marked hypogastric tenderness in the early days of his fever. Otherwise abdominal distension or tenderness was not a feature of the cases.

**Nervous system.**—There was no nervous symptom of special note. Delirium was present towards the end in the two fatal cases of pneumonia, while No. 6 sank into the typhoid state before death.

**Skin.**—Nothing suggestive of rose spots or of an eruption of any kind was seen in any of the series.

**Abdominal organs.**—**Spleen.**—Its size varied considerably in the different cases. Some of the notes report the organ as being slightly or distinctly palpable on deep inspiration. In one fatal case it was two fingers-breadth below the costal margin, while at the other two autopsies the organ showed nothing of special note. Malarial parasites or pigment was not seen in any smears of the splenic pulp. Liver, kidneys, and bladder: Nothing of special note. The usual febrile

a case of abscess of the lung from the pus of which *B. para. B* was isolated. Apart from this rather special case, I cannot find a recorded instance of paratyphoid bacilli being found in the pleural fluid ante mortem nor in the lungs post mortem. I can only think that if these organisms do attack the lungs and pleura it must be but rarely.

In the two cases of the present series which showed extensive pneumonic consolidation the organism was isolated from the lung juice in pure culture on MacConkey's hile medium, while, except for a few scattered diplococci which did not resemble the pneumococcus, it alone was seen in stained lung smears.

The duration of the bacillæmia is so far undetermined, as positive blood cultures were obtained from the third to the ninth days inclusive in the various cases. Marked involvement of the intestinal tract, except where the infection assumed the character of a hæmorrhagic septicæmia, was uncommon, and the absence of any lesion of Peyer's patches,

<sup>1</sup> Miller: THE LANCET 1917, i., 831.



or of the solitary glands, may be of importance as a differential feature.

My attention has recently been drawn to an account by Neukirch<sup>2</sup> of an epidemic which occurred between March, 1915, and the early part of 1917 in Anatolia and Turkey from the cases of which an organism called *Bac. Erzindjan* was isolated. This organism, the author concludes, is closely related culturally to *Bac. para. B* and the *supestifer* group, but it can be differentiated by serological tests. From the title of his paper Neukirch is inclined to identify the organism with the Glässer-Voldagsen group, placing his reliance on the agglutination test. Yet he states that all the strains of *Bac. Erzindjan*—like those isolated from the present series of cases—produced acid at first in litmus milk, followed later by alkali production, except one which showed no initial acidity. On the other hand, all the Glässer-Voldagsen strains tested produced acidity and remained acid until the end of the ten days recorded. It seems difficult to accept the serological similarity and ignore this constant biochemical difference between the organism under review and the Glässer-Voldagsen group. The cultural characters of *Bac. Erzindjan* cannot be compared with our *Bac. para. C*, as Neukirch has so far described its action on glucose and lactose only.

This worker distinguishes two main clinical groups of cases from which the *Bac. Erzindjan* was obtained in pure culture: (1) the "typho-septic" type, with a mortality of 46 per cent.; (2) the dysenteric type, with a much smaller mortality of 6·7 per cent. For comparison he quotes a 5 per cent. mortality rate as having occurred among the infections of the "enterica" group. Two other groups are also mentioned—viz., four cases of slight general infection and a solitary case of pyelonephritis. Neukirch draws special attention to the very variable clinical picture met with, and to the difficulties of distinguishing these cases from those of typhoid, paratyphoid, and dysentery, apart from a bacteriological diagnosis. I have not had access to the original article to ascertain what types of infection are included in the group called "typho-septic," but it appears very probable that the causative organism in the present series of cases of infection among British troops is the same as that described as *Bac. Erzindjan*.

Most of the cases which are the subject of this paper appear to have been infected in the Bagdad area, although in three instances the evidence available pointed to the place of infection being much farther up the line—viz., at such widely separated places as Kermanshah, Tekrit, and Kifri. For the present it is impossible to say anything about the epidemiology. The probable prevalence of the infection among the native population requires investigation, while it would be of considerable interest to learn whether a similar para. C-like organism has been among the bacteriological findings in Palestine and in other areas of military operations in the Near East.

#### Summary.

1. A series of inagglutinable organisms culturally and morphologically indistinguishable from *Bac. para. B* have been isolated by blood culture in Bagdad during the latter half of 1918, and it is learned that similar findings have been reported in other areas of Mesopotamia.

2. Of the three patients suffering from the infection who died, two of them were clinically regarded as cases of lobar pneumonia. At autopsy the same cocco-bacillus was isolated from the lungs and spleen, and in one instance from the gall-bladder also. Respiratory symptoms were a prominent feature of most of the cases, while the symptomatology and course of the fever were usually not suggestive of an enteric group infection.

3. Serologically all the strains on isolation were inagglutinable to the "enterica" high-titre sera (Lister Institute). After 30 subculturings of the organism agglutination of an atypical character was present in dilutions up to 1 in 1000 of specific para. B. serum (Lister), while in comparison a 1 in 10,000 dilution of the same serum led to marked clumping with two stock strains of *B. para. B*. Absorption tests tended to confirm those serological differences. The sera obtained from three rabbits immunised with different strains of the bacillus readily agglutinated the whole series of organisms in dilutions of 1 in 5000 to 1 in 10,000; whereas no reaction resulted with the stock *Bac. para. B* in dilutions

higher than 1 in 250. Equivocal findings were also recorded in tests with a strain of presumed *Bac. aertrycke*.

4. The real identity of the organism is so far undecided. In its behaviour with specific sera it is distinguishable from both *Bac. para. B* and *Bac. aertrycke*, although closely related to both. It has been learned with interest that an epidemic in Turkey and Anatolia has been described as due to a paratyphoid-like organism with similarly atypical serological characters. If the bacillus should eventually be proved not to be a specific organism but to be simply a variety of *Bac. para. B*, the practical importance of its recognition seems to lie in the fact that the recognised high-titre para. B sera fail altogether to agglutinate it on isolation, and after numerous subculturings they react with it, to only a limited extent, while a special immune serum is necessary for its ready identification. Many of the organisms which have been from time to time reported as non-agglutinable or "temporarily inagglutinable" para. B bacilli may belong to this para. C-like group.

It is with pleasure that I acknowledge my indebtedness to Lieutenant-Colonel J. C. G. Ledingham, C.M.G., R.A.M.C., consultant bacteriologist to the Mesopotamian Expeditionary Force, for his great assistance and helpful criticism; while I desire to express my thanks to Lieutenant-Colonel H. J. Crossley, R.A.M.C., O.C. — Stationary Hospital, Bagdad, for access to and the use of the clinical records of the described cases.

Bagdad, January, 1919.

## SOME OBSERVATIONS BEARING UPON THE COMMOTIONAL FACTOR IN THE ÆTIOLOGY OF SHELL SHOCK.

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PSYCHONEUROSIS CLINIC.

IN THE LANCET of Jan. 11th, 1919, Dr. C. S. Myers raises three important questions relating to the problem of "shell shock." The first is as to "the existence of distinct commotional and emotional syndromes." I believe that the following experiments, carried out with the assistance of Lieutenant A. Dinsley, R.A.O.C., prior to the appearance of Dr. Myers's article, will prove of interest as bearing upon this point. The conditions under which "shell shock" arises in man render accurate observations so difficult that experiments upon animals seemed advisable carried out so that the weight of explosive used could be kept constant, its nature and composition known but varied at will, and the actual distance of the animals from the centre of detonation measured.

#### Effects of High Explosives.

When a high explosive is detonated there arises first a sudden terrific blow which exerts a compressing and shattering force upon its surroundings in every direction. This is instantaneous and is followed immediately by an equally sudden decompression, thirdly rapid oscillatory or vibrating movements are set up, which die down only gradually. Each of the three results requires analysis when considering the effects upon living organisms. A further effect is the purely demoralising effect produced by the vibrations outside the sphere within which any demonstrable physical destruction or injuries occur. Evidence will be adduced to show that the Germans arranged their shell-fillings so as to enhance this peculiar effect. This, fully in keeping with other of their methods, might be described as "frightfulness by detonation."

If a high explosive be detonated at a point X three zones may roughly be mapped out around it, their radii depending, amongst other things, upon the weight of explosive.

Zone A is delimited by the extent of obvious gross disruption, and may be termed "the zone of brisance"; within it a crater is formed, barbed wire and other obstacles are blown aside, broken and distorted; animals are killed and usually lacerated; other high explosives immediately detonated.

Outside this is a second zone, B, which may be termed the "zone of decompression," for the disturbances within it seem mainly attributable to this factor, though coarse shaking movements also play their part. In zone B the

<sup>2</sup> Neukirch, 1918, Ztschr. f. Hyg. u. Infektionskrankh. lxxxv., 103.



gross effects of shattering and disruption are no longer evident; animals placed in it and protected from flying fragments rarely show external signs of injury; only sensitive explosives, whose tonal standard is somewhat similar to that of the primary explosive, detonate.

Beyond this can be named a zone, C, in which the effects of detonation are modified further. The effects upon animals in zone C vary considerably, but as a rule a short transitory state of stupor is followed by a stage of excitement.

#### *Experiments on Fish.*

Experiments were first carried out in water, the test animals being fish (perch); a depth charge of 6 oz. of gelignite was used.

Fish in zone A became obviously "hors de combat," showed gross lacerations, and were sometimes torn in pieces.

Fish in zone B after the detonation floated in an almost vertical position, but slightly inclined with their ventral surfaces uppermost, their mouths just protruding above the surface. At this early stage the whole of their bodies were rigid, and if the fish were pushed down to a depth of about two feet they sank slowly to the bottom of the tank and there remained. The earliest sign of animation was violent and irregular spasmodic movement of the opercula and gills. The first reflex which could be elicited from such fish was erection of the dorsal fin upon stimulation of the skin to either side of it. At the end of about half an hour those fish which eventually recovered began to swim when the abdomen was stroked with a piece of stick, but these first swimming movements carried the fish only forward in a straight line, and no turns were made even when an obstruction was met. The movements were made with the ventral surface uppermost and almost flush with the surface of the water. At this stage, then, the fish had lost their power of equilibration, and with this the whole of their orientation in life.

The majority of those which attained the stage of swimming in this way gradually became more active, and eventually, after passing through a side-uppermost posture, began to swim about in a natural manner. In about 12 hours after the detonation all those fish which had not succumbed were, to all appearances, completely normal.

Dissection of the dead one showed definite congestion of the foreparts of the brain, hæmorrhagic points in the mid-brain and basal ganglionic region, and generally hæmorrhage in the upper region of the spinal cord and medulla. The gills and other viscera, also the muscles attached to the vertebral column, frequently showed areas of hæmorrhage. Dissection of perch taken at random immediately after the detonation either revealed varying degrees of the above-described changes or else, at macroscopic examination, nothing abnormal was discovered.

Towards the outer margin of B zone and the inner region of C zone the effects upon fish could not be sharply differentiated, the severity of the symptoms and the anatomical findings gradually diminishing with the distance of the creature from X.

Fish well out in C zone dashed about vigorously in a disturbed and excited manner, but though their movements were wild and apparently haphazard they generally made away from X. A few came to the surface and splashed about, but when netted no physical abnormality could be demonstrated, and those returned to the water soon behaved in a completely normal manner.

In considering the effect upon fish of vibrations set up in water one should bear in mind the great development in these creatures of special sense organs directly susceptible to stimulation from such. It is conceivable that the effects of the violent vibrations just described are in part due to excessive stimulation of these special sense organs. If this be so, the shock, though still physical, might be more accurately described as of neurogenic than of commotional origin. It is well known that in man unconsciousness can be produced by purely reflex stimulation, the whole ego being swamped by an excessive flood of afferent impulses which gives rise to a condition of neurogenic shock; there being no "commotio." As I have no evidence which leads me to think that neurogenic shock of this type plays any appreciable rôle in the production of the war neurosis I shall not refer to this aspect of the subject any further.

#### *Experiments on Mammals.*

Experiments with mammals (rats and mice) were carried out on land. Perforated zinc cages were used, partly to fix

the position of the animals and partly to protect them from flying fragments. These cages were distributed at measured distances around X. The charge was standardised to 3 oz. of explosive.

In zone A cages in and immediately outside the crater formation were simply blown away and distorted, the animals being killed or severely wounded by direct violence; their eyes were bloodshot, and there was often external hæmorrhage from the ear, nose, or mouth. On dissection the alveoli of the lungs were found to be ruptured, and to a variable extent the central nervous system and other viscera showed hæmorrhagic areas. With the effect in A zone we are not further concerned; the changes would seem to be due to the direct blow of displaced air, which strikes like a solid substance, and to the effect of the exceedingly rapid decompression succeeding this.

Along the inner part of zone B the findings, though similar to the above, were much less in degree. Animals were invariably rendered unconscious irrespective of the extent or nature of the lesions demonstrable, and occasionally were found to be dead, even though no external injury was present; upon dissection the only abnormal finding, to coarse examination, was general capillary engorgement, especially noticeable in the central nervous system and meninges. Whether this indicates that vaso-motor changes play any part in the associated phenomena I am not prepared to say.

Further out in zone B a state of stupor or transitory loss of consciousness, of much shorter duration than in zone A animals, was an almost constant result. During the stage of recovery twitching movements of the limbs were often present, and then the animals, if stimulated by appropriate physical agents, showed massive and exaggerated reflex reactions. For example, the application of a pin-prick to one hinder extremity might be followed either by bilateral contraction of the hinder extremities or even by a generalised convulsion. There was frequently considerable difference in the activity of the reflexes on the two sides of the body—a hemiplegic distribution—but, as a rule, the fore-limbs were more severely affected than the hind and showed weakness and dragging after the latter had recovered normal movements. Reflex responses, though vigorous, died away quickly, but were often succeeded by a weaker repetition even when no fresh stimulus was given. Rapid fatigue of the response on repeated stimulation was a noticeable feature. By dissection no gross macroscopical evidence of internal injury to such animals was revealed, but capillary engorgement, as in animals nearer X, was generally demonstrable.

Animals left alone after this stage had been reached gradually began to behave in a more normal manner, though for a considerable time their conduct, postures, and gaits were awkward. The severity of these disorders varied greatly from animal to animal, which rendered it impossible to delimitate, from biological observations, the precise boundaries of the several zones. Speaking generally, the effect diminished gradually in proportion to the distance of the animal from X.

For some distance beyond what I have termed the C zone, animals crouched down and huddled themselves together whenever a detonation took place; after this state of diminished activity a state of apparent excitement with increased restlessness was the rule. Animals left exposed in this position during a series of experiments invariably crouched down as flat as possible and seemed to be in an absolutely stuporose condition. When liberated they made no effort to run away but remained for a long time in a huddled-up posture. The interpretation of these latter peculiarities of behaviour is difficult. Should fear be allowed as the cause or are other more material factors also at work?

If instead of employing a single explosive at X one detonated a composite charge all the above phenomena became more pronounced, but the increased effect was particularly noticeable in zone C and its immediate surroundings.

#### *Observations on Soldiers.*

In this connexion it is of interest to record some observations carried out upon physically and mentally fit men of an "Ammunition Proof and Demolition Section" during the ordinary course of their duties. The staff, drawn from infantry-men with some technical knowledge, was sheltered in a well-protected dug-out about 100 yards from X, the



centre of detonation. In this case X was a large crater formed in the centre of the demolition ground, and contained the official maximum weight for each single destruction—viz., 200 lb.

Although the men had some technical knowledge they did not know the nature of the explosive fillings which were to be destroyed on any given occasion, and it was interesting to study the differing effects of these upon them. Simple single fillings, such as T.N.T., picric acid, and tetryl, rarely caused any of the men discomfort under the conditions described, yet when mixtures such as ammonal (British), amatol (British and German), donarit and glückauf (German) were detonated many of the men complained of unpleasant sensations—e.g., “catching in the throat,” “peculiar feelings in the chest,” “creepy feelings down the spine,” or “weakness of the legs”; others were seen to shake violently and the rate of their pulse and respiration increased.

When separated or layered fillings of different explosives having widely differing velocities of detonation were demolished the effects became greater and several of the men passed into a stuporose condition, followed in some instances by violent shaking and twitching, and in one case by vomiting.

Men thus affected were not fit for duty for the next two or three days, and even then, although fully aware that no real danger attended the demolitions, they seemed to be in a state of mental anxiety and were more readily affected by detonations than previously.

#### *Effects of Detonations of Shells with Layered Fillings.*

Examination of German shells shows that in certain of them layered fillings were deliberately employed, although involving more time and labour. Captured German documents reveal the fact that this type of shell was intended for use immediately prior to an attack, and in sectors where the opposing troops were well entrenched. Hence we must infer that the Germans were aware of the peculiar demoralising effects which attend the detonation of these mixed and layered fillings.

Most of those who have been through a severe German bombardment bear witness to the demoralising effect it had upon them, and state how this was succeeded, owing to summation of effect as the bombardment continued, by a sort of “fixed glassy feeling” even when the shell did not detonate particularly close to them. In order to eliminate as far as possible, if not entirely, the psychic factor which in such cases plays its part it is instructive to study cases in which the detonation fell like a “bolt from the blue” upon individuals who were not in a state of tense expectation or fatigue at the moment of the incident.

At the same time one cannot ignore the importance of the predisposing factors, which are highly complex. There is, however, nothing distinctive about them as regards the type of neurosis developed. So far as my observations go the most important of them—viz., fatigue both physical and mental—seem to operate in a general way by lowering the resistance of the individual to all forms of shock, though naturally the individual of poor make-up is more profoundly affected than the robust type.

#### *Commotion from “Direct Concussion.”*

First to deal with the syndrome in cases where commotion resulting from “direct concussion” without wounding, as in animals exposed in the B zone, is the primary causal factor.

The initial symptom is unconsciousness, often of several hours’ duration and possibly persisting for days. Consciousness when first recovered does not remain clear, but the patient passes through a stage of variable duration during which he loses and regains it—the so-called “dipping of consciousness.” Some degree of aphasia and sphincter troubles are common at this stage, which is frequently associated with an active delirium in which the patient re-enacts episodes of his military service.

At this time the general condition is one of extreme exhaustion; all mental operations are sluggish and there is great difficulty of concentration. Amnesia both for immediate and remote past is a common occurrence. The voice is often altered, becoming slow, monotonous, and higher pitched than normally. In severe cases these symptoms tend to persist for many months and relapses are easily induced by any form of fatigue.

Clinically the importance of recognising these symptoms is that the prognosis in such cases is much graver than in those giving an exaggerated account of events after they had been thrown down or partially buried. In cases exhibiting the above symptoms prolonged rest, with freedom from strain of all sorts, is essential. Psycho-therapeutic treatment is of little avail except in so far as fixation of symptoms may have occurred in the later stages.

#### *“Indirect Concussion.”*

Cases of “indirect concussion” corresponding to animals on the borders of the B and C zones demand more careful discrimination. The history is complicated by the fact that there is a tendency on the part of the patient to exaggerate, but careful questioning will overcome this difficulty.

Unconsciousness or stupor of comparatively brief duration is the rule, and the phenomenon of “dipping of consciousness” is not observed. Active delirium is rare, and is not of the occupational type. Amnesia though frequently present is only retrograde, is less extensive, and more readily recovered than in the type of case previously described.

The severity of the symptoms, as well as their duration, is also less, but there is a greater tendency to the superimposition of functional troubles such as paralyses and algeias; these may supervene immediately but, more commonly, they develop later in the course of the disease when the symptoms of commotional origin are recovering. If they are removed by appropriate treatment the patient, after a few weeks’ complete rest, generally feels as well as ever. Easy fatigability and diminished power to concentrate the attention are apt to be more persistent symptoms, and although the patient declares himself “quite fit,” it is advisable to insist upon a more prolonged period of rest.

#### *“The Last Straw.”*

Cases in which the neurosis arose as the result of exposure to shell fire in what I have referred to as the C zone are naturally much more difficult to differentiate from those of purely psychogenic origin, and it cannot be said that they are recognisable by a distinctive syndrome. The description already given of men so exposed in the “Ammunition Proof and Demolition Ground” affords a better picture of the onset of the neurosis than can be got from an analysis of the more complicated conditions arising during trench warfare.

In a rather disparaging way any shell detonating outside the A zone is commonly referred to as merely “the last straw,” its influence being thus tacitly attributed to purely emotional factors. It is, nevertheless, a last straw which cannot be lightly disregarded, and one is justified in maintaining that a sufficient number of such “straws” will cause the downfall even of the most robust.

It should be remembered that the stability of any explosive is under these conditions diminished, and its sensitiveness so raised that it may eventually detonate. There is no difficulty, then, in conceiving that physical processes, which cause alterations in the direction of *instability* in a relatively simple chemical compound such as an explosive, may, in a similar way, affect the far more delicate colloidal solutions contained in the central nervous system.

#### *Combination of Physical and Emotional Causes.*

With cases of purely psychogenic origin, many of whom never reach the danger zone, it is not my purpose to deal. The syndrome closely resembles that with which we are familiar in civil life, though the “current conflict” is usually of a different nature. Psychological analysis reveals the repression and the conflict which is being shirked.

The point which seems to have been universally overlooked is that under the conditions of modern warfare the soldier is constantly subjected both to physical and emotional causes of shock, and that the two factors operate in conjunction. Also whichever factor be in any given case the primary one the individual, once sensitised by either, remains for a long time, perhaps always, hypersensitive to both forms of stimulation, and a vicious circle is thus established.

Although one not infrequently meets with cases in which apparently a single factor has been operative, a careful study of histories in the special military neurological hospitals has led me to conclude that the combined action of the two aetiological factors is much the more common event. If this be so, it is not surprising that those who expect to find either definite commotional or emotional syndromes in the bulk of their patients are generally disappointed.



*Conclusion.*

I have tried with the aid of the experiments, here briefly set forth, to give a picture of the early syndrome which distinguishes the more severe cases of commotional shock, but as the experiments themselves no less than clinical experience indicates, the symptoms in slighter cases become almost inextricably blended with others which appear identical with those resulting from emotional shock. Hence, though at the two extremes one may with ease deduce the nature of the primary pathogenic factor from a study of the syndrome exhibited, this becomes increasingly difficult as one approaches the intermediate members of the series, and one's judgment is largely determined by the aspect from which one approaches the problem.

## INTRACRANIAL LESIONS:

## THREE INTERESTING CASES.

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THESE cases, each differing widely from one another, but each having in common a hemiplegia, are recorded together, the first on account of its rarity, the second for its interesting obscurity and want of a true diagnosis, and the third merely as a reminder of what one must be prepared for as an aftermath of the war.

*Cavernous Sinus; Thrombosis; Hemiplegia; Pyorrhœa Alveolaris.*

Patient, a man, aged 28, was admitted to hospital on March 7th, 1918; long history of pyorrhœa alveolaris. On Feb. 20th seven teeth were extracted from right upper and lower jaws. He developed an alveolar abscess in the right lower jaw with cervical suppuration, requiring incision. On Feb. 27th temperature  $104^{\circ}$ ; repeated rigors and symptoms of septicæmia. The chest was involved in an early bronchopneumonia of a septic type. Loss of power on left side of body.

On admission patient was extremely ill. His mouth was foul. There was marked necrosis of the lower jaw all along the right alveolar margin, with sloughing of the gums. Both antra were apparently not involved when searched by transillumination. The right lung showed signs of bronchopneumonia, with some pleural effusion; sputum full of streptococci; blood culture sterile. Intense proptosis of right eye, with œdema of lids; marked chemosis and paralysis of sixth nerve. The fundi were normal except for tortuosity and enlargement of retinal veins on right side. There was a little œdema over right mastoid region due to back-pressure in the petrosal sinuses. He was quite conscious, but was almost completely paralysed in face, arm, and leg on left side. Reflexes abolished; no sensory changes; incontinence of urine and feces.

Intravenous eusol 1 per cent. was given daily for seven days; initial dose 100 c.cm., rapidly increasing to 250 c.cm. Temperature of septic type,  $103.5^{\circ}$ – $104^{\circ}$ ; respirations, 30–35; pulse, 120–130. After the second injection of eusol the symptoms improved. On the third day the proptosis was a little less; sixth nerve began to recover. On the fourth day the paralysis of the arm was not so complete; on fifth day improvement in leg. The paralysis was never absent, but improved until he could partly move arm and leg. By the seventh day the sphincters were normal. The proptosis decreased up to a certain point and signs of chronic back-pressure began to show in the veins of the lids and in a solid unaltering œdema of the conjunctiva. The right fundus remained as first noted. The chest lesion began to dominate the scene on March 14th; increasing respirations and gradual deterioration; duct parotitis which did not suppurate. By March 16th he was profoundly toxicemic; death on March 23rd from septic broncho-pneumonia and septicæmia.

The points of interest are: 1. The infection and thrombosis of the cavernous sinus by septic absorption from pyorrhœa alveolaris via the pterygoid plexus of veins, through the ophthalmic veins into the sinus. 2. The hemiplegia due to pressure by direct swelling of, or added tissue œdema about, the sinus, on that part of the right crus cerebri containing the motor fibres of the face, arm, and leg of the left side, where it is in relationship with the cavernous sinus. And of the sixth nerve as it lies intimately related to the outer wall of the sinus. 3. The improvement in the hemiplegia and squint and proptosis suggesting organisation of the

clot and absorption of surrounding œdema and establishment of collateral circulation. 4. Recovery might possibly have been hoped for had not septicæmia and bronchopneumonia led on to death.

*1 Case for Diagnosis; Cerebral Decompression; Recovery.*

Patient, a man, aged 43, apparently perfectly healthy, and walking in the street, suddenly gave an articulate cry and fell down in a fit. Syphilis 20 years ago; teetotaler 13 years. On admission to hospital on August 8th, 4 P.M., he presented a further fit. Twitching and fine tremors started in the left hand, passing up the arm, involving face on left side, and ending in left lower extremity; great distress. His tongue was bitten before a gag could be obtained. Pupils dilated and fixed; eyes turned to the left. Consciousness during jactitations and intervals. Reflexes were absent on left side; Babinski's sign negative. Total flaccid paralysis of the left side of face, arm, and leg. No alteration of sensation. Urine normal except for a slight trace of albumin. Distinct œdema of discs, especially on right side. Pulse 120, full, and bounding. B.P.: systolic 130 mm., diastolic 100 mm. Lumbar puncture, fluid under pressure; 20 c.cm. clear fluid withdrawn.

At 8 P.M. patient was deeply comatose and cyanosed, respirations slow, and breathing stertorous. Pulse-rate had fallen to 56, full, and thudding. Pupils equal, semi-dilated, and reacting slightly, and fully dilated in a fit. Complete paralysis as above, but with total loss of all reflexes, including sphincters. Every few minutes patient, although unconscious, was thrown into most violent left-sided jactitation, beginning in face and ending in lower extremity, and lasting 30 to 40 seconds. No external injury was present.

Having diagnosed compression due to a pathological rather than a traumatic lesion with a localising site in the right cerebral hemisphere, I advised decompression. In cerebro-spinal fluid only an excess of small lymphocytes; cells of any kind scanty. This is of extreme importance in later developments.

Operation was carried out at 10 P.M. under chloroform. A large semilunar flap was turned down on right side of skull over motor area and middle meningeal artery. The brain was exposed over area of 2 square inches, including precentral gyrus. No extradural hæmorrhage; middle meningeal artery intact. A normal dura mater bulged; loss of brain pulsation. No subdural hæmorrhage observed, so whole of dura in decompression area was turned down. The brain bulged out rapidly, assuming size of duck's egg; meninges apparently normal; no œdema or suggestion of thrombosis. The skin and fascial flap was then sutured completely. Breathing and pulse-rate immediately improved and he was returned to ward.

On August 9th in the morning there was complete recovery of consciousness and ability to talk. Paralysis remained and reflexes absent; no sensory changes. On the 10th conversation sensible. Partial recovery of lower limb; face and arm paralysed; control of sphincters. On the 11th further recovery of leg with sluggish knee-jerk, arm could be moved, no fine movements possible. On the 12th Wassermann reported strongly positive. On the 13th power in arm and leg increased; facial paralysis almost stationary. Coördination was defective. Steady improvement continued, even in the face, until August 18th.

On the 18th he suddenly had a coarse tremor of the left arm, lasting a few seconds, repeated several times daily; over 25 tremors recorded in a week; otherwise patient is making a good recovery. On the 28th sudden return of violent jactitations affecting arm and then leg, but not face; 24 violent fits in 12 hours. No loss of consciousness in convulsions. Brain at site of decompression very tense and enlarged. Lumbar puncture removed 40 c.cm. of clear fluid under great pressure; fluid similar to last. Complete paralysis of leg and arm followed and lasted two days before return of slight movement in the leg. During this time slight athetoid movements continued in the arm and leg.

From August 30th no further tremors; steady return of power, chiefly to leg, continued. The reflexes were now exaggerated on that side; Babinski's sign negative. On Sept. 20th he could walk with some spasticity of the left leg; arm be raised with difficulty and hand placed on head; grip good. The eyelids could close; lower supply of facial nerve not recovered; fundi completely recovered. Antiseptic treatment with iodides has been steadily carried out as far as the stomach will allow.

From this point up to his discharge on Oct. 27th a change was seen in his mental attitude, which had been quite rational. He has been emotional and childish and a little verbose; general health good; able to carry on light work in civil life. He was last seen in February, 1919 (seven months after admission). The mental attitude remained the same; slight improvement in gait and arm power. Tremor of tongue and slight tremor of hands had appeared.



*Points of Interest and Discussion.*

A man with a strong positive Wassermann is brought in with a left-sided hemiplegia, left-sided Jacksonian epilepsy, and cerebral compression. Where and what is the lesion?

A. At the time of onset of the symptoms the strongest feature was increasing intracranial compression with coincident hemiplegia on the left side, denoting hæmorrhage in the region of the basal ganglia from the lenticulo-striate branch of the middle cerebral artery. This would not account for the localised and definite convulsions which essentially belong to a cortical lesion, the two conditions remain uncorrelated.

B. Syphilitic thrombosis of the cortical vessels over the right motor area, with a syphilitic meningitis, might explain both the palsy and the epilepsy. But it does not explain the excessive intracranial pressure leading to profound coma, nor does the normal condition of the meninges and vessels found allow of such a theory.

C. Hæmorrhage into a cyst or a softened gumma in the region of the basal ganglia can only explain the hemiplegia and compression, but not the cortical symptoms. The recurrence of convulsions 21 days after decompression, relieved by lumbar puncture, tends to strengthen the view of further hæmorrhage into such cyst.

D. The abundance of small lymphocytes in the spinal fluid in the early stage, with the onset of changes in the mental attitude later, strongly suggest early general paralysis of the insane which, as is well known, may be ushered in by convulsions and even transient hemiplegia. But this fails to supply the explanation of severe compression sufficient to have been fatal without surgical interference.

My own opinion now is that a combination of (C) and (D) is the only means of correlating the antagonistic symptoms.

A photograph showed the site of decompression and protruded brain on the right side, unfortunately almost obscured by his hair. The position of the leg is voluntary. The arm will be noticed to be still lacking power, and the facial muscles are not controlled.

*Latent Meningitis Following Gunshot Wound of the Skull.*

Patient, aged 34, sustained in November, 1916, a severe wound by shrapnel of left frontal bone above air sinus. Both tables were carried away, leaving a semilunar opening in the bone  $2\frac{1}{2}$  inches long by  $\frac{1}{2}$  inch wide. Laceration of frontal lobe. From the injury up to Feb. 1st, 1919, he had recurring headaches with from time to time vertigo. The fundi did not denote any intracranial pressure.

On Feb. 1st, 1919, he was admitted to hospital, having suddenly had four very severe generalised fits with cyanosis and vomiting; semi-coma between convulsions. He was unconscious to his surroundings on arrival. The fits had no localising features, but were very violent generalised clonic convulsions. In the period of quiet a violent fit could be elicited by firm pressure on the scar. Fundi normal. All reflexes present, but sluggish. The scar was very thick, and firmly adherent all round hiatus in bone. The tissues about the scar were slightly œdematous, simulating the puffy tumour of Pott. The convulsions continued frequent and violent. The diagnosis acute spreading œdema of the meninges was made, and operative measures advised.

*Operation.*—Under chloroform the old scar was rapidly excised and site of fracture exposed, well in front of motor area. The hiatus in the frontal bone was filled up with dense scar tissue, consisting of brain tissue, organised blood clot, and the remains of the meninges. The whole was markedly œdematous; cerebro-spinal fluid more abundant than usual. A trephine disc was removed from the sound bone just behind the fracture and the tissues adherent to the ragged bone carefully separated until the brain and meninges were free from the skull. Bone was then removed until a decompression over 2 inches square had been effected. The organised clot and scar tissue were carefully excised from the frontal lobe, hot saline freely used, and the wound closed except for drainage.

On recovery from the anæsthetic two hours later patient had a violent convulsion, followed by a state of acute cerebral irritation, which was continuous and had to be controlled by chloroform anæsthesia. This stage in about ten hours gave place to intervals of lethargy alternating with violent fits. Twenty-four hours later compression symptoms came on and patient developed hemiplegia of the whole of the right side. Coma and death ensued 48 hours after admission.

*Post mortem.*—The frontal lobe on the left side showed marked destruction of old standing, with a dry cavity in the deeper portion suggesting the site of an old abscess which had undergone absorption. On the left side of the brain there was a marked basal meningitis. The meninges were in a state of acute œdema, especially marked on the left side.

No undue localising pressure was noted on the left motor area to account for the increasing paralysis on the right side.

This case illustrates the guarded prognosis necessary in war wounds of the skull. In brief, the majority of such wounds are fatal on the field. Those brought under the surgeon's care either remain clean and recover or become septic and die within a fortnight from suppurative leptomeningitis or encephalitis or end with a hernia cerebri, which remains a menace for all time. This man had apparently completely recovered, with no hernia cerebri or bulging of the brain tissue. Yet over two years elapsed before the latent infection flashed up, ending fatally in an acute generalised œdema of the meninges and a definite localised basal meningitis.

Plymouth.

**COLECTOMY.**

BY JAMES TAYLOR, F.R.C.S. EDIN.,

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At present the question of intestinal stasis is much before the profession. The medical journals constantly refer to it, and even the public press has articles on this subject. We are recognising more and more that a great many ailments have their origin in the intestine. In many cases diseases are the direct mechanical result of the delayed passage of food, but much more suffering, and a much greater variety of sickness, is produced by toxins from fermentive processes among the accumulated intestinal contents. Other diseases are produced by germs directly attacking organs after their resistance has been lowered by intestinal toxæmia. The mechanical and fermentive processes are always more or less associated. They act and react on one another, but sometimes one and sometimes the other is the dominant factor in the production of any particular disease.

The treatment of intestinal stasis rests with the physician, but a fairly large proportion of cases get beyond his control and can only be relieved by surgical measures. Many cases only reach this stage because all treatment has been neglected until serious mechanical obstructions and marked toxic changes have taken place.

The most striking results of surgical treatment are seen in the toxæmic cases. Nothing is more impressive than to see a large thyroid shrivel to normal dimensions, or a Bright's disease entirely clear up after removal of the colon. Six years ago after performing an ileo-sigmoidostomy on a woman with inveterate constipation the feeling of well-being which followed was surprising. Within 24 hours she felt entirely different, and the change was obvious to the observer. Before the operation the odour of her breath made it unpleasant to be near her, in spite of the utmost care of her mouth by the nurses. Within a day from the operation this had entirely disappeared, and her muddy complexion became clear incredibly soon. The removal of a controlling appendix or the division of a controlling band will often produce remarkable improvement, but the results which impress one most occur after the more radical operations, and one sees the most wonderful recoveries after the removal of the large bowel.

*Illustrative Cases.*

In this paper I propose to describe some cases in which the changes in the colon itself, resulting from stasis, were such as to demand its removal. They illustrate the effect of the irritating contents on the bowel.

CASE 1.—The colon was not actually diseased, but, being overloaded, had sunk down till almost all the ascending, transverse, and descending portions were in the pelvis. The patient, aged 30, came under my care suffering from severe indigestion. Constant pain and vomiting after food; bowels always constipated. The symptoms were those of gastric ulcer; physical examination confirmed this. When the abdomen was opened an old healed ulcer was found at the pylorus; obstruction not very great. The colon was as described, and obviously was the essential cause of the trouble. The large bowel from cæcum to lower part of pelvic colon was removed, and the end of the ileum joined to the end of the divided sigmoid.

CASE 2.—A boy, aged 18, complaining of abdominal pain for three months. Pain in spasms; during spasms a considerable swelling appeared in right side of abdomen, just



below umbilicus. It was movable and tympanitic, and only slightly tender. At times it would disappear altogether, and the pain would pass off. He was constipated; occasional attacks of vomiting; slight distension of whole abdomen. A diagnosis of chronic obstruction was made, and I thought he had probably a tuberculous cæcum. When the abdomen was opened the end of the ileum was dilated to the size of a normal stomach; walls greatly hypertrophied. In cæcum and beginning of ascending colon was a firm elastic swelling resembling chronic intussusception. The dilated end of the ileum and the whole colon round to its pelvic portion were excised, and an end-to-end anastomosis between ileum and sigmoid made. On examination of the specimen the lumen of the cæcum and lower ascending colon was so narrowed that a finger passed with difficulty. The subserous and submucous coats were greatly thickened and the mucous membrane was thrown into folds, which gave the appearance of a large-celled honeycomb. Professor S. G. Shattock very kindly examined the specimen and pronounced it to be a case of colitis polyposa.

CASE 3.—Six years before coming under my care patient suffered from constipation; appendix removed; condition did not alter during next four years. Then pain began on right side of abdomen; blood in stools. A few weeks later diarrhoea began to be troublesome; much blood and mucus passed. He was in hospital at various times during the next two years, once for five months. When I saw him first he had been under treatment for six weeks without improvement, and I was asked by the physician to perform a cæcostomy. Diarrhoea was constant, as many as 12 motions a day; patient extremely thin and weak. The cæcum was opened and irrigation started. He improved up to a point, but relapsed when cæcostomy opening was allowed to close. More radical treatment was decided upon. The whole colon down to within a few inches of the rectum was excised. The patient stood the operation well, and gradually improved. A certain amount of diarrhoea still resulted from diseased condition of rectum. Cultures were made from the stools, and a streptococcal vaccine was given; this with protargol injections hastened recovery. He was discharged from the Service fit for light employment.

CASE 4.—Patient, a woman aged 53; intestinal obstruction for ten days. There had been much abdominal pain, occasional vomiting, and repeated enemata had only resulted in a very little flatus being passed. The abdomen was enormously distended and somewhat tender. On laparotomy there was an escape of free gas from the peritoneal cavity; free fluid was present in pelvis. The large and small intestines were greatly distended, and a malignant growth was found in middle of pelvic colon. Several stercoral ulcers in cæcum; one had perforated. The cæcum was brought out of the wound, perforation closed, and a Paul's tube tied into the most healthy part. A large rubber drain was then passed down to the bottom of the pelvis, to be left in for several days.

The patient was very ill for about a week; distended bowel very slowly recovered tone, and expelled its contents. After three weeks the abdomen was quite flat; bowels moving freely through artificial anus. Under stovaine and ether anaesthesia an incision was made round the cæcostomy opening, two narrow flaps of skin turned up and stitched together face to face so as temporarily to close the opening. The field of operation was then again thoroughly cleansed, and the abdominal cavity freely opened. The whole colon, except a few inches of pelvic portion, was resected, with about 4 ft. of lower ileum hopelessly matted together as a result of the perforative peritonitis. An end-to-end anastomosis was made, and a tube passed up through the rectum to a little above the line of intestinal suture. Most excellent recovery; healing by first intention.

Eighteen months afterwards the patient is in better health than she has enjoyed for years, the bowels move easily twice a day, and she can lead a normal active life, including horse-riding. There is no evidence of recurrence.

CASE 5.—This is a similar case, a malignant growth in the same situation causing acute obstruction, which had to be relieved in the same way with colectomy a fortnight later. No perforation; only about 8 in. of small intestine sacrificed. Recovery excellent, but it is too soon to say whether any recurrence is going to take place.

CASE 6.—A patient had had a transverse colectomy for gunshot wound of pelvis involving rectum. When the rectum had healed the colectomy opening had to be closed. So much of the transverse colon was damaged that it was going to be difficult to bring the ends together after removal of injured portion. The ascending and descending colon were removed as well and an end-to-end anastomosis made between the ileum and the pelvic colon. Recovery excellent.

These six cases are the only complete colectomies I have had the opportunity of performing. I was surprised at the way the patients stood the operation, especially in the two cases in which so much delay was caused by the precautions to

avoid contamination of the wound from the colectomy opening. The rapid improvement in general health was also striking. I have seen four of these cases recently and, except the case with the ulcerative condition of the rectum, there was no trouble with diarrhoea, the bowels only moving about twice a day. One hears that these patients are always troubled with looseness of the bowels, but that has not been my experience. Even the patient who lost 4 ft. of ileum as well as the whole colon has had no trouble of this kind. Yet another patient in whom I removed about the same length of intestine—8 ft. of small intestine, cæcum, and ascending colon—has suffered from troublesome diarrhoea since. This seems to indicate loss of small intestine as more likely to cause frequent motions than loss of colon.

Sir Arbuthnot Lane is most emphatic that in cases of obstruction from a growth in the colon the whole large bowel, including the tumour, should be removed at the primary operation. The tube which is then passed up through the rectum into the end of the ileum drains the small intestine directly and at once. It seems the ideal method, but I think could only be done by a surgeon of his skill and experience. In my two cases I felt that the patients would not stand more than I did at the first operation, and I also anticipated having great trouble in making my anastomosis tight when the ileum was so much distended. On the other hand, I almost lost my first patient from toxic absorption from the colon, for it took nearly a week to empty itself through the colectomy opening, and the difficulty of doing the radical operation afterwards was greatly increased by the presence of a faecal fistula.

#### *Partial Operations.*

Attempts to relieve patients by partial operations are not very successful. Two recent cases bear this out, and are rather instructive.

CASE A.—I saw this patient, aged 38, in consultation in the country. She had been an invalid for many years, much troubled with indigestion, and not able to do more than move about quietly in her garden. Thirty-six hours before I saw her she was seized with sudden severe abdominal pain and vomiting. When seen by her doctor there was no marked tenderness or rigidity, but enemata failed to produce any result; nothing had passed by bowel since onset of pain. I found the abdomen much distended and somewhat tender in its lower part. Pulse weak but not rapid. Immediate laparotomy was decided on. The abdomen was opened in the middle line and a large gangrenous cæcum presented in the wound. Examination showed extreme visceropexy, and a volvulus of an extremely mobile cæcum had taken place. This portion of bowel was greyish black in colour, had lost its lustre, and rupture seemed imminent. I first incised the cæcum and cleared out the contents; the torsion was then easily uncoiled. I had to remove the colon round to the middle of its transverse portion before a moderately healthy part was reached. I was much in doubt as to whether I should resect the whole large bowel, but decided it was better not to have any raw surfaces on the left side of the abdomen, as the peritoneum was somewhat infected from the gangrenous gut. An end-to-end junction was made therefore between the ileum and the transverse colon. Patient made a good recovery, but she has not put on any more weight, and does not seem to have improved in general health, as I should have expected had the ileum been drained directly into the pelvic colon.

CASE B.—This is a very instructive case, the notes on which Sir Arbuthnot Lane has very kindly allowed me to publish. The patient, aged 36, had suffered from constipation for many years, and about four years before she came to me began to have considerable abdominal discomfort. She was supposed to have appendicitis and had this organ removed; it was noticed that the colon was badly prolapsed. She was no better after this treatment and three months later laparotomy was performed by another surgeon, and the cæcum, ascending and beginning of the transverse colon resected. She was fairly comfortable for the next 18 months, when constipation again became very troublesome, and after various kinds of medical treatment, the abdomen was opened for the third time. Some adhesions were separated, and a loop of small intestine, which had been acutely bent on itself, was sutured to the abdominal wall. She nearly died of ileus, and such was her suffering during the next month that operation was decided on again. On this occasion a lateral anastomosis between the ileum and pelvic colon was performed, and the patient was told that when she had recovered sufficiently the segregated loop would be removed. However, at the end of another year the operator refused to do this, as adhesions had made the operation too difficult.



At this stage I saw her for the first time. She was leading a miserable existence. Large doses of aperients were necessary every day, and often enemata as well. She was in almost constant pain. At times a distended loop of bowel could be seen standing out with waves of peristalsis passing along it. Opaque meal examination showed very marked delay in the small intestine. Most of the contents passed slowly through the ileo-sigmoidostomy opening, but a small quantity travelled through the side-to-side anastomosis made between the end of the ileum and the end of the transverse colon. By this means it reached the splenic flexure, and was held up here for about 48 hours. Although she was taking aperients, it was not till the fourth day that the opaque meal reached the rectum. A barium enema showed a very long and distended pelvic colon, and the fluid could not be forced beyond the splenic flexure. It was obvious that she was suffering from chronic obstruction, which might become acute at any moment. As a radical operation was going to be extremely difficult, I advised her to have it done by Sir Arbuthnot Lane, and I had the privilege of assisting him with it. After carefully separating the adhesions, the very long pelvic colon was divided near its lower end. The bowel was freed and removed from below, upwards, until the ileum above the higher anastomosis was reached. An end-to-end anastomosis between the ileum and the pelvic colon was then made.

The patient had a much happier convalescence after this operation than after any of her previous ones, and her pain was entirely relieved. She is now steadily recovering her strength. Had a complete colectomy been done in the first instance she would have been saved much suffering and four years of invalidism.

#### Conclusion.

Although my experience of colectomies has been somewhat limited, I feel it is worth while publishing notes on the few cases done because there is a very general belief that many patients do not recover from the operation, and that those who do are no longer capable of leading an active life. Operation deaths do occur, but usually because the patient is suffering from a serious organic lesion, and an operation is being done that one may give him the only chance of recovery. One must expect misfortunes sometimes when patients with serious kidney disease are submitted to operation, but the fact that my first six cases of colectomy were recoveries seems to show that the risk is not very great when no very vital organ is seriously involved.

I feel assured that improving the drainage system produces wonderful results, and often efficient drainage cannot be obtained without removal of the large bowel. One sees the effect of improved drainage in those patients with peptic ulcer who have had a gastro-enterostomy performed, and their ileal control freed. The complexion clears, the tongue becomes clean, and the excretion of foul-smelling toxins by the sweat glands no longer takes place, and yet in these cases only slight relief has been given to the obstructed alimentary tract. I feel sure that the great improvement in health often following appendicectomy is not due to the removal of a diseased organ, but to the excision of an appendix which has been controlling the end of the ileum.

## ANEURYSM OF THE HEART WITHOUT SYMPTOMS.

By CLAUDE WILSON, M.D. EDIN.

ANEURYSMAL dilatation of the cardiac wall is rare, though, perhaps, not so rare as supposed, for in many cases of sudden death from heart failure no autopsy is made. The condition cannot be diagnosed during life, and in very few cases has it ever been suspected. It has been found as a solitary lesion in an otherwise healthy heart, but is commonly associated with widespread changes—syphilitic, sclerotic, or fatty. The immediate cause is probably in all cases the blocking of a branch of the coronary artery, leading to atrophy of a limited area of the heart wall.

Occasional cases have been published in the medical literature of many nations. In English there are two well-known monographs on the subject: by Dr. Wickham Legg<sup>1</sup> and Dr. D. G. Hall.<sup>2</sup> In neither of these is the clinical history

dealt with very fully; but it may be stated generally that in the great majority of cases the usual signs and symptoms of cardiac enfeeblement have been present, while angina is a fairly common symptom. But in a certain proportion of cases the severer symptoms of cardiac weakness have been singularly wanting, and I have traced one case, recorded by Dr. F. M. Hughes<sup>3</sup>—in addition to my own—in which there were no symptoms at all.

The patient, a dock labourer who had never had any cardiac symptoms, had worked hard all his life, and had several times been passed as fit for work by doctors. He had had no occasion for medical treatment of any kind during the last 15 years of his life; he walked six miles to his work two days before his death, and was able to continue his arduous labours after his first slight feelings of distress, until on the third day he suddenly dropped dead at the age of 49. At the autopsy the pericardium was found full of blood clot, and in the anterior wall of the left ventricle—near the apex—was an aneurysm the size of a walnut, which had ruptured. The valves and aorta were healthy, but the microscope showed degeneration of the myocardium in the area of the aneurysm and fatty degeneration of the whole heart wall. The other organs were healthy, and there was no evidence of syphilis.

#### Account of a Case.

The case under my care is not less remarkable.

The patient, aged 60, was married at 36; three children, all grown up. Pale complexion which made her look somewhat fragile, but with a wonderful record of health; could not remember ever having been ill. Cheerful disposition. Very active worker at home and abroad. Good walker: could take a 20-mile walk, and go up the hills as fast as her daughters. This record ceased on Sunday morning, Sept. 8th, 1918, when after breakfast, for the first time in her life, she felt somewhat sick. However, she went to church—a mile walk, mostly uphill—and ate the usual substantial meal on her return. At 2 P.M. some visitors turned up. She entertained them, but was glad when they departed at 3.30 as she then felt sick and ill and said she would go to bed. At 3.45 I received a message from her husband asking me to see her at once, and I went at once.

I found her sitting up in bed, complaining of a pain behind the sternum, and of nausea. Almost immediately she was violently sick and vomited her undigested meal. She then said she felt better and laid down, but the nausea continued and she still felt some pain. Her pulse was regular—about 75—and the heart sounds normal. I concluded it was a gastric attack, and that she must have eaten something that had disagreed. At 7 P.M. I telephoned and heard that she was better, but still retching from time to time. Later she told her husband, who is a somewhat restless sleeper, that she thought she would sleep better alone. He consequently left her at about 11 P.M. and slept in the adjoining room. At 4.30 he awoke and heard her "coughing." He went into her room and found her sitting up in bed, with a basin in her hands, endeavouring to vomit. Hardly had he reached her side when she gave a gasp and fell back dead. At 4.45 A.M. (Monday, Sept. 9th) my telephone woke me up, and I was informed that she was dead. I was at the house before 5.30, when I learned the history of the night, and made sure that life was extinct.

*Necropsy.*—In the afternoon of the same day I made a post-mortem examination. The abdominal contents were normal, and in the thorax attention was immediately centred on the bulging pericardium. On puncturing it blood gushed out, and the sac was found to be full of blood, partly liquid and partly clotted. The heart itself was small, and the walls rather thin and pale. On the surface of the left ventricle, about an inch above the apex, was a dark circular patch rather smaller than a shilling, with a small rent in the centre. On section, the patch proved to be a collapsed aneurysmal dilatation; the central portion, where the rupture had taken place, was hardly thicker than brown paper. The obvious difference in colour and texture of the aneurysm from that of the rest of the ventricular wall seemed conclusive evidence that the lesion was one of old standing. In other respects the heart appeared normal. No microscopical examination was made.

I presume that what occurred on the Sunday was a pin-hole perforation, allowing of the oozing of droplets of blood into the pericardium, thus occasioning widespread vagal disturbance, and that the larger rent took place just before death.

The occurrence of such cases is valuable evidence of the astonishing capacity of some badly damaged hearts, and it is surely fortunate that these conditions cannot be diagnosed. Both of these patients lived useful lives to the very end. As

<sup>1</sup> The Bradshaw Lectures, 1883 (Med. Times and Gazette, 1883, ii., 199).

<sup>2</sup> Edinburgh Medical Journal, 1903, p. 322.

<sup>3</sup> THE LANCET, 1914, i., 533.



the lesion could not have been cured, any extra lease of life secured by rigid limitation of effort would have been dearly purchased at the price of invalidism, coupled by continual apprehension.

Tunbridge Wells.

## FLAVINE IN THE TREATMENT OF COM-MINUTED FRACTURES OF THE JAWS AND ACUTE SEPTIC STOMATITIS.

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THE treatment of fractures of the jaws due to shrapnel or gunshot presents a complicated problem, special difficulties being extensive comminution of bone and laceration of soft tissues, and the high degree of septic infection. Provided the patients came under treatment before extensive necrosis of bone had occurred—i.e., not later than seven to ten days after injury—the results have been highly favourable in many cases with very severe damage and infection. I attribute my success in great part to the use of flavine, which has been shown to possess powerful antiseptic action in dilutions relatively harmless to tissue elements.

### *Method of Treatment.*

The following method was adopted as a general practice. After the patient had been anaesthetised a tube was passed into the larynx and the anaesthetic administered by means of it; the throat being plugged with gauze there was no possibility of foreign bodies passing downward. Teeth in the lines of fracture were removed wherever possible, and also every septic tooth and root. In dealing with fractured bone where comminution was extensive, it was impossible to decide which fragments were viable and which were necrotic. Accordingly I made a rule to leave all bony fragments undisturbed and to bathe and soak the whole fractured area for five to ten minutes with 1:1000 flavine solution, disturbing the parts as little as possible, so as to avoid mechanical injury to tissues already devitalised. The external wound was cleansed with flavine solution and dressed with gauze soaked in flavine, which was also used to pack lightly any sinuses. In fractured mandible the jaw was supported with a knitted chin support. Subsequent to this the treatment followed on the usual lines; cap-splints were fitted to maxilla and mandible and were wired together. Cleanliness of the mouth was ensured by frequent syringing.

I am convinced that the favourable results were largely due to the early treatment with flavine, which, hastening the extinction of septic infection, yet left unimpaired the vitality of the osteogenetic tissue. Had the living bone been destroyed in the course of treatment such complete bony union as occurred in these cases could not have been obtained.

### *Illustrative Cases.*

The following notes indicate the results in two particularly severe cases:—

CASE 1.—Pte., admitted Sept. 3rd, 1918. The X ray photograph showed very extensive comminution of bone; there was much destruction of soft tissues and profuse suppuration. After treatment on the lines described there was practically reconstruction of the mandible, as shown in a photograph taken on March 25th, 1919.

CASE 2.—Australian Lt. There was a fracture of the right maxilla with involvement of the antrum, which was filled with pus. The soft palate was badly lacerated, and the hard palate extensively comminuted; the mouth was very foul. The parts were cleansed with flavine and the antrum washed out with the solution, then all the soft tissues were soaked with flavine; all broken teeth were removed. At the close of the operation the soft palate was stitched up. It is to be specially noted that although the wound was completely closed, and no provision was made for drainage, the parts healed excellently and there was no recrudescence of sepsis.

### *Acute Stomatitis.*

The frequency of acute stomatitis of all degrees up to actual gangrene has been a striking feature among soldiers. These acute infections were usually superadded on a chronic septic condition of the mouth. When such cases first come under observation the gums are exceedingly tender and painful, and there is often extensive sloughing and an exceedingly foul odour. It is essential to get rid of the

acute inflammation before instituting thorough operative measures.

The following method of preliminary treatment has yielded excellent and rapid results:—The mouth is syringed out with flavine 1:1000, special attention being paid to all pockets. Then gauze soaked with flavine solution is lightly packed into the angle of the cheek and all round the gums, and is retained in the mouth for 20 to 30 minutes. This procedure is repeated thrice daily.

As regards the results, not merely is the application painless, but it leads quickly to relief of pain and to subsidence of the acute inflammatory condition. Further, in several cases where the mouth was so foul that one could readily detect the bad odour at a distance of several yards, 24 hours after commencing treatment with flavine the breath has become quite free from smell.

## Clinical Notes:

### MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

#### THE USE OF BISMUTH AND IODOFORM IN THE TREATMENT OF CHRONIC SUPPURATIVE OTITIS MEDIA.

By FRED. STOKER, M.B. DURH., F.R.C.S. EDIN.,  
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EARLY in 1916 I was introduced to the merits of bipp<sup>1</sup> by its inventor, Professor Rutherford Morison. The results he was attaining by its use in bone surgery impressed me very greatly, and I put into operation his suggestion of using it in mastoid work. The sequel more than justified our expectations, and encouraged me to use a powder of bismuth and iodoform in the same proportions as in bipp in certain cases of chronic ear suppuration.

*Types.*—Chronic ear suppuration may be divided roughly into the following types: 1. Those in which the suppuration is not confined to the tympanum, but has extended to the mastoid or the labyrinth. Although in acute suppuration the whole middle ear cleft is generally involved, this by no means holds good in the chronic stage. It is a common experience to observe the relief of mastoid pain and tenderness after tympanic drainage is established in acute cases, and it is equally common to open a healthy mastoid antrum when operating for the cure of chronic suppuration. 2. Cases in which naso-pharyngeal or tubal sepsis is responsible for the continuance of the suppuration. 3. Those in which the bony tympanum is carious. 4. Those in which the suppuration is limited to the mucous tympanum.

It is only in cases belonging to the last group that cure may be hoped for by local conservative measures, but such cases are extremely common. The usual method of treating them with syringing, mopping, "drops," &c., is discouraging. One is so completely at the mercy of the patient's attendants, and the effect of the "drops," even when they are correctly instilled, is so transitory, that it is difficult to expect a cure. The use of "bip"<sup>2</sup> to a great measure removes these handicaps.

*Technique.*—1. Establishment and maintenance of thorough drainage. In the generality of cases that is already present, very many "chronic ears" presenting but a rim of membrane or even none at all. 2. Removal of crusts, dead epithelium, and all morbid material with hydrogen peroxide. 3. Thorough cleansing of meatus and tympanum with spirit, applied on a wool-carrying applicator, and allowing to dry. 4. Covering the tympanum with bip. The powder is blown in with a fine-pointed, slightly curved, powder-blower through a large speculum. In cases with profuse suppuration I have not found that more than three applications a week are necessary, and in milder ones a weekly application fulfils

<sup>1</sup> Bismuth, iodoform, and paraffin paste, containing bismuth and iodoform in the proportions of 1 of bismuth to 2 of iodoform.

<sup>2</sup> Bismuth and iodoform powder.



requirements. As the suppuration lessens the need for frequent sittings diminishes, of course.

**Results.**—I have treated well over 200 cases on these lines, and while 100 per cent. of cures cannot be claimed, the results have, in the great majority of cases, been so satisfactory as to justify my recommending the method. The curative effects may be attributed to two causes: 1. The continual antiseptic action of the nascent iodine, which is being constantly formed from the iodoform. 2. The prevention of putrefaction in accumulated secretions by the same agency. The factor of putrefaction is an extremely important one in chronic suppuration.

Long duration of the condition is no bar to success. Many of the cases successfully treated have suffered seven and eight years. The presence of a polypus need not always cause dismay; it is not conclusive evidence of bone disease, but its removal is necessary before thorough treatment can commence.

Queen Anne-street, W.

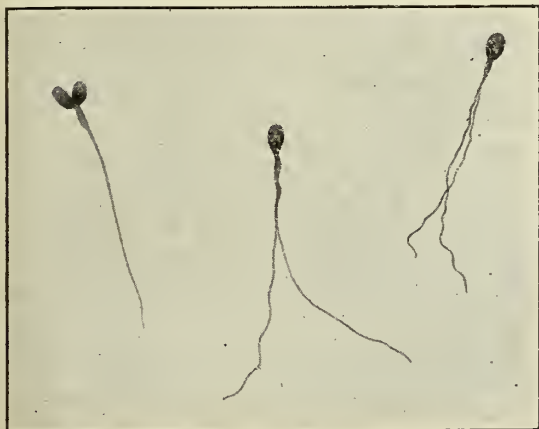
#### A NOTE ON

#### DUPLICATION IN HUMAN SPERMATOZOA.

BY S. R. TATTERSALL, M.R.C.S., L.R.C.P.

IN spermatozoa from certain of the lower animals partial doubling of the tail has been described as an occasional occurrence; but similar observations in the human subject seem to be at present wanting. In the case to which this note refers, the patient was a man, 25 years of age, suffering from spermatorrhoea. The microscopic examination was made upon films fixed by heat and stained, for ten minutes in hot carbol-fuchsin. This was found to stain the tails of the spermatozoa extremely well, but at the expense of some detail in the head and middle part.

The greater number of the spermatozoa are normal, but in a few instances one head is furnished with two distinct tails. The tails are quite separate and distinct as far forwards as the posterior end of the middle part, with which they join. The position of the two tails varies widely. Some lie close together, while others diverge at varying angles. The



Human spermatozoa, showing two-headed and two-tailed varieties. 1/12 in. oil-immersion. (Figure reduced.)

possibility of two heads and middle parts overlying each other has to be excluded, but the head-cap of the two-tailed forms is not less translucent than the head-cap of normal sperms. In each case the middle-piece is not increased in thickness. The tails have been of equal length with the exception of one sperm, where they differ markedly. The proportion of two-tailed to normal sperms is estimated at about 1:750. Those sperms which have been observed have all been in thin parts of the film where confusion with the tails of neighbouring spermatozoa may be with certainty excluded.

A second type of abnormality was also observed. One or two spermatozoa were furnished with two heads and one tail. The angle made by the axes of the heads varied from about 60° to about 170°. They are much less

frequent than the first type described, the estimated ratio to normal spermatozoa being about 1:5000. In a few of these two-headed spermatozoa the middle part appears of normal thickness, but in many it is slightly thicker, though not denser than that of the normal spermatozoon. The genuineness of this type is, however, not indisputable. Several instances have been observed where with divergent heads, the middle parts and tails have adhered very closely, indeed diverging only for about the last eighth of their length. Although these latter are probably spermatozoa adherent to one another, the possibility of their being fused by the middle part may be borne in mind.

No abnormality has been found in the sexual history of the man's family. There has not been a marked preponderance of one sex among the children born, nor has there been an instance of twins or abnormal children for two generations back. The drawings were made under Professor Shattock's supervision, and he informs me that the occurrence of two-headed spermatozoa in the seminal fluid of man was recorded by Major F. Smith in the *Journal of the Royal Army Medical Corps* (Vol. XI., 1908), though without either particulars or drawings: the individual is stated to have regularly procreated twins.

Schäfer<sup>1</sup> states that in animals the extremity of the tail may be split into two or three fibrils, which can sometimes be traced along the whole length of the tail. The drawings accompanying this communication were made with a 1/12 in. oil-immersion objective, and a 10 x eyepiece.

Since the above observation was made I have found similar two-tailed forms in the fluid from a spermatocele. The opalescent fluid, which contained great numbers of spermatozoa, was diluted from normal saline, and from this preparations were made as above described.

St. Thomas's Hospital.

#### CASE OF SMALL-POX SIMULATING ACUTE APPENDICITIS.

BY J. K. HAWORTH, M.D., B.S. DURH.,

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THE following case of small-pox appears to illustrate the difficulties of diagnosis in acute appendicitis.

Mrs. — was admitted at 10.30 P.M. to Family Hospital, Lucknow, complaining of acute pain in her right side, with vomiting and fever—the Murphy sequence. Her history was that she had been unwell for three days, but only on the day of admission had she thought it necessary to call in medical advice. On admission she was in great pain, temperature 104.6° F., pulse 100, with vomiting. The rate of breathing was slightly increased. Her abdomen was not distended; she was very tender over the appendix area, with only slight rigidity. Chest normal. The case at first appeared one of acute appendicitis, but it was decided, not without considerable anxiety, to delay operation till next morning, as her general condition and abdominal signs did not seem quite to agree. Next morning she developed a typical small-pox rash with some hæmorrhagic spots. Her temperature dropped. The pain disappeared and the course of disease was uneventful to recovery.

In striking contrast to this case on the next day a patient in hospital developed almost exactly similar symptoms and was operated on in less than 12 hours from his first attack of pain, and a black gangrenous appendix was removed.

<sup>1</sup> Essentials of Histology, 1914, p. 389.

A PSYCHIATRIC CLINIC FOR CARDIFF.—A conference was recently held at the City Hall, Cardiff, attended by Sir William Byrne and Dr. C. H. Bond, on behalf of the Board of Control, at which the setting up of an in- and out-patient department for early mental cases in connexion with King Edward VII.'s Hospital was fully discussed. The proposal is, in the first instance, for a psychiatric clinic of 50 beds within convenient reach of the infirmary, with facilities for special examination and psychotherapy, as well as lecture rooms and laboratories. The out-patient department, it is expected, will be located at the King Edward VII.'s Hospital. Sir William Byrne, in expressing the sympathy of the Board of Control with the scheme, outlined the main features of the amending Bill to the Lunacy Acts, the draft of which is now being considered by the Government.



## Reviews and Notices of Books.

*The Story of English Public Health.* By SIR MALCOLM MORRIS, K.O.V.O. Pp. 166. *Infant and Young Child Welfare.* By HAROLD SCURFIELD, M.D. Edin., D.P.H. Camb. Pp. 166. *Food and Public Health.* By WILLIAM G. SAVAGE, B.Sc., M.D. Lond., D.P.H. Pp. 156. *Housing and Public Health.* By JOHN ROBERTSON, C.M.G., O.B.E., M.D., B.Sc. Pp. 159. *The Welfare of the Expectant Mother.* By MARY SCHARLIEB, C.B.E., M.D., M.S. Pp. 152. (English Public Health Series, edited by Sir MALCOLM MORRIS.) London: Cassell and Co., Ltd. 5s. each volume.

THE editor and the publishers are to be congratulated upon the timely appearance of this series of books dealing with the present problems of public health. It is designed especially to meet the needs of members of local authorities, district nurses, health visitors, and the lay public generally in so far as this public is interested in its own welfare. We hope that where that interest is lacking these books will do much to supply the want, for legislation can never be effective in public health unless it is supported by an intelligent body of opinion.

Sir Malcolm Morris, who also edits the series, is responsible for the first volume—a short history of the growth of the public health movement from the work of Edwin Chadwick, which culminated in the passing of the Public Health Act of 1848 down to the establishment of the Ministry of Health. The functions of the principal central health authorities in the old regime are dealt with serially; two chapters are devoted to the questions opened up in recent years by discoveries of the nature of the infections and the spread of venereal disease, and finally the Ministry of Health is invoked to embrace all the measures taken by old authorities as well as to deal with the new problems as they arise.

The welfare of the infant is viewed by Dr. Scurfield from a very broad standpoint, and is exactly the kind of writing which is most needed. In his introduction he reviews the doctrine of the survival of the fittest as becomes a disciple of Benjamin Kidd, and wonders how many useful citizens the Spartan Council of Elders ordered to be thrown down the cavern of Mount Taygetus. If we are to assist in the survival of the fittest it must not be by neglecting the weak, but rather by paying attention to eugenics. Dr. Scurfield recognises the limitations necessary to the application of this science, but does powerfully plead for some endeavour to prevent the marriages of syphilitics, epileptics, alcoholics, mental defectives, and persons suffering from an infectious stage of tuberculosis. From its heritage the writer passes to a consideration of the baby's environment, and thence to a very practical review of the details which make its life worth living. This is a volume which every mother and every intending mother ought to study.

When the second edition of "Food and the Public Health" comes to be published it is reasonable to suppose that a great deal of new matter will have to be introduced into the first chapter. In the present edition the food constituents are classified and the common foods are considered as regards their caloric value and digestibility. But the newer knowledge acquired during the war of the effects of certain foods in counteracting fatigue and the results of the deprivation of others through war conditions—all this is perhaps not yet sufficiently crystallised to find expression in popular language. The remaining chapters deal mainly with the adulteration and infection of food, and are illustrated by half-tone plates.

Dr. John Robertson writes as one having authority, for he depends mainly upon his own experience as a medical officer of health in one of our most crowded cities, and quotes but seldom from the works of others, though a useful little bibliography is appended. The bad housing of the past was due to poverty. Never again, says Dr. Robertson, must the labourer be allowed to suit the house to his wage. Public attention has already been closely focussed upon the evils attendant on bad housing, and it is a relief, therefore, to find that the scope of this book is almost entirely constructive. The minimal standard for a dwelling-house as laid down by the author is certainly not too high, he writes as a practical man rather than as a seer, and in our opinion his plea for the use of electrical labour-saving devices is almost too apologetic.

The welfare both of the expectant mother and of her child depends to a very great extent upon the care devoted to them in the antenatal period, and the first step towards or diminution of the risks incurred by both is, as Dr. Scharlieb says, in the direction of popular education. Dr. Scharlieb has long practised what she preaches, and the gravamen of this book has formed the substance of her writings and lectures for many years. All the popular aspects of pregnancy, with its demands and its dangers, are dealt with in her usual incisive style. She pleads for a larger number of midwives, increased hospital accommodation, and the multiplication of welfare centres, and recommends that facilities be increased for the investigation of the causes leading to antenatal death. A scheme for the endowment of motherhood is also on her list of desirable reforms.

We have said that these books are intended for lay readers, but there is no doubt that they will also prove of interest to many medical men.

*Anaphylaxis and Anti-anaphylaxis.* By A. BESREDKA. With a preface by E. ROUX. English edition by S. ROODHOUSE GLOYNE, M.D. London: W. Heinemann. 1919. Pp. 143. 6s.

IF any reader considers anaphylaxis to be a dull topic he should read this gay account by one who has been in the thick of its experimental investigation almost from the first. And anyone who thinks it a difficult subject may do the same, for the exposition is forcible and for the most part clear enough, the whole finding an admirable summary in the preface by Roux. It is some 17 years since Richet had the idle curiosity to call in the dog Neptune to help with the poisonousness of his extracts of sea-anemones, and—which is the basis of most great discoveries—the wit to see that he had found out something more than that experiments do not always come off. Arthus made further progress, though it was not till Rosenan and Anderson brought "Richet's phenomenon" into the restricted field of pathological vision by using the familiar serum-guinea-pig apparatus that the stream of inquiry fairly began to flow, and finally almost flooded us out. Besredka takes the phenomena seen with egg-white, serum, &c., and the guinea-pig as typical, and describes in order the circumstances of sensitisation by a first injection, of exciting anaphylactic shock by a second injection, of desensitisation by a vaccinating or anti-anaphylactic injection, and finally discusses the theory of the whole business. The view he takes is that now pretty generally admitted: the first injection of a proteid causes the production by the recipient animal of an antibody, which he frankly assumes without clear evidence to be a special "anaphylactic antibody." The second injection, given after an interval in which this "sensibilisin" accumulates, either in large amount, or in curious places, or in both, reacts as any antigen will with its antibody, and, either by the violence of this reaction or on account of the place where it occurs, general symptoms of greater or less severity ensue. These symptoms may be avoided if, quite shortly before the second injection, a small dose of the antigen is given, and Besredka points out at some length how easily the anaphylactic troubles of serum therapy may be minimised by his method of small preparatory injections of serum preceding the main therapeutic dose by 10 minutes to 3 or 4 hours, according to the route of administration. The method seems to deserve special consideration now that, e.g., meningitis and pneumonia are being treated with doses of serum undreamed of a few years ago.

With regard to the mechanism of production of anaphylactic shock, the author will have none of Friedberger and the anaphylotoxin he has so profusely propagated. He says, indeed, bluntly that there is no anaphylactic poison; that the union of antigen and antibody results in a harmless complex, and that the disturbance is produced by the antibody becoming attached to, and so enabling the antigen to penetrate, certain nerve cells. Here he is vague. The question at issue seems to be not whether there is a poison or not—unless the cellular injury which objectively occurs is mechanical in origin there must be something somewhere which might be called a poison—but whether the reaction which results in the shock takes place in the fluids of the body or inside the cells. Friedberger would say that the combination of antigen and antibody in humore gives a poison, Besredka that it upsets cells because it takes place inside them. The two views are not necessarily mutually exclusive; both parties are, as usual, probably more or less



right, and likely the truth is that the reaction takes place inside cells, and on that account liberates poisonous substances which may act generally as well as locally.

A good many details are naturally, and commendably, left unnoticed; some of the more important recent advances are described in a supplementary chapter by Dr. S. R. Gloyne. The enthusiasm of the narrative leads to a few statements which can hardly be taken at their face value—e.g., that passive anaphylaxis takes place “instantaneously.” There is a sad misprint on p. 18, where, at its definition, sensibilisin is called sensibiligen. Neither the title-page nor preface is dated.

*Mammalian Physiology: A Course of Practical Exercises.*

By C. S. SHERRINGTON, M.D., D.Sc., F.R.S., Waynflete Professor of Physiology in the University of Oxford. Oxford: At the Clarendon Press. 1919. Pp. 156.

Professor Sherrington, recognising the fact that a certain broadening of scope of the practical work customary for students in animal physiology is desirable, has in this manual given an admirable response to this desire. The work is correctly described as a course of practical exercises in mammalian physiology, the emphasis being on the word mammalian. In most medical schools what is called “experimental physiology,” as carried out by the students themselves, is usually confined to muscle-nerve preparations and the cardiac and spinal physiology of the frog, and but rarely does the student make experiments on a mammal—save on himself. Professor Sherrington does not propose to do away with laboratory experiments on the frog. But he sees that there are other facts of great value and interest, especially to the future practitioner of medicine, which can be better displayed and more easily obtained in the mammalian preparation, and thus, with elaborate detail, describes how in Oxford for some time he has met this proposition. Building on the fact that in a decerebrate or decapitate “carcase”—e.g., rabbit or cat—the circulatory, glandular, muscular, and simpler nervous activities remain for some considerable time, a scheme whereby the student can observe, study, or record, if need be, these activities became possible; but in this course the great fact is that the student does the work himself—it is not a question of a mere demonstration by the teacher—so that by the actual performance of these main experiments he gets a genuine insight into their general significance and into the problems they touch. Moreover, the systematic knowledge acquired from text-books is vivified as well as vitalised, and the interest in their studies intensified and thereby made a living and abiding possession of great practical value where practical work has actually been done.

The course comprises 21 lessons, each consisting of somewhat less than three hours' work. In each lesson certain “observations” have to be made, and full details for these are given, the instruction being greatly aided by anatomical and other notes set forth in nine plates in colour admirably drawn by the author himself, diagrams of apparatus, and graphic records in the text, reproduced from the tracings obtained by the class students themselves. To each exercise is subjoined a short annotation concerning the source and bearings of some of the more salient observations included in the exercise. Their trend is often historical, and many references are given to publications in which additional details are to be found. By way of showing how all these observations can be carried out on the “carcase,” and how they can be so arranged as to obtain the maximum profit from each animal utilised, an appendix is added at the end of the volume. There is an index of the names of authors referred to in the text, but with rare modesty the author omits his own name, though there is scarcely an exercise to which he himself has not made some original contribution.

Ninety-five “observations” are comprised in the 21 “exercises.” The idea of the extraordinary scope of the work done in about 60 hours can be best grasped by a limited epitome of the main experiments. Given a “decerebrate” or “decapitate” carcass of rabbit or cat—no dogs are used—the first exercise comprises the study and recording of intestinal movement and tone, with the action of adrenal extract on these and on the excised spleen and arterial wall. The circulation next is taken in hand, comprising revival of the excised heart by coronary perfusion; the influence of temperature, adrenalin, and chloroform on the excised heart; inspection of the lungs,

great vessels, and the heart beating in situ; vagus inhibition, and effect of raising the intra-pericardial pressure. Then follow graphic records of arterial pressure by the kymograph, and the effect on heart and blood pressure of stimulation of the vagus and spinal cord and splanchnic nerve; “vagus escape”; the action of atropine, adrenalin, amyl nitrite, pituitary extract; asphyxia; artificial aortic stenosis and insufficiency; time of the lesser circulation, action of the accelerans on heart rate, and other cardiac phenomena. Renal secretion, hydræmic plethora, diuresis by caffeine citrate, effect of pituitary extract, perfusion of the kidney with normal saline, and the action of adrenal extract and amyl nitrite with cognate subjects occupy two exercises. Next salivary secretion—corda stimulation—and the action of pilocarpine and atropine are studied. Then follow observations on respiratory movement and allied phenomena; respiratory rhythm and the effect of nerves thereon; air-embolism, pneumothorax, respiratory undulations of blood pressure, and the various reflexes connected with the glottis, and swallowing in its various aspects.

Pressor and depressor phenomena are then dealt with, and so are other reflexes. This leads up to knee-jerk functions of the spinal roots and other spinal phenomena, cervical sympathetic action, proprioceptive reflexes, measurements of reflex and twitch, postural tone, and reflex inhibition of posture and contracture. Hæmorrhage and arterial pressure and restoration of the latter by gum-saline injection, clotting, and fibrinogen are all described. One exercise is given to “washed leucocytes,” phagocytosis, and opsonic power of serum, and another to preparation of secretin, pancreatic secretion, and bladder-bile. Fortunate indeed are the students who obtain such a compendious, practical, and vivifying course of instruction in applied physiology. We most cordially endorse the view of Sir George Newman that these exercises are an illustration of the kind of applied physiology which should be taught in all schools of physiology.

As was to be expected, Professor Sherrington has done his work with a master hand. If we compare the operative training and the vast amount of knowledge directly and personally acquired during 60 or 70 hours spent in a well-equipped physiological laboratory with the modicum of anatomical detail acquired during the same time in the dissecting room, there seems to us to be no doubt as to where and how the medical student can most profitably spend what after all represents less than three full days of his academic time.

*Modern Medicine and Some Modern Remedies: Practical Notes for the General Practitioner.* By THOMAS BODLEY SCOTT, M.R.C.S. Eng., L.R.C.P. Edin. Second edition. London: H. K. Lewis and Co., Ltd. 1919. Pp. xvi. + 198. 6s. 6d.

THESE essays were first reviewed in our columns in September, 1916. It is no surprise to us that a second edition should have been called for. Dr. Scott writes in a style that is at once pleasant to read and that carries with it the confidence of the reader, who feels instinctively that the author has used his observation not only at the bedside but also in the laboratory, and that he has used it with a shrewd discrimination. In dealing with such ailments as heart disease and chronic bronchitis the general practitioner learns much that was never taught to him as a medical student, and many who are setting up in practice at the present time will be the wiser by borrowing from Dr. Scott's well-stocked store of common-sense.

## JOURNALS.

*Quarterly Journal of Experimental Physiology.* Editors: E. SHARPEY-SCHAFER, W. D. HALLIBURTON, C. S. SHERRINGTON, E. H. STARLING, A. D. WALLER. Vol. XII., No. 2. London: Charles Griffin and Co. 1919. Pp. 97-198. 7s. 6d.—Carbohydrate Metabolism in Relation to the Thyroid Gland (IV.): The Effect of Thyroid Feeding on the Gaseous Metabolism of Thyroidectomised Rats, by W. Cramer and R. McCall. Such animals react to thyroid feeding by an increased metabolism, but this experimental hypothyroidism shows two stages. In the early stage in which the metabolism is reduced if thyroid gland is administered the metabolism is brought back to that of the normal animal; in this respect it is similar to pathological hypothyroidism. In the later stage the metabolism is similar to that produced in a normal animal by thyroid feeding. This result seems to be due to a compensatory mechanism, and does not really represent a condition of true hypo-



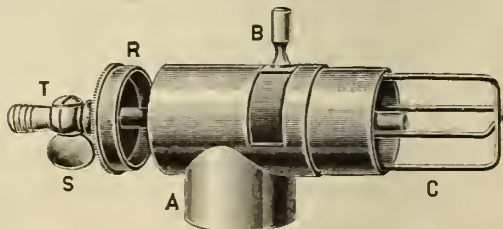
thyroidism. The increased metabolism due to thyroid feeding occurs also in the absence of preformed carbohydrate in the food. It appears that all changes in metabolism can be explained as being the result of disturbance of the glycogenic function. It is suggested that in Graves's disease a diet rich in carbohydrates is indicated to counteract the loss of flesh which is one of the features of the disease.—The Action of the Blood-serum of the Dog in a Condition of Tetania Parathyreoopriva on Voluntary Muscular Tissue compared with that of Normal Serum, by B. A. Houssay. Neither of these serums causes tremors in the muscles of the South American frog (*Leptodactylus ocellatus*). Five out of six samples of tetania serum produced tremors in the muscles of a toad (*Bufo marinus*), while four samples from normal dogs produced tremors. On the other hand, four other samples from normal dogs produced no effect.—The Adrenalin Content of the Suprarenals of the Female White Rat and the Changes Brought about by Thyroid Feeding and other Conditions, by P. T. Herring. The suprarenals of young female white rats are normally 40 per cent. heavier than the suprarenals of the male animals of the same weight, while the adrenalin content of the suprarenals of the female is twice as large as that in the male of the same size—e.g., average adrenalin in female 0.073 mg., in male 0.034 mg. These differences are associated with sex differences in the other endocrine glands and organs of the body. The adrenalin content is increased during pregnancy, but is not permanently altered by the occurrence of this condition. The female white rat is less tolerant of thyroid feeding than the male; a daily dose of 0.2 g. fresh thyroid if continued is too high and checks the rate of growth of the animal. Thyroid feeding causes a rapid increase in the weight of the suprarenals, but more so in the male. The chromaphil tissue of the female rat normally contains a much higher level of adrenalin production than it does in the male. The increased size of the suprarenals following on thyroid feeding is mainly due to hypertrophy of the cortex. The percentage amount of adrenalin is always diminished by thyroid feeding.—The Effect of Phloridzin on the Permeability to Glucose of the Frog's Glomerular Membrane, by R. Brinkman. The surviving kidneys of the frog were perfused with certain solutions of known composition—e.g., Ringer's fluid—and the result showed that frog's glomerular membrane is, under normal conditions, impermeable to physiological quantities of glucose. The "urine" obtained was compared with the fluid perfused. The rate of diuresis had no influence on the results. So far as glucose was concerned—the urine obtained always contained the percentages of glucose (0.05–0.1 per cent.) in the perfusing liquid. Further experiments showed that the permeability of the glomerular membrane is dependent on the composition of the perfusing fluid—the concentration of the free Ca-ions is the factor of greatest importance in this connexion. If the Ca-ions have a certain concentration the membrane shows itself impermeable to physiological quantities (0.06 per cent.) of glucose. If the concentration exceeded 0.003 per cent.  $\text{CaCl}_2$  the membrane became permeable to glucose. A second factor is the preservation of the normal slight alkaline reaction of the perfusing liquid ( $= 0.285$  per cent.  $\text{NaHCO}_3$ ) = to that of frog's serum. As to the action of phloridzin, it is known that phloridzin-glycosuria is a renal process, most investigations finding that blood-sugar is not increased, it may even be decreased—i.e., hypoglycæmia. Many suppose that this drug causes the tubuli to secrete glucose. It was found that the addition of 0.0004 per cent. of phloridzin to the solution already described is sufficient to make the otherwise impermeable membrane wholly permeable to physiological quantities of glucose, though the membrane is not influenced by many other drugs—e.g., atropin, pilocarpin, nicotin, narcotics. The concentrations of the glucose in the urine closely follow those in the corresponding serums. Phloridzinised frogs show well-marked hyperglycæmia. Phloridzin promptly makes the glomerular membrane permeable to glucose. In higher animals secretion of glucose by the tubuli is the dominating phenomenon.—A Convenient Method of Recording Pulmonary Blood Pressure, by Sir Edward Sharpey Schafer. The method was used in some of the experiments described in the Effects of Adrenalin on the Pulmonary Circulation, by Sir Edward Sharpey Schafer and R. K. S. Lim. The intravascular administration may produce effects on the pulmonary circulation by (1) an effect on the pulmonary arterioles, causing constriction, or in some cases dilatation of these vessels, resulting in a diminution or increase of the flow and a rise or fall of the pressure in the pulmonary system; (2) on the musculature of the heart through the sympathetic nerve and coronary vessels; (3) on the conducting (Purkinje) fibres under the endocardium; and (4) indirectly as a consequence of constriction of the systemic arterioles and great rise of the aortic pressure. The effects produced upon the aortic system can be similarly caused in four ways. First the effects of perfusing adrenalin through the surviving lung

were studied. The results of previous observers are not in accord. In the rabbit adrenalin in moderate doses injected into the jugular vein usually at first causes a rise of pulmonary blood pressure, owing to constriction of the pulmonary arterioles, or shows no effect on this system. If there is great constriction any rise in the pulmonary system is soon converted into a fall, gradual recovery following as the constriction passes off. The effects are similar when it is injected into the aorta through the carotid, but the preliminary rise is absent. In the cat the usual result is a sharp, well-marked rise in both pulmonary and aortic pressures—and usually with parallelism in both systems—which must be of cardiac origin. In the dog there is a great rise in both systems, sometimes running almost parallel. The rise in the pulmonary system is not due to "back action" propagated from the aortic system. There may be no rise at all in the pulmonary, with great rise in the aortic systems, even when the aortic pressure is raised by compression of the aorta and in other ways. In rabbits the chief effects of adrenalin upon both pulmonary and aortic pressures are produced upon the blood-vessels, but in most cats and dogs the chief effects are produced by the drug upon the cardiac musculature. The musculature of the two sides of the heart may be differently affected by adrenalin, which may be due to its action on the Purkinje network of the ventricles.—The Effect of Adrenalin on Muscular Fatigue in *Leptodactylus ocellatus* and in *Bufo marinus*. By John Guglielmetti. Subcutaneous or intravenous injection or perfusion produces recovery of muscular contractions which have been abolished by previous fatigue. Given sufficient doses recovery may be obtained in muscles which have been wholly exhausted. Recovery is more usually obtained when the adrenalin is made to act early upon the preparation.—Note on Strychnine Tetanus. By Arthur R. Cushny. The author's experiments lead him to conclude that it is unnecessary to assume, as has been done, that strychnine changes the ordinary coördinated reflex, not only in quantity, but also qualitatively, by inducing a reversal of inhibition into contraction. Strychnine tetanus is merely a quantitative change of the "start" reflex which occurs under normal conditions.

## New Inventions.

### A VENTILATING ETHER BAG MOUNT.

THE accompanying illustration shows a bag mount designed to afford an inhalation as "open" or "closed," as the administrator may wish. A fits Hewitt's wide-bore inhaler and face-piece. An Ormsby (or paper) bag is attached over the cage C by a thick rubber band. B opens a window, simultaneously cutting out the bag to any desired extent. T admits gas, oxygen, or ethyl chloride to the bag, whatever the position of B, and is removable for cleansing purposes. R, fixed to T, is pushed home into A for use. Gases can be retained in the bag by opening B and closing T by the stopcock S. This affords a convenient means of giving ethyl chloride either alone, or before ether, the bag being



charged before applying the face-piece and gradually opened as the window at B is being closed. For the gas-ether sequence a little hot water can be poured into the Ormsby through A. With less than two ounces of ether anaesthesia can then be induced in about three minutes, usually without appreciable coughing or struggling. During the operation B is always more or less open, so that with every breath the patient gets some fresh air, as warm and moist as the anaesthetist may desire. The hot water in the bag can be easily renewed or the bag may float in a bowl of hot water. The mount (and bag) can be boiled, there are no valves to get out of order. By means of an "adapter" the mount may be adjusted to an ordinary "Clover" or face-piece. I have used this apparatus for brain cases and abdominal operations of every kind during the last five years. It is made by Messrs. Barth.

BERESFORD KINGSFORD, M.D. Durh.,  
Anaesthetist, University College Hospital, &c.



# THE LANCET.

LONDON: SATURDAY, AUGUST 2, 1919.

## Science and Unrest.

TRULY these are progressive times, when we find labour organisations demanding State aid for scientific research on the ground that the value of scientific advancement to the welfare of the nation is many times greater than the cost of the necessary laboratory quest. Public recognition of this fact will mean the era of a great movement of the utmost social and economical importance. When it is realised that increased productivity of industry results from scientific research, a powerful aid will appear to those involved in an ever increasing struggle to raise their standard of living. In applied science there lies a possible solution of many disastrous labour problems, and none too soon those who labour are perceiving it. Have they not seen the truth before their organisers or their employers?

In a remarkable manifesto on scientific research recently drawn up by the American Federation of Labour it is maintained that the importance of scientific applications in industry must steadily increase, since there is a limit beyond which the average standard of living of the whole population cannot progress by the usual methods of readjustment, a limit which can only be raised, it is claimed, by research in industry. The wise solution of the numerous important and pressing problems of administration and regulation now facing almost all Governments of the world depends, it is suggested, upon scientific and technical research. It would be a remarkable consummation in the history of the world, as is here hinted, should science ultimately prove to be the palliative of unrest. And it seems probable, if we accept the application of science to mean increased production and output of what is essential to the existence and welfare of both workers and community. This may be a truism and altruism well worth the serious thought of our counsellors. The community has its claims on medical science also for maintaining the health and well-being not only of the workers but of the whole population, which is thus dependent upon scientific advances in medicine and sanitation. Without research progressive medicine is, of course, impossible, and medical science could not have reached its advanced stages without intensive studies along all sorts of ancillary lines; and similarly progressive industry and output must be dependent upon deeply searching and minutely inquisitorial work. The war has brought home to us the fact that the world has ignored a great asset brought into valuation by the pursuit of knowledge; the war was largely won by applied science, and it is to science properly applied that the world looks for regeneration. The British Labour Party has recognised this, and its advisory committee on public health has urged on the Ministry of Health as one of its main duties the direct prosecution of medical research and its encouragement in universities and elsewhere.

Here is a concrete example to which we referred last week—namely, the encouragement of research work in drugs by the State, which resulted in great

advantages to the country. At the outbreak of the war there was a threatened famine in essential drugs, the supply and preparation of which had hitherto been left entirely to enemy sources. The National Health Insurance Commission were fully alive to this fact and to the possibility of disaster looming ahead on this account; but with the assistance of the Royal Society and various State departments scientific workers and manufacturers were brought into touch with each other. The result was that there was no drug famine, no really important medicine was lacking for essential purposes, and at no time did the public health suffer from a lack of medical and surgical material. What was done by the State in encouragement of one particular and important industry in a time of emergency should obviously be continued with benefit to all the economic and industrial resources of the country now that the war is over.

## Psychiatric Clinics.

THE essential mystery of mental disease baffles us now as it did a century ago, and Dr. BEDFORD PIERCE, in his presidential address to the summer meeting of the Medico-Psychological Association, queries whether the recovery rate has increased during that time. But signs are not wanting of encouragement. During the past year several medico-psychologists have been earnestly engaged in framing recommendations for the more rational treatment of patients suffering from incipient mental disease. It is satisfactory to note that the result of their labours is likely to bear fruit in the near future. The experience gained in the special hospitals for similar cases under military organisation has served to bring to a focus what has long been held to be desirable in civilian practice. But to attain this objective no proper provision exists, as is well known, neither is there legal sanction. The prevention of disease is as much the rôle of the practitioner as is the cure and care of patients. To this end the sooner a case of threatening mental breakdown can be dealt with the better should be the result secured; and it is not too much to hope that insanity may yet be nipped in the bud to no small extent. The extension of the voluntary boarder principle to the county and borough asylums, which is being promoted, is a step in the right direction, but there is a large class for which other facilities for early treatment must be devised. The establishment of recognised homes for incipient or border-line cases, advocated by Dr. L. A. WEATHERLY last week, is, we think, generally approved, subject to notification to some public authority competent to exercise supervision. Such homes would apply to private patients in a position to defray the expenses incurred. But for the person of slender means the demand for psychiatric clinics seems to be imperative in order to keep abreast of the times.

Several of the voluntary hospitals, in response to appeals, have instituted out-patient clinics for mental cases, but apparently they hesitate to allocate beds for them. No doubt this would entail the building of an annexe, or, at any rate, the provision of a special ward with suitable arrangements, and the services of nurses with asylum training. It is quite possible that the overcrowded state of the hospitals militates against a departure which involves increased responsibilities and expense. Yet the advantages which should accrue are manifest



in bringing mental diseases into closer alliance with other diseases, and the consultations between the various departments would be of the utmost value. Moreover, the class-rooms and laboratories would be at hand, and there would be increased opportunities for the scientific teaching of psychological medicine. The finances of such a scheme for mental clinics might very fairly be met by contributions from the local authority or central exchequer, and this, we take it, is provided for in the legislation proposed by the Board of Control. The union infirmaries, to which the poorer classes of mentally affected patients in the first instance have access on certain conditions, can scarcely be held efficient under the present regime. The medical and surgical staffs are inadequate, there is a need for workers in pathology, and their status would be improved by the appointment of a recognised authority on psychiatry to direct the treatment of mental cases. In the interests of public health mental patients should be able to obtain early treatment without the formalities of the three-day order and certification, which, with the added stigma of pauperism, have such a baneful influence on persons in the incipient stage of insanity. Reform can only be achieved by dissociating the management entirely from the Poor-law in name as well as in fact. Were this accomplished, it is more than probable that many existing buildings could be remodelled and adapted for the formation of psychiatric clinics, in addition to those which the voluntary hospitals may in time provide, and where medical schools exist in the vicinity they should be affiliated to the clinics for the purposes of teaching and research.

But besides these problematical innovations there is yet another method to deal with the situation, which has already been initiated, and that is to build hospitals for incipient nervous and mental diseases analogous to the special hospitals that exist for other diseases. There is much to be said for this movement, and it might save the cost of the continual additions to the asylums of the country. These hospitals should constitute thoroughly up-to-date psychiatric clinics with every means for scientific investigation; care should be taken that they are bereft of any tinge of asylum atmosphere, or they might defeat the object in view. The Maudsley Hospital, which is equipped with modern laboratories, already exists owing to the foresight of its munificent donor, and it is to be hoped that no time will be lost in admitting suitable patients on a voluntary basis when the military authorities have evacuated it. The meetings of delegates of the various asylums' committees of the country which took place at the Guildhall this year on the problem at issue have resulted in good work, and we observe with satisfaction that it is proposed to institute a psychiatric clinic at Cardiff, to which allusion is made in our news columns. By such means we may, as Dr. EDWIN GOODALL suggests in his letter, remove the reproach at present resting on psychiatry in this country. For the moment, however, there is this difficulty to be faced. The functions of these clinics, and more especially of approved homes, can scarcely be performed without risk in the present state of the lunacy laws. These and other cognate matters have received the careful attention of the Board of Control, whose recommendations are in close accord with those contained in the report of the Lunacy Legislation Committee of the Medico-Psychological Association. An amending Bill drafted by the Board of Control has

been, we understand, in the hands of the Government for some time, and it is regrettable that this measure has not been brought forward this session in connexion with the Ministry of Health. The position of the various administrative departments of health will require rearrangement under the new Ministry, and it would seem feasible for lunacy to come within its province, a course rendered possible by an Order in Council. The transfer, if effected, should not interfere with the duties of the Board of Control, whose work in administering the present Acts is fully appreciated, and we are glad to find that the Board is in sympathy with the new aspirations for more rational means of treating the early stages of mental disease.

### Medical Trade-Unionism.

THE Annual Representative Meeting of the British Medical Association was held last week under the presidency of Dr. T. W. H. GARSTANG, the Chairman of the Representatives, and, as might have been expected, having consideration to the times in which we live, the trade-union question in reference to the medical profession was treated as an important issue. A recommendation was received from a large provincial branch that the British Medical Association should not endeavour to prevent its members from joining any other organisation which was attempting to combine the profession on trade-union lines, the reference clearly being to the Medico-Political Union, a body which is frankly committed to trade-union principles. Speeches were made by some who had already given in their adherence to the Medico-Political Union, and although their arguments were not perhaps conclusively dealt with, the vote showed that the British Medical Association, through its Representatives, disagrees in great majority with any attempt to convert the profession of medicine into a trade-union. It is no reproach to clear thinking, or to the debating powers of either side in the controversy, that nothing was said proving the one side to be wholly right or the other side to be wholly wrong; the arguments for the introduction into medical practice of trade-union principles are very strong, but the arguments which can be employed in opposition are at least equally strong; and it is a great error on the part of those who see salvation in the formation of a trade-union to insist that those who dissent from them are influenced only by motives of obsolete snobbery.

That a trade-union may be an effective weapon capable of good use and capable of gross abuse we all know at the present day, but its virtues and its defaults have been displayed in association with callings which cannot be compared with the calling of medicine. The analogies usually employed in this controversy are imperfect. A trade-union must be substantially a union of those employed in the trade, though no doubt every trade-union has among its supporters dissentients who now and again form a considerable body of opinion. None the less, the members have a common policy, and by effective weapons which are within their reach can stimulate political activity along the desired lines. The medical profession cannot have a common policy except in the carrying out of the grand ideal to serve humanity. Certainly in the pursuit of this ideal medical practitioners have the right to formulate a common demand for proper remuneration, and this demand depends for its real force upon no vaporous or sentimental claim to the



gratitude of the public, but upon the undeniable argument that good service can only be rendered by men who are placed in a proper position to do good work. Where that work is multifarious it is exceedingly difficult to devise a plan to insure that along each and all the lines justice is being done. Clearly no single rate of wages, with which a trade-union is so well able to deal, would meet the case. It is generally admitted that the most ardent advocates of medical trade-unionism have no intention of using the last weapon of the trade-union—namely, the strike; but a proposal to substitute for the strike against individuals a strike against Government regulations may be a distinction without a difference. A recent memorandum by the Medico-Political Union states that panel practitioners are the only citizens in this country who are, at the present time, outside the protection of the law, the statement deliberately excluding the position of the Civil Servant. It is conceivable, and indeed conceded, that a large body of the medical profession, being engaged in homogeneous work by a common employer, form typical material for a trade-union, and in this sense is doubtless to be construed the National Insurance Defence Trust to be administered by the British Medical Association. But what is to be the attitude of other members of the medical profession not in the same position? They cannot be forced into a trade-union, and their scientific and humanitarian services must be available for the benefit of medicine as a whole, within and without its sections.

It was to assist in the solution of such questions that the Medical Parliamentary Committee was formed, and if in its present shape as a British Federation of Medical and Allied Societies it should become representative, the medical man through any body, association, or group with which he is affiliated, would give a vote on these great questions and inaugurate a policy of strength and of conciliation. But it is understood that the British Medical Association, within whose ranks a difference of opinion on the trade-union question has become manifest, will not revise its opinion that this Federation has no reason for its existence. The British Medical Association is the elaborate work of men devoted to the interests of the medical profession, and every respect must be paid to their decision; but here is a question of vital importance upon which apparently members of the Association do not think alike. If the trusted leaders of the Association would debate this and cognate questions with a real federation of medical and allied bodies good would emerge.

THE Government's intention to regulate the sale of products which in the past were limited by patent was made by Sir Auckland Geddes, President of the Board of Trade, in the House of Commons on July 28th, on the occasion of his moving the second reading of the Trades Marks Bill. In what he said he was guided probably by the recommendations of the Select Committee on Patent Medicines, the report of which was ordered by the House of Commons to be printed August 4th, 1914. This Committee proposed that fancy names for recognised drugs should be subject to regulation, and that the period of validity of a name used as a trade mark for a drug should be limited, as is already the case with patents and copyrights. We anticipate that legislation will follow in this direction.

## Annotations.

"No quid nlmis."

### THE FUTURE OF HOSPITALS IN IRELAND.

AN Irish correspondent writes: "There is no more urgent medical question in Ireland at present than the future of the voluntary hospitals. In Dublin, the Richmond, the Whitworth, and the Hardwicke Hospitals are controlled by a common board of governors, and since 1856 have enjoyed a Government subsidy of £7600 per annum. They have no other funds, and as the cost of maintenance has risen from a pre-war figure of £64 per bed to a present sum of £119 per bed, they are in serious plight. All the governors have tendered their resignation to the Lord-Lieutenant, the hospitals being now without funds to pay tradesmen's bills. The Whitworth Hospital is definitely closed. For some time the Treasury grant has been held by the bank and devoted to the reduction of the overdraft. The Irish Government has now expressed its inability to come to the relief of the hospitals in their present crisis, and if this course is persisted in the only chance is for the Dublin Corporation to act, but the rates are so terribly high in that city that little hope is felt in such a relief. In Belfast—with a population much larger than Dublin—the Government has never contributed a halfpenny to the hospitals, but it is plain that hospitals there cannot go on unless the working-classes themselves—with their present high wages—give more to the places to which their debt is so huge. At the Royal Victoria Hospital an arrangement is in force by which, for a penny a week contribution, a working man and his wife and family are treated at the hospital—as extern or intern patients—except for the zymotic fevers and tuberculosis. This plan, which was made about a quarter of a century ago, is utterly out of date now, and the contribution should be raised to at least sixpence weekly or even more. Middle-class people who formerly subscribed to the hospitals can do so no longer, as owing to the diminished purchasing value of the sovereign and the heavy taxation they are greatly crippled financially."

### THE COMMOTIONAL FACTOR IN THE ÆTIOLOGY OF SHELL SHOCK.

IN our present issue Dr. Alfred Carver records in some detail a series of experiments on animals which has a direct bearing on the problem of the ætiology and symptomatology of so-called shell shock. Dr. Carver describes in a lucid way the three zones produced round a point of detonation, and brings forward evidence to show the different physical effects in these three zones. In the first, the zone of "brisanee," objects are shattered by the sudden terrific compression; in the second, the zone of "decompression," there is very much less evidence of actual destruction or distortion of objects; in the third, outer zone, physical effects are modified still further. Some significance is attached to the fact that in the central zone other high explosives will, under the influence of the original detonation, themselves spontaneously detonate, as will, in the intermediate zone, those whose tonal standard is somewhat similar to that of the primary explosive. Corresponding to these physical changes are the effects produced on



animals finding themselves within the various zones; thus in the innermost zone animal life is destroyed, with laceration of the body structures; in the intermediate animals are rendered unconscious, often with no sign of external injury; in the outer a state of diminished activity is followed by a period of excitement and restlessness. Pathological evidence reveals numerous hæmorrhages in the zone A animals, and capillary engorgement in such zone B animals as are killed. There is, perhaps, something of the artificial and the schematic in these experiments, and some psychologists may be inclined to minimise their importance, as regards human beings, in judging of the effects of shell concussion not merely in the physical atmosphere but also in the mental. Dr. Carver's experiments, however, are supplemented by valuable observations on the effect of high-explosive detonations on a more or less picked set of men belonging to an "ammunition proof and demolition section," according to which definite physical and mental symptoms supervene on shell explosions even where the "psychic factor" can almost certainly be eliminated. Again, evidence is adduced of the peculiarly "demoralising" effect of shells with fillings layered in a special fashion, as though an unusual physical effect is somehow transformed into an unusual psychical disturbance. We feel that Dr. Carver is justified in his contention that both physical and psychical factors operate in the production of shell shock, and that differentiation of their respective actions is a matter of considerable difficulty. In any case, to ignore the physical element is unwise, and to restrict psychical phenomena to a psychical ætiology is unscientific. Our experience of shell-shock cases over the five years of war is in the main that the physical factor predominates in the originating of shell shock; that thereafter subconscious or unconscious "rumination" takes its place in the continuing of the symptoms; that the first two years saw more severe and protracted and inveterate cases of the condition than the last two—a fact which may be taken to suggest that in the perpetuation of symptoms the psychogenic element is much the more important. The *commotionné* becomes an *emotionné* in many instances; clear-cut examples of the two syndromes, we agree with Dr. Carver, are the exception and not the rule.

#### IMPERIAL CANCER RESEARCH FUND.

THE seventeenth annual report of this Fund, dealing with the year 1918-19, has just been issued, and consists of statements by the secretary, the director, and the honorary treasurer, together with a list of the year's subscriptions (£956 0s. 4d., making with amounts acknowledged in previous years £174,112 2s. 5d.), and a statement of accounts. Mr. F. G. Hallett, the secretary, points out that now it is becoming possible to resume systematic investigations in the laboratories the foresight shown by expending time and labour in maintaining the various tumour strains in mice is justified, for already material for research purposes has been supplied to Professor Borrel's Laboratory and the Institut Pasteur, Paris, and to Dr. J. Shaw Mackenzie at King's College. The report of the director, Dr. J. A. Murray, shows that during the war, while the working organisation has been maintained, the main efforts of the staff have been concentrated on war problems, the results of which work will shortly be published in the Sixth Scientific Report. This, for the most

part, will deal with the investigations of Messrs. W. E. Bullock and W. Cramer on new factors in bacterial infections, and by Dr. Murray on cellular changes on cartilage grafts. The report of Sir W. Watson Cheyne, the honorary treasurer, records the gratifying fact that the loan from the bankers has been reduced by £1700, leaving only £500 still to be cleared off. As the scientific staff, depleted owing to the war, is now nearly at full strength, researches will be energetically resumed with a necessarily increased expenditure, and an earnest appeal is made to all who are interested in cancer research to support the Fund themselves and to induce others to do likewise. "Looking to the heavy death-rate from malignant disease," says Sir Watson Cheyne, "it must surely be to the interest of the community that this Fund should not be starved in its efforts."

#### TRAUMATIC PSORIASIS.

FROM a recent article on this subject by Döllner,<sup>1</sup> of Duisburg, it appears that Köbner in 1872 was the first to describe this form of the disease. Another case was published in the *Lyon Médical* in 1895, in which psoriasis followed vaccination in a man, aged 22, who was alcoholic himself and belonged to an alcoholic family. Otherwise, apart from a case published by Becker in 1906, Döllner has not been able to find any example of traumatic psoriasis on record. He has lately observed two examples himself in soldiers who developed psoriasis after gunshot wounds, in one case of the tibia and fibula, where the psoriasis appeared on the injured leg but not at the site of the wound, and in the other at the actual site of the wound in the tibia. The last case was, further, of interest in that it proved to be infectious. Six months after his discharge from hospital the patient's wife, who had recently recovered from scarlet fever and still had a trace of albumin in the urine, developed psoriasis, which extended over both knees and the middle line of the back. In another two months her mother also contracted psoriasis. In a postscript Döllner relates the case of a stretcher-bearer who was wounded while carrying another wounded man, the subject of psoriasis, and developed the skin disease a fortnight later on his face, knees, and back.

#### THE PLIGHT OF VIENNA HOSPITALS.

THE prestige of the Vienna Medical School has for long been high in this country as anyone may see for himself by turning over the pages of the Medical Directory and noting the names of distinguished British surgeons and specialists who took post-graduate study there. The number of its students was never greater than was the case in 1914 on the eve of the war. The contrast between its situation then and the situation of the school to-day is startling and tragic. The hospitals, at first overwhelmed with wounded men and later with the victims of epidemic disease, are now filled with enfeebled and semi-starved patients, while lacking the food and equipment necessary to minister to their needs. Tuberculosis has developed into a deadly and acute disease. Nephritis has taken vast toll. Continuous underfeeding with its results seen as hunger-dropsy, rickets, scurvy, and Barlow's disease, provide the major part of the clinical material. In one clinic alone there were recently to be seen 18 cases of spontaneous fracture

<sup>1</sup> *Arzt. Sachverst. Ztg.*, 1919, xxv., 64-5.



in adults due to inanition. In consultation with Professor Tandler, Austrian Minister of Health, an effective organisation for the distribution of relief to the hospitals and kindred institutions has been brought into being. This is known as the International Spitalhilfsaktion, which has its offices at the Albrecht Palace, and its own private store houses. It is independent of other Government departments and is controlled by an international committee, of which Professor Wenckebach is chairman. An appeal to provide the urgent means of relief for this excellent organisation to distribute has been issued by Frau Dr. Biene, Frau Hofrath Lecher, Mr. C. K. Butler, chief of the British Mission, Mr. Halstead, chief of the American Mission, Mr. Karpeles, of Schenker and Co., and Dr. Hector Munro representing the Save the Children Fund. The most urgent need exists for extra rations to give to these hospital patients. The foodstuffs required are enumerated as fats (margarine, butter, cod-liver oil), sugar, eggs, meats, milk, and flour—the list suggesting, what we believe to be the fact, that the present diet of hospital inmates consists principally of broth and tea. 46,000 gallons of milk (of which 11,000 turned sour owing to difficulty of transport) are stated to have been the total supply for a population of over two millions during three recent days. Those to whom Vienna is a pleasant memory of student days will interest themselves in bringing the needs home to those who can supply them. The address of the Save the Children Fund is 329, High Holborn, London, W.C. 1.

#### TRAUMATIC ANEURYSM OF THE RIGHT VENTRICLE.

SPONTANEOUS aneurysm of the heart is rare enough; Dr. Claude Wilson, in recounting an interesting case, indicates how easily the condition may be overlooked. Traumatic cardiac aneurysm is rarer still, although less likely to elude diagnosis during life. In the *Journal of the American Medical Association* of June 7th Dr. G. H. Curfman and Dr. C. R. Fuller have recorded a case. On July 19th, 1917, a youth, aged 18 years, complained of the effects of a kick in the epigastrium by a mule. Since the injury he noticed difficulty in breathing, which steadily increased. There was persistent cough, accompanied by expectoration, the sputum consisting of frothy mucus tinged with bright blood. During the previous month the abdomen, ankles, and legs had become greatly enlarged. On examination the face was swollen, with marked puffiness under the eyes. The lips and tongue were very cyanotic. There was pronounced pulsation of the jugular veins. On lying down the whole face became extremely cyanotic. The cardiac impulse was heaving and could be seen to extend from the seventh interspace, about  $1\frac{1}{2}$  in. to the left of the middle line over the entire cardiac area. Cardiac dullness was greatly increased both to the right of the sternum and to the left of the mid-clavicular line. There was a loud systolic murmur most audible at the apex and transmitted over the whole cardiac area. At the end of systole the murmur became "whistling" and then faded into a faint blowing sound. The second pulmonic sound was accentuated. The abdomen was distended with fluid and there was marked tenderness, most noticeable in the epigastrium. The liver extended three fingers-breadth below the ribs and was tender on pressure. The lower limbs, from the ankles to above the knees, were swollen and œdematous. He gradually became worse; the cyanosis deepened and the abdomen became more distended with

fluid. The pulse became weak and irregular. On Feb. 27th, 1918, he passed into mumbling delirium and died. The necropsy revealed a greatly thickened pericardium containing about a litre of light amber-coloured fluid. The heart was enlarged and weighed 723 g. At the apex of the right ventricle was an irregular tumour about the size of half a lemon, which proved to be a sacculated aneurysm connected with the ventricle by an opening which admitted the index finger. The right ventricle was greatly hypertrophied and there was relative insufficiency of the tricuspid valve. The abdomen was normal except for a large amount of ascitic fluid.

#### THE HANDICAP OF DISABLEMENT.

THE Central Hall, Westminster, on July 24th was crowded from floor to ceiling with men who had lost their limbs in the Great War. The sight while the hall was being filled was one which at first could only engender feelings of despair, some of the men being so helpless that they had to be carried, others legless, shuffling along the floor by the aid of their arms only; but before the end of the meeting that feeling gave way to conviction that the awful pageant presented by the tragedy of war had its hopeful side. Under the auspices of the London War Pensions Committee and the British Red Cross Society the meeting was convened with the object of demonstrating to disabled soldiers and sailors the possibilities of success in life which lay before them, and with this purpose in view two American gentlemen, Judge Corley and Mr. Michael Dowling, who had been crippled in youth, but in spite of their disabilities had risen to positions of honour and trust, practically by their own efforts, gave their experiences. Sir Laming Worthington-Evans, Minister of Pensions, who presided, in introducing the speakers, said—and the attitude of the meeting proved his words—that if one really wanted to get among people who were stout-hearted and cheerful it was necessary to go among limbless men. He desired to see these men put in the service of the country, and into as good a position as possible by providing them with artificial limbs, but the coöperation of the men themselves was also necessary. Each man's case was a separate case, and after the skill of the surgeon, who was doing his very best, had been requisitioned, there was need for the individual who used the artificial limbs to select and learn to use properly the instrument which was best adapted to his purpose. Judge Corley, who had no arms, then gave a demonstration of the instrument which he had invented and perfected, and which enabled him to perform all the necessary actions of daily life. The main principle of the apparatus was that of the working of a pair of forceps, with various attachments for eating, drinking, performing the daily toilet, and even paring the toe-nails. As he explained, he could drive a motor-car, shave, play games—in fact, enter into life with the same enjoyment as a man with both his hands and feet. "And I get my full share of that enjoyment," he exclaimed with conviction. Warning his hearers against the danger of allowing the natural sympathy of the public towards them to lead to apathy, he concluded by exhorting the disabled to endeavour to do for themselves everything it was possible to do. Prince Albert, who was present, in the course of a short speech said: "We all know what you did in the war and what you have suffered, and it is now up to us to make



things as easy for you as possible. And only right that we should." The Prince then made an inspection of the exhibits of the work done by limbless men at the various training centres, which included many of the arts and trades of the country. After a cinematograph display showing Mr. Dowling as an expert motorist, the subject of the pictures himself gave a stirring address, the keynote of which was "grit." The knowing man, he said, did not pick out the winner by listening to the tales of tipsters or stableboys, but by noting the handicap and record of the horse. The greater the handicap the more certain it was that the horse had got the stuff in him if he won the race. And the man who had lost a limb in the war was likely to have the stuff to win. Mr. Dowling, who has lost both legs, half his left arm, and half his right hand, has risen in life from a state of poverty to that of president of the largest bank in Minnesota, and boasts that he can do everything in life except tie a bow-knot in his tie. In spite of his disabilities he won his bride against two whole-limb competitors, and is the father of healthy children.

#### PLAGUE AT LIVERPOOL AND AVONMOUTH.

THE Ministry of Health announces a fatal case of plague in Liverpool, in a bargeman. From the same source we learn that on the arrival of the s.s. *Framlington Court* at Avonmouth from Montreal on July 22nd, one of her officers, who was ill, was removed to the isolation hospital suffering from bubonic plague. Another officer, we are informed, having suspicious symptoms, was taken to hospital the following day and has been found also to be suffering from the disease. The vessel came from Alexandria to Montreal and called at Sydney, Nova Scotia, on her voyage to Avonmouth. She is being detained by the Bristol Port Sanitary Authority. All the accepted precautions have been taken, while the circumstances are being investigated.

#### GOVERNMENT SALARIES.

A VACANCY is announced for a medical inspector of factories who will be required to undertake medical inspection, under the direction of the senior medical inspector, in factories, workshops, and other places under the Factory Acts. The salary offered is £500 per annum, rising by annual increments of £20 to a maximum of £700 per annum, these figures being exclusive of war bonus; and the appointment is subject to the usual Civil Service regulations as to retirement and pension. The scale of salary will certainly be criticised at the present moment, when the salaries to be obtained in so many directions are considered, as well as the diminished and diminishing purchasing power of the sovereign. We may, however, remind intending candidates that the war bonus to be added to the salaries will be equivalent to an additional one-third, making, roughly speaking, the salaries nearly £700 and over £900 respectively. These, also, are not generous figures, but if the pay is maintained at that rate, and if proper account is given to the value of the pension, the salaries are not distinctly lower than those attached to many Civil Service appointments. It will, of course, be remembered that a war bonus is a distinctly conditional sum, and with a fall in prices might be arbitrarily withdrawn. We cannot attempt to estimate the

measure of this risk. But the Home Office must be served, and therefore it must pay salaries comparable to those paid by other departments. Having regard to the sums mentioned in connexion with posts in certain of the new bureaux, we feel that if the Home Office should later attempt to reduce the salaries which it is now offering it would be involved in a difficult struggle. Moreover, we should expect the salaries of medical inspectors of factories not to come down, but to go up in response to the increasing knowledge of the nation that on trade production depends our very life, while on healthy workers depends our trade production.

#### THE MENTAL NURSE'S WORKING DAY.

IN a recent number of THE LANCET (July 19th) we referred at some length to the conditions of asylum service in so far as these affected medical officers. The head of a large establishment dealing with one group of the mentally infirm calls our attention to another aspect of the matter—namely, that of the nursing of these patients. This question of mental nursing has been under consideration lately by the various authorities, with whom rests the responsibility of making suitable provision; and the two especially concerned with London, its County Council and the Metropolitan Asylums Board, have now adopted proposals for reducing considerably the hours of duty of the staff employed in their institutions. There is, of course, no parallel between ordinary industrial conditions and those of nursing, and many difficulties arise from the inability of certain workers to appreciate this fact. It is, therefore, not surprising that the two bodies just mentioned are experimenting on different lines, and it will be interesting to see which solution of the problem is found the more satisfactory. The County Council has adopted a three-shift system, each shift averaging eight hours on each of six days a week, while annual leave of 14 days is granted. In the institutions controlled by the Metropolitan Asylums Board the weekly total of hours worked is to be 50, spread over five days in each week, while four weeks of annual leave are to be given. The total number of hours on duty is the same under both arrangements—i.e., 2400 per annum. Both methods have their own drawbacks, and other schemes drawn up by other authorities are open to objections probably of equal weight. The chief requirements are to have a sufficient staff on duty at all times without having a superfluity at particular hours, and to provide that every ward shall have a responsible officer in charge of its equipment without its being necessary to check the stock twice a day or oftener as the change over is made. Since the working day, as distinct from the bedtime of the patients, must ordinarily extend over 14 hours—that is to say, 98 hours per week—it will be seen what a gap has to be filled when a charge nurse or attendant is only on duty for 48 or 50 hours. To keep patients in bed 12 hours out of the 24 is feasible in some instances, but can hardly be regarded as a good arrangement for young and active persons. Much will turn upon the spirit in which the staff take advantage of their extended freedom, but if the concessions made now are merely to serve as the basis for further demands the public practice of charity towards the weaker brethren is likely to prove an expensive luxury.



## PSYCHIATRY A HUNDRED YEARS AGO, WITH SOME COMMENTS ON THE PROBLEMS OF TO-DAY.<sup>1</sup>

BY BEDFORD PIERCE, M.D. LOND., F.R.C.P. LOND.,  
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In the latter part of the reign of George III. many treatises on insanity were published, many of them possessing much literary grace. They abound in details of clinical cases, including frequently the appearance on post-mortem examination. Probably the public interest taken in the King's illness helped to stimulate this remarkable output. The volumes are full of interest, containing much that is wonderfully modern, yet it is not easy to enter into the spirit of the age, which was one of conflicting doctrines, old and new.

### *Blistering and Blood-letting.*

During the early part of this period medical treatment was based on the hypothesis that acute insanity was due to inflammation of the brain and its membranes; and it was considered necessary, by whatever method, to reduce the supply of blood to the brain. This can be illustrated by the treatment of George III. himself. It appears that his physicians were unanimous only on one occasion, when they decided to blister the King's legs to relieve his acute excitement! We are told that no beneficial result seemed to follow this operation.

Similarly, the practice of blood-letting was considered of great value. In 1811 Crowther, the surgeon to Bethlem, claimed to have bled 150 patients at one time, without untoward result. He also recommended emetics, quoting a case of hypochondriacal melancholia relieved entirely by their use. The patient took 61 vomits in the course of six months, and for 18 nights one every evening, yet made a perfect recovery! This view of the pathology of mania was supported by the post-mortem findings, which frequently described hæmorrhagic points in the substance of the brain.

### *The Treatment of Insanity.*

The treatment of insanity was founded on the anti-phlogistic theory, which at that time was generally held, and we must not pass hasty judgment on those who conscientiously accepted it. In our own times theoretical considerations have suggested methods of treatment that may be criticised adversely by our successors. For instance, since convalescents frequently possess an increased number of white blood-cells, it has been suggested that an artificial leucocytosis might promote recovery, and turpentine has been injected in order to produce an abscess. This line of treatment is founded on the gratuitous assumption that the leucocytosis in the two cases is similar in nature. The underlying thought is akin to that of Dr. Joseph Mason Cox, who recommended inoculation with small-pox, or the itch, and who said in his "Practical Observations on Insanity," published in 1804:—

"Certain it is that if any considerable commotion, any violent new action, can be excited in maniacal complaints, by whatever means, the mental derangement is often permanently improved."

This little book formulates the teachings of the whole school very concisely. It professes to state rules which will lead to "a more humane and successful method of cure," yet it offends the modern reader from start to finish. We are told that it is essential, in management, to procure the confidence of the patient, or to excite his fear. Pious frauds are recommended, and the case is recorded of a gentleman who imagined that his housekeeper had tried to murder him by means of poison in his shirts. It was arranged that she should be arrested, and dragged away in his presence; a bogus analysis of his shirts was made, which confirmed his suspicions; antidotes were prescribed, and he recovered in a few weeks.

Still more objectionable is the next method, which Cox strongly recommends—the use of a circular swing, invented by Dr. Erasmus Darwin, by means of which a patient, firmly strapped down on a chair or a bed, could be made to rotate round a central beam at any desired pace. It is only fair to

say that Cox gives most impressive instances of the marvellous cures accomplished, apparently, by the swing. It was recommended by many other physicians of experience, and in Morrison's lectures, published in 1828, an illustration of it was given, that every private asylum might be properly equipped.

The striking change in the treatment of the insane which began in the eighteenth century can be traced to three causes. First, there was the great humanitarian movement, which awakened sympathy with all human suffering; secondly, there was the gospel of liberty, equality, and fraternity preached in France, which penetrated even to the prison asylums of Paris; and, thirdly, there was a gradual enlightenment of medical opinion. So far as I can ascertain, actual priority in asylum reform belongs to Italy, where, between 1774 and 1778, Vincenzo Chiarugi, assisted by Daquin of Chambery, introduced new methods in Florence.

But the premier place in reform belongs to Philippe Pinel, who not only transformed the conditions at the Bicêtre and Salpêtrière in Paris, but convinced the world by his writings that the old methods were wrong and futile. His work on Mental Alienation, published in 1801, constituted a fresh departure. He was the hero of a wonderful chapter in the history of medicine, especially as his reforms were carried out during the darkest hours of the French Revolution. It was to the terrorist Couthon, who suspected him of harbouring aristocrats, that he made the remark which stands true for all time: "Citizens, I have a conviction that the insane are only intractable because they are deprived of air and liberty!" The same day he removed the chains from 50 of his patients.

### *"The Retreat," York.*

To pass to our own country, the Retreat, in York, was opened in 1796, long before Pinel's work was known here, through the united efforts of William Tuke and Lindley Murray, both members of the Society of Friends. The latter contributed much, in a quiet way, to the project; but the energetic, strong-minded William Tuke actually carried it through at the age of 60, and in spite of much misunderstanding and opposition. Even his wife is reported to have said, "Thou hast had many children of thy brain, William, but this last one will be an idiot!" In 1812 his grandson, Samuel Tuke, published "The Description of the Retreat," and Sydney Smith drew attention to it in a delightful essay, "Mad Quakers," which appeared in the *Edinburgh Review*.

The Retreat was fortunate in its first physician, Dr. Thomas Fowler, a man of keen scientific spirit, devoted to experimental research. He introduced the solution of arsenic known everywhere as Fowler's solution. He left in manuscript notes of 6000 cases, recited concisely and without bias, both failures and successes. Any drug or therapeutic agent which he investigated was administered singly, under conditions as similar as possible, but, to quote Tuke's description, he was "led to the painful conclusion, painful alike to our pride and to our humanity, that medicine as yet possesses very inadequate means to relieve the most grievous of human diseases." That conclusion, I fear, still holds good.

I should not like to convey the false impression that the Retreat was the only institution in England conducted on humane and enlightened principles; the report to the House of Commons in 1815 gives a very favourable account of Laverstock House, Salisbury, and Brislington House, Bristol. Both Pinel and Tuke stood for a complete change of outlook, involving not merely the abandonment of brutal methods of coercion, but the application of a new principle, which they called "moral treatment." By this they claimed that more could be done for the insane than by drugs and discipline. They asserted that the psychological environment of a patient was no less important than his physical condition.

### *Problems of To-day.*

To come to some of the problems that still vex us to-day. A hundred years ago only three sedative drugs were in use—opium, hemlock, and henbane, and opinion was greatly divided as to their value. Haslam strongly condemned opium, while Pinel suggested that experiments should be made in the use of various drugs, with proper attention to the specific distinctions of insanity. At present more than a hundred sedatives are advocated for sleeplessness or mental excitement, and the problem of their use is more complex than ever before. It is, of course, recognised that chemical

<sup>1</sup> Abstract of the Presidential Address to the annual meeting of the Medico-Psychological Association of Great Britain and Ireland, held in York, July 22nd, 1919.



restraint is generally hurtful, that drug habits are easily acquired, and that sedatives dull the faculties and mask symptoms. Moreover, all physicians in hospitals for the insane know that many newly admitted patients will not recover until the hypnotics given before admission are withheld. Yet, even now, we have no clear and satisfactory data. The extreme opinion of Haslam is shared by many present-day physicians. Prominent among these is Dr. C. K. Hitchcock, formerly the medical superintendent of Bootham Park, York, who, in 1900, published a striking article in the *Journal of Mental Science*, summarising the results of treating 206 cases of acute mania with no sedatives whatever. During the period in which he refrained from their use the rate of recovery was a high one.

At the Retreat we only use narcotics when ordinary measures have long been persevered with and have failed. It is only fair to say that in some exceptional cases great benefit has seemed to follow. Sometimes the intensity of mental suffering calls for immediate relief, even if only temporary. The problem is to find out the value and the limitations of sedative drugs. I think that members of our association could investigate this problem to good purpose. Our patients live under very uniform conditions; in the nursing staff we have trained observers, and the inquiries could be conducted on a sufficiently large scale to eliminate many disturbing factors. At the outset it would seem advisable to limit the inquiry to groups of cases in which psychical factors in ætiology are of secondary importance, such as acute delirium, the nocturnal excitement in senile insanity, or the agitated melancholia of the climacteric. Two such groups might be compared, one taking no drug, the other any drug that might be selected. I am sure that results thus obtained would be of greater value than the individual opinions of even the most observant people.

#### *The Drink Question.*

Another problem which confronted physicians at the beginning of the nineteenth century is still painfully present with us. It is the alcohol problem. The wastage from intemperance is incalculable, yet we face increasing industrial competition with nations such as the United States, which are relatively abstemious. The word inebriate is unfortunate, as it suggests actual drunkenness, whereas there may be dangerous alcoholic addiction without gross signs of intemperance. This morbid condition, of course, is essentially the concern of psychiatry. It is virtually a disease, although when the exciting cause is removed no symptoms may be discovered.

Experience tells us that the potential inebriate should be treated early, or there will be no hope of preventing confirmed addiction. But the Inebriate Acts are practically useless in the first stages of the disorder. If early treatment is to be obtained it must clearly be on a voluntary basis and in strict privacy, for no one can afford to be branded as an alcoholic.

If the suggestion of Mr. Theodore Neild, of Leominster, were adopted, and a consultation bureau were established in every large centre, much might be done.

#### *Clinics for Early Treatment of Mental Cases.*

But inebriety and drug addiction should not be considered apart from other forms of mental instability. The legislature is taking up the subject of the establishment of clinics or hospitals which will provide early treatment for unconfirmed mental trouble; and the proposed consultation bureaux might be affiliated with these new clinics or form a special department of them.

Unfortunately, many patients decline all treatment and refuse any advice. For these some form of compulsion should be possible. I suggest that any new laws relating to inebriety might provide three separate procedures in dealing with such patients. First, a judicial warning, which might be given privately, when the justice has satisfied himself that the patient is in grave danger of alcoholic or drug addiction. Secondly, if warning and advice failed, the appointment of a guardian, who would be legally authorised to stop supplies, to forbid the sale of liquor to the patients, and to restrict his liberty within prescribed limits. Thirdly, internment in a farm colony or other approved home.

#### *Progress of Psychiatry.*

In comparing the psychiatry of 120 years ago with that of to-day it would be easy to show that progress has been slow

and disappointing. No specific treatment of mental disease has been discovered, save in the case of that arising from thyroid insufficiency; and it is doubtful whether the recovery rate has improved. It is probable that, a century since, the condition of patients in the more enlightened institutions did not greatly differ from their condition to-day.

The medical literature of that period, moreover, contains much that anticipates modern teaching. Haslam, for instance, describes both dementia præcox and general paralysis. The essential mystery of mental disease baffles us now as it did then. Nevertheless, we have achieved a great deal. A vast amount of progress has been made in the anatomy and physiology of the nervous system, in pathology, bio-chemistry, and in many departments of science which intimately affect our subject.

#### *War Neuroses.*

The war has thrown some light upon one aspect of it. We have learned that symptoms formerly termed hysterical or functional are not peculiar to the frail or sensitive, but occur in strong men, that they continue long after any recognised exciting cause has ceased to operate, and that they frequently disappear suddenly as if charmed away. Unfortunately, we cannot analyse the causes of their disappearance, which is ascribed to multifarious agencies, suggestion, psycho-analysis, faith-healing, hypnotism, and ordinary hygienic measures. There is no organic lesion, and the illness, though often accompanied by physical disability, is clearly a disorder of the mind rather than the body. There is urgent need to establish a scientific therapy, that appropriate treatment may be selected with confidence.

We have learned, too, that the functional element in definite organic maladies must not be overlooked. Patients with certain diseases, such as disseminated sclerosis, frequently present symptoms that do not correspond to the extent of the organic lesion.

#### *Conclusions.*

These observations may throw some light on various problems of psychiatry. Do not many of our sudden recoveries correspond to the recoveries in the psychoneuroses? Are not many of our chronic cases akin to that of the confirmed neurotic, with this difference, that in the one, the disordered function affects intelligence and emotion, and in the other some lower nervous mechanism such as vision and muscular coördination? This thought, of course, does not carry us far, but it suggests that the study of hysterical phenomena may help us greatly, and it reminds us to lay due stress on psychical, as well as physical, factors, in the ætiology of mental disease, the attempt to separate mental and bodily factors must inevitably lead to error, since they constantly react on one another.

Be this as it may, we have, at any rate, left behind the doctrine expressed in the dictum: "All insanity is either toxic or traumatic." Just as Tuke and Pinel considered moral treatment of paramount importance in promoting recovery, so we recognise the profound importance of mental strain in the causation and development of certain forms of mental disorder.

#### PARIS.

(FROM OUR OWN CORRESPONDENT.)

#### *Mobilised Students and their Medical Studies.*

WAR has left cruel gaps in the student ranks of all professions, especially perhaps of medicine, for all young robust medical students were sent to the very front, whether to the aid-posts or among the squads of stretcher bearers. The survivors are, on account of their age, still mobilised for one or two years, since the term of compulsory service is three years. A large number of older students due for more or less immediate demobilisation are kept, since the armistice, by the Army of Occupation in Germany. The War Minister, at the request of the heads of the medical profession, has repeatedly taken steps to ensure the return of these students and the completion of their term of service in a town with a medical school. In December, 1918, he gave instructions for the recall of all students mobilised 54 months—i.e., already in military service before the war—and of others mobilised 51-53 months who had served



32 months or more in a company of infantry or a squad of stretcher bearers, or had been wounded short of being invalided out. Unfortunately, these limited measures affect only a handful of individual students. The Ministry of War is, in fact, placing great obstacles in the way of their repatriation. A recent decision, ostensibly an improvement on the earlier, introduces only nominal alterations. It adds to the categories already cited medical students of any age posted to other duties than those of the Service de Santé—students, that is, who preferred to enter the infantry, artillery, or air force to making use of their medical training—a very limited number in all. The medical societies and faculties have resolved that all medical students without exception shall be recalled to continue their medical service at some town containing a medical faculty, where they can pursue their studies and still perform garrison duty.

#### *Requisition of Civil Doctors.*

To ensure medical care in regions deprived of doctors by mobilisation the Ministry of War during the two years preceding the armistice had charged with this service mobilised medical men of the later age-groups. These men are now almost all demobilised, and in order to supply their place in localities where the population is scanty or largely indigent the Minister has decided to avail himself of the service of civil volunteers, offering them a monthly stipend of 300 fr., capable of increase in exceptional cases.

#### *Acoustic Troubles in Musicians.*

Dr. Castex has published an intriguing study of the auditory disturbances found in musicians. These are not infrequent, but the author has failed to determine whether the practice of the musician constitutes an actual predisposition in comparison with other occupations. He recognises that the hearing of musicians acquires a special acuity, a fact sufficient perhaps to explain its fragility. Certain musicians, for example, perceive at the same time as the note struck the whole gamut of natural overtones. Among the disturbances noted by M. Castex, some concern the timbre, others the pitch, and others again the intensity of the sound. Sometimes a slight degree of sclerosis only allows of the perception of shrill notes or of the deep tones of the brasses. In other cases there is double audition, the two ears perceiving a different note, the interval between them varying from a semitone to an octave. Others are victims of persistence of the notes, as though the loud pedal of the piano is depressed. Modifications of timbre make the tone metallic or nasal in quality. Painful increase in audition is not uncommon among deaf musicians. They may fall in a faint as a result of intensely loud notes (organ, fanfare of trumpets), when the ear has lost its damping mechanism. The prognosis of these affections depends on the fleeting character or otherwise of the auditory affection, but it is to be noted that incomplete deafness does not prevent a good musician from appreciating the diverse turns and qualities of notes. On the deafness of celebrated musicians, Jean Jacques, Schumann (obsessed by a *fa*), Beethoven himself, it is difficult to express an opinion in the absence of a technical examination, but—and therein is well seen the secondary rôle in music of the sense of hearing—the finest works of the master were written after he had become finally deaf, when (as he wrote himself) “he knew the divine hour in which the composer hears nought but his musical inspirations.”

**DEATH OF THE HON. TARAVETH MADAVAN NAIR, M.D. EDIN.**—Dr. Taraveth Nair, who died in London recently, was prominent in Madras both as a medical man and a political thinker. Educated at the University of Edinburgh, he graduated M.B., C.M., in 1894, and was for some time house surgeon at the Sussex Throat and Ear Hospital, Brighton. In 1896 he proceeded to the M.D. and C.M. degrees of his university, and on his return to India he became a political leader with no little influence. He arrived in London a few weeks ago in a serious condition of health, and succumbed to diabetes, a disease on which as recently as 1914 he had published. This book is a conscientious and careful summary of our present knowledge and theories. In consequence of the frequency of diabetes in India Dr. Nair was of the opinion that organised research into the ætiology and pathology of the disease ought to be conducted in that country on the lines of the anti-tuberculosis campaign in England.

## WOMAN IN INDUSTRY.

(Concluded from p. 169.)

LAST week we summarised the memorandum by Dr. Janet Campbell on the Health of Women in Industry, forming part of the comprehensive Report of the War Cabinet Committee on Women in Industry (Cmd. 135, price 1s. 6d.), dealing then with the effect of industrial employment, first, on the personal health of the woman worker and, secondly, on the function of motherhood. There remains for notice the important section of the memorandum bearing on the means for mitigating the admitted evils, and here, as before, we follow closely the actual words of Dr. Campbell's very clear exposition.

#### IV. SAFEGUARDS AND REMEDIES.

During the war the employment of women has been greatly modified. The number of employed women has increased, they have been employed as substitutes for men in men's work, restrictions with regard to hours have been removed—overtime being general at the beginning of the war and night-shifts usual throughout—and wages have increased to subsistence level in almost all cases and in excess of this in some. The result of these changes on the health of women workers has been summed up in a number of memoranda and reports which have been issued by the Health of Munition Workers Committee. An examination was undertaken by this committee of 2500 munition workers with a view to ascertaining the effects of employment on their health. The actual findings were summed up as follows:—

(1) That there is a definite burden of fatigue which, though relatively small in amount as regards severe fatigue, is considerable as regards that of a less severe character.

(2) That the fatigue and ill-health are less than might have been anticipated, having regard to the hours of work and the nature of the employment, and that this is due, broadly speaking, to the greatly improved attention to the health and welfare of the workers.

(3) That fatigue and sickness are greatest where heavy work is combined with long hours at the factory and associated with onerous domestic duties after factory hours.

(4) That unless brought under control the considerable amount of moderate weariness and ill-health now present is likely to reduce immediate efficiency, and also exercise, in many cases, an injurious effect on subsequent health and on capacity for maternity.

Dr. Campbell's comment on these findings is as follows:—

“The fact that the women were able to stand the work as well as they did was attributed (a) to good wages, enabling them to feed and clothe themselves properly; (b) to healthy conditions in the factories; and (c) to welfare and health supervision, including the provision of protective clothing, canteens, rest-rooms, surgeries and medical advice. It may confidently be asserted that if similar demands had been made upon women working under pre-war factory conditions they could not have been met to the same extent, if, indeed, they were met at all, without causing an immensely greater amount of fatigue and permanent injury to the health of women and girl workers. As it was, most women enjoyed the more interesting, active and arduous occupations, and in many cases their health improved rather than deteriorated. Medical officers of factories and welfare supervisors have pointed out the beneficial effects of open-air conditions (yard work, trucking in filling factories, &c.) on the general health, and the success with which properly selected women have undertaken work involving the lifting of weights, heavy machine work, and even forge and foundry work, without untoward physical consequences. The whole experience tends to show that light sedentary work is not by any means always the most suitable for women, that operations involving a change of posture are preferable, and that, given adequate nutrition, many women would have better health and greater physical vigour if they followed more active occupations.”

#### *Restrictions on Women's Labour.*

The question of restrictions on women's labour then claims attention. The Health of Munition Workers Committee examined a number of witnesses on this point.

Various of these witnesses, Dr. Campbell tells us, urged the abolition of all special protective legislation for women after



the war. They consider that women ought not to be prevented on physical grounds from entering any trades open to men (unless sex injury can be proved, as in the case of lead poisoning), or from working similar hours to men, or from engaging in night-work. It is suggested that the conditions of employment should be improved for men and women equally and that it is unfair to handicap a woman economically by restricting the conditions under which she may work. There is some truth in these arguments, but, on the other hand, it should be remembered that women as a class are still, unfortunately, unorganised and therefore in a far more helpless position than men in the face of unreasonable demands on the part of unscrupulous employers; to abandon all restrictive legislation might still lead to the exploiting of women and the return of some of the abuses which this legislation was designed to remove. The women factory inspectors examined were unanimous in desiring the re-imposition of some restriction of women's labour, though it was considered that a revision of the Factory Acts was desirable.

#### *Shorter Hours.*

The general opinion of the witnesses examined appeared to be that a 44-hour week was advisable for women, with a Saturday half-holiday. Attention was called to the advantage of a short break in the morning spell, especially when work begins early and where there is no breakfast interval, as workers often have no time for a proper meal before leaving home. In the Report of the Chief Inspector of Factories and Workshops for 1917, which Dr. Campbell quotes, Mr. Bellhouse discusses the advisability of commencing work after instead of before breakfast, and sets out the following results of the experiment at Paisley, which are typical of the findings elsewhere:—

(1) Bad time-keeping in the morning has almost disappeared.

(2) Sickness amongst the girls in the first hours of the morning, which was common when work started at 6 A.M., has largely ceased.

(3) Reduction in output is hardly noticeable in departments where it depends on the activity of the worker, and not in proportion to the drop of one hour per day, even in departments where output depends chiefly upon machine hours.

(4) Better work is secured and maintained.

The conclusion drawn is the eminently reasonable one that shorter hours would result in better time-keeping, especially where married women are concerned, and that in most trades and processes output would not suffer and might even improve.

#### *Night Work.*

Night-work, also, comes in for its share of condemnation in Dr. Campbell's memorandum. The conclusion arrived at from the examination of competent witnesses was that it should not be permitted to women after the war, and, in the case of men, it might also be injurious and should never be resorted to except in case of necessity. Night-shifts, and especially permanent night-shifts, Miss Martindale pointed out, were particularly harmful to women with domestic responsibilities, as it was more difficult for them to obtain adequate sleep; they invariably did their own house work during the day and their rest was subject to continued interruption; their work became inferior in quality and their health suffered. Evidence showed that overtime had an injurious effect on workers, and, if continued for a long period, reduced rather than increased the output. It was particularly injurious to girls of 14 to 16 years of age and to women between 30 and 40.

Although some regulation of women's labour is thus likely to be continued after the war, Dr. Campbell foresees the time when the need for special protection for women and girls will disappear in large measure, a revision of the existing Factory Acts leading to a levelling-up of the conditions under which men work to the standard which is now considered desirable for women.

#### *Medical Supervision.*

The whole position in regard to medical supervision is then surveyed. Provision for medical inspection and supervision has already been made by the local education authority for persons up to 18 years of age. It is presumed that every boy and girl will have been under regular medical care and supervision during the whole of school life and will have received treatment for such physical defects as have revealed

themselves. With regard to industrial workers direct supervision was almost non-existent before the war. Experience of war conditions has emphasised the need for more effective supervision and for energetic research into the causes of industrial fatigue and the methods of preventing disease directly or indirectly due to occupation. Factory hygiene must, indeed, become an integral part of the general system of preventive medicine, which is likely to be the most important branch of medicine of the future. For this purpose an adequate service of factory medical officers is needed, having no duties of treatment, but charged with the general oversight of factory conditions, hygiene, and health. With this may be associated the "welfare" service in individual factories, responsible to the factory management, and partly occupied in carrying out recommendations made in regard to the health of the workers.

The duties of the factory medical officers, as sketched out in the memorandum, comprise the supervision of (a) the general hygiene of the factory, including sanitation, ventilation, lighting, heating, &c.; (b) the particular hygiene of processes likely to involve hazard, discomfort, or injury to workers; (c) the maintenance of surgeries, first-aid equipment, rest-rooms, &c.; and (d) the general health and welfare of the workers, men, women, and young people, with particular regard to the conditions under which women and young people are employed. Further, it should be the duty of the factory doctors to investigate and report upon any trades, processes, or forms of work which appear to lead to general or specific ill-health or to shorten unduly the lives of workers employed therein. They should act in an advisory capacity only, and should not undertake the treatment of disease in any form.

As to the administration of factory supervision Dr.

Campbell writes:—

"Such a service might conceivably be established centrally under the Home Office, and locally under the sanitary authority. This would presumably entail the formation of a strong central Medical Department at the Home Office, staffed by men and women doctors, and the appointment of a considerable number of medical officers (women as well as men) to act as local medical inspectors of factories. The nucleus of such a service might possibly be drawn from the ranks of the certifying factory surgeons, whose present duties would obviously be superseded in one direction by the school medical officers, and in the other by the factory medical inspectors. The suggested means of providing for the medical inspection of factories would make it necessary to enlarge the powers and duties of the medical officer of health in connexion with factories and to provide him with a sufficient staff to undertake their adequate inspection and supervision, this branch of his work being under the general control of the Home Office in much the same way as the medical officer of health in his capacity of school medical officer is under the supervision of the Board of Education. Such an arrangement would have the obvious advantage of combining in one local administration the whole of the powers and duties relating to health in any one area, of preventing overlapping of function, and of promoting smooth and rapid action."

Concerning ante-natal and post-natal employment, such evidence as there is suggests that suitable employment under reasonably good conditions is beneficial rather than harmful. As the result of an investigation undertaken by the Women's Industrial Council into the "quality of maternity" in relation to industrial occupation, it was stated that there was practically nothing to choose in quality of maternity between those who went to work and those who stayed at home. Medical witnesses agreed that light factory work was not in itself objectionable, and that it was better for a woman to work than to be under-fed.

For the sake of the mother and the child it is clearly desirable, the Memorandum states, that the mother should have not less than one month of ease and comfort in order to complete her own recovery, and that she should be in a position to nurse her child for the normal period. No extension of Section 61 of the Factory and Workshop Act of 1901 will in itself secure this unless at the same time financial assistance is given to the mother to enable her to remain at home without anxiety.

#### *Grants in Aid of Maternal and Infant Welfare.*

In order that women might be enabled to refrain from work at least sufficiently long after their confinements as to ensure



the proper care of their infants, it was suggested, in the evidence taken by the Health of Munition Workers Committee, that the desired end could be reached by means of adequate grants in aid made to the mother at the time of and subsequent to her confinement. It was the general opinion that these grants should be non-contributory, that they should be available for all women below the income-tax limit (some witnesses preferred to impose no limit), that they should preferably cover a period of nine months after confinement and perhaps one or two months before, but if the cost of this was prohibitive, that they should be for periods of six or three months after confinement, the three months after being regarded as the most vital period. It was recommended that a mother in receipt of grants should be prohibited from seeking employment away from home.

The probable expenditure involved in several alternative schemes was estimated. If grants were given it was considered that they should be available for all women now entitled to maternity benefit, and to these should be added the wives of men who were excepted from insurance under the Act, as there would be no logical reason for excluding them, and their need was often great. This would cost the Exchequer between 5 and 6 millions a year if the benefit was available for a period of six weeks, and between 11 and 13 millions a year if it was available for 13 weeks. It should not be forgotten that these grants would necessarily be supplementary to the existing benefits under the National Insurance Act.

The specific objects of the proposed grants would be, in Dr. Campbell's words:—

(a) To ensure efficient midwifery and nursing at the time of the confinement, and thus to prevent avoidable injury to the mother's own health or to the infant.

(b) To enable the mother to secure adequate nutrition and to obtain the period of rest necessary for complete recovery after confinement.

(c) To reduce infant mortality by ensuring as far as possible regular breast-feeding and the personal care of the mother.

The Memorandum does not rashly assume that the grants would have these desirable effects. If the professional fee were increased it does not follow that more efficient treatment would be obtained, and money spent on the untrained nurse or handy-woman is useless if the intention of the grant is to ensure skilled nursing. It is also doubtful whether grants would make a substantial difference on the infant mortality rate apart from improvements in domestic hygiene, housing, and environment.

What actual difficulties might arise in practice the Memorandum frankly discusses, and with a transcript of these passages we close our survey:—

"The administration of such grants would be difficult and costly. At present there is no machinery for this purpose, though a nucleus might be found in the staff of the local sanitary authority. Presumably the grants would depend on the continued breast-feeding of the infants, a matter not easy to prove. Visits of inspectors (possibly health visitors) to the home, or of the mother to the maternity or infant welfare centres would be necessary, but even so, little control could be exercised over the spending of the money, especially in the later months. If the grants covered a period of six months or longer no mother could be expected to spend the money on herself or on her own food, it would almost necessarily be merged into the family income. The family, as a whole, would gain in consequence, but though this would be a valuable result as far as it went, it would not be fulfilling the express purpose of the grants and might be obtained more satisfactorily in other ways.

"On the whole, the precise effect it is desired to obtain would either not be obtained or would be obtained only in part, while the cost of the improvement made in maternal health and infant welfare would probably be out of all proportion to the results.

"The main criticisms in regard to maternity benefit are that it is an *ad hoc* unsupervised grant, entirely unrelated to municipal provision for maternal welfare and not available for a certain number of women who are perhaps particularly in need of it. Further, it is administered under the Insurance Act by Approved Societies and not by the sanitary authority. Instead of setting up a new system of maternity grants overlapping the existing maternity benefit and administered by another Department of State, maternity

benefit should be transferred to the sanitary authority; it should be placed on a non-contributory basis, made available for all women under the income-tax limit and increased to at least the 60s. now paid to the employed wives of insured men.

"It is idle to expect much improvement in the professional care of the mother and child until we have wholly efficient medical and midwifery services, in addition to a more just and equitable distribution of maternity benefit. Such services could only be organised under a competent health authority. It is essential that the mother should be able to secure a doctor or midwife, whichever she prefers, whose qualifications in this respect are beyond dispute. Further, there should be a full exercise by the sanitary authority of the powers which already exist for the provision of food and milk, advice and treatment for mother and child, health supervision, &c., and their extension as and when found necessary.

"It is submitted that the provision of large grants in aid, with no assurance that they will be applied to the specific purposes for which they were awarded, is an unscientific method of dealing with the problem of maternal and infant welfare, and that in any case to give such grants before securing an adequate health and medical service is unsound administration. If grants or pensions in addition to a revised maternity benefit prove to be necessary, it would be suitable to entrust the administration of such grants to the central and local health authorities responsible for the public health service."

In this short account of the Memorandum many interesting and instructive details have had to be omitted. Anyone interested in the subject would be well repaid for the time spent in the perusal of the whole Memorandum—indeed, of the whole Report.

## URBAN VITAL STATISTICS.

(Week ended July 26th, 1919.)

*English and Welsh Towns.*—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had been 10.0, 10.1, and 9.0 in the three preceding weeks, rose to 10.3 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual rate was 10.5, or 1.3 per 1000 above that recorded in the previous week, while among the remaining towns it ranged from 3.0 in Swindon, 3.8 in Gloucester, and 4.4 in Lincoln, to 15.1 in Bootle and in Bury, 15.5 in Darlington, and 19.7 in Carlisle. The principal epidemic diseases caused 134 deaths, which corresponded to an annual rate of 0.4 per 1000, and included 54 from infantile diarrhoea, 33 from diphtheria, 22 from measles, 12 from whooping-cough, 11 from scarlet fever, and 2 from enteric fever. Measles caused a death-rate of 1.2 in Newcastle-on-Tyne, 1.6 in West Bromwich, and 2.2 in Barnsley. There were 2 cases of small-pox, 1526 of scarlet fever, and 1140 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 5, 1438, and 1100 respectively at the end of the previous week. The causes of 21 deaths in the 96 towns were uncertified, of which 5 were registered in Birmingham, 4 in Gateshead, and 2 in Liverpool.

*Scotch Towns.*—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had been 9.9, 11.0, and 10.6 in the three preceding weeks, rose to 11.1 per 1000. The 222 deaths in Glasgow corresponded to an annual rate of 10.3 per 1000, and included 5 from whooping-cough, 4 from measles, and 2 from infantile diarrhoea. The 82 deaths in Edinburgh were equal to a rate of 12.7 per 1000, and included 3 from diphtheria, 2 from measles, and 1 from infantile diarrhoea.

*Irish Towns.*—The 89 deaths in Dublin corresponded to an annual rate of 11.5, or 2.5 per 1000 above that recorded in the previous week, and included 2 each from diphtheria and infantile diarrhoea. The 92 deaths in Belfast were equal to a rate of 12.0 per 1000, and included 2 from scarlet fever and 1 from infantile diarrhoea.

**NATIONAL LEAGUE FOR HEALTH, MATERNITY AND CHILD WELFARE.**—The following resolution was passed unanimously by the League at its last meeting:—

"That this League calls upon the Government to continue some reasonable control of the liquor traffic in the interest of the health and welfare of the mothers and infants of the nation."

The National Association for the Prevention of Infant Mortality, a constituent section of the League, has passed a resolution dealing with the milk-supply:—

"That this Association calls the attention of the Government to the urgent necessity for reconstruction of the milk-supply throughout the country, with regard to (1) its greater purity, (2) freedom from infection, and (3) its seriously diminishing volume. This Association would remind the Government that both the quality and quantity of the milk-supply of the United Kingdom are at present in a deplorable state, and that the earliest attention to the problem is vital to the babies and children of to-day, who will bear the burden of Empire in the future."



## Correspondence.

"Audi alteram partem."

THE COÖRDINATION OF CLINICAL RESEARCH:  
THE POSITION OF PSYCHIATRY.

To the Editor of THE LANCET.

SIR,—In THE LANCET of June 21st a letter appeared from me under the above heading, in the course of which I expressed the view that the time was ripe for a conference between local authorities responsible for the care of the insane, the governing authorities of the local university, and of the infirmary, and representatives of the Board of Control, with a view to the establishment of a clinic in psychiatry. Since that date such a conference has taken place in Cardiff, at which the main features of the proposed amending Bill to the Lunacy Laws (which will allow of treatment in early cases of insanity without orders and certificates—in fact, will permit of the establishment of these clinics) were outlined, and the lines upon which the clinic could best be developed in Cardiff were sketched. I understand that similar conferences have been held at Newcastle and at Oxford, and I believe will be held at other university centres. The proposed amending Bill has not yet been adopted by the Government. It may be expected that the proposition will be that the Government should find, say, 50 per cent. of the cost of maintenance, and perhaps as much of the annual charges for liquidation of the capital expenditure, the local authority finding the balance. The answer to the question, Who is to find the money for site and erection of the buildings? is not forthcoming that I know of. I cite from the *Western Mail* of July 18th as follows, in regard to the Cardiff conference:—

The conference was unanimous in the view that a clinic in psychiatry was absolutely necessary, alike in the interests of all sections of the community, and of teaching; and it was resolved that a committee of the authorities represented be formed, to act with the advice and coöperation of the Board of Control, to promote the object in view.

It is obvious that the development above outlined is one of the first importance to the community at large, aiming, as it does, at the prevention of what is probably the most terrible of the ills to which the flesh is heir. In the erection of these clinics, each locality concerned must, in the main, bear its own burden; and there is, therefore, scope for the exercise of that spirit of munificence on the part of private individuals which has never failed to manifest itself in South Wales when an appeal has been made on behalf of suffering humanity.

Some account in due course will be given of the experience gained in treating some 1700 cases of mental disorder amongst troops at the Cardiff City Mental Hospital in its capacity as the Welsh Metropolitan War Hospital (Mental Division). These cases have been admitted and detained on the authority of Army Council Instructions ("for observation and disposal"), but without any orders or certificates or formalities of any kind. I wish I could convey some idea of the gratitude and relief which the relatives of these men have experienced and expressed for this blessed immunity. Yet very large numbers of these patients, had they not been serving soldiers, would have been placed under orders and certificates and have gone through the channel of the Poor-law. Allow me the following citation from a letter just received from a distinguished American psychiatrist, to whom I complained of the woeful backwardness of this country in psychiatry:—

"Perhaps, as a native of England, I may agree with you, without offending taste, that British psychiatry is behind the times in many respects. The Phipps Clinic at Johns Hopkins and the Psychiatric Hospital in Boston have both been stimulating factors in advance, not to mention several other like institutions."

Are we to understand that this (still great) country will continue, either through poverty of ideals or poverty of purse, or both, to remain passive in this matter, and recognise no obligation as a State in regard to the actual finding of money for the erection of these clinics, but relegate this responsibility to the local authority, or trust to the generosity of those to whom the war has brought wealth? I fear the amending Bill referred to will not be dealt with by the Government this year unless it judges the force of opinion to be such that to ignore it would be inexpedient.

I am, Sir, yours faithfully,

EDWIN GOODALL.

Cardiff City Mental Hospital, Cardiff, July 26th, 1919.

NATIONAL HEALTH INSURANCE AND THE  
MEDICAL GUILD.

To the Editor of THE LANCET.

SIR,—Dr. Frederick Porter's letter in your issue of to-day, containing the suggestions of the Scottish Medical Guild with regard to National Health Insurance, is a timely one. The hulk of non-panel practitioners are determined not to sell their freedom by entering into contractual relations with Insurance Committees. They consider that their fees, their times and methods of attendance, and so on, are private matters for mutual arrangement between themselves and their individual patients, and that at any time, if the patient or doctor be dissatisfied, either party should be able to bring the professional relationship to an end at once, without any recriminations or charges one against the other. It is this freedom of choice and power to change which gives adequate protection to the interests of both parties. The question of the *freedom* of the medical profession and the public in their mutual relations is the *root* issue in this matter.

The scandal to which Dr. Porter alludes in the latter part of his letter should certainly be brought to an end. It is grossly unfair that insured persons, who in large numbers prefer and are prepared to pay for private medical attendance, should in effect be subjected to a money fine which is distributed gratuitously amongst panel practitioners who have done nothing to earn it. Another way of bringing this scandal to an end would be to permit every insured person who preferred obtaining and paying for medical attendance himself to *renounce altogether* the "medical benefit" portion of the Act, and in consideration of the money loss thereby incurred by him to have his "sickness benefit" (i.e., sick pay while he is prevented by illness from following his occupation) *proportionately increased*.

It is this sick pay that is the most useful and desirable part of the Act for many insured persons. Those who preferred to continue obtaining "medical benefit" on the panel system would, of course, be free to do so, and their sick pay would remain as before.

I am, Sir, yours faithfully,

Hampstead, N.W., July 26th, 1919.

HENRY SHARMAN.

THE ORIGIN OF LIFE: THE WORK OF THE  
LATE CHARLTON BASTIAN.

To the Editor of THE LANCET.

SIR,—Taking note of a letter, published in your issue of May 29th, from the son of the late Dr. H. Charlton Bastian, and of another in the same number from Sir Ronald Ross, referring to the brave battle for the proper discussion of the question of spontaneous generation carried on all his life by Dr. Bastian, I venture to add my tribute to his memory in appreciation of that long life of persistence in the advocacy of a conviction at variance with that of the scientific men of his day.

In the flush of a newly born activity in the field of biology, in the rise of the great science of bacteriology, the illogical deductions made from the facts set forth by Pasteur and Tyndall passed current as a valid and conclusive negation of the reality of abiogenesis. But according to the professions of modern methods in science you can affirm a fact by demonstration, but to deny and disprove an asserted fact is a very different proposition. Pasteur and his followers proved to the hilt that they could destroy life in certain fluids and prevent its resurrection, but that this disproved the possibility of the birth of life in any kind of media in any combination of chemical elements by no means followed. Yet bacteriologists behaved for a generation after Pasteur as though he and his followers had established this position. In the last one or two decades a change has set in and very few men of science make any such claims; a very large number cannot accept the continuity of cosmic processes as proven unless they accept the birth of the organic from the non-organic and the birth of life from the lifeless.

Dr. Bastian some years before his death sent me some salts and solutions, which, combined according to his directions, examined microscopically and by culture to my satisfaction and sterilised by heat under pressure in closed tubes, exhibited after varying periods of time various forms indistinguishable under the microscope from spores and



bacilli. These were not present before the tubes were sealed. They took various stains, some not so deeply, but on the whole offering little ground for discrimination between them and bacteria. They, however, with the culture media at the command of a fairly well-equipped laboratory presented no evidence of growth.

I had no explanation to give other than that advanced by Dr. Bastian, but inasmuch as we were unable to get a culture and because the simple chemical constitution of the fluids in which they appeared was not in accord with what I have been accustomed to associate with the manifestations of life, I was unable to agree to Dr. Bastian's conclusion that these were not merely simulacra of life, but life itself.

He had, as I look at it, the best of the argument on orthodox scientific grounds. I could not explain the results, and insufficient as I regarded the evidence to be I could only oppose to it a disbelief founded on a theoretical objection, the commonly accepted view of life as being made up of complex molecules interacting upon one another and on their environment in such a way as to exhibit continuous orderly proliferation which we designate by the term "reproduction." A current number of *Science* (June 27th, 1919, N.S., xlix., 1278) contains a paper by Dr. MacDougal which deals with the nature of these molecules. Incomplete as was Dr. Bastian's own experimental evidence and that of the work carried out under my own supervision by those skilled and of long experience in bacteriological technique, I was, under the circumstances, able to offer only a still more unsatisfactory report. Full reports of the work of myself and colleagues were made to Dr. Bastian, and doubtless his son can find them among his papers. The conception of the chemical composition of living matter is largely hypothetical, and the utilisation of all known culture media and devices was not performed. I consider Dr. Bastian offered to the world sufficient evidence to make further investigation an imperative duty on those having the requisite skill and the opportunity to continue the work. His conclusions have never been answered in a way to reflect credit on men of science. I am, Sir, yours faithfully,

JONATHAN WRIGHT.

Pleasantville, Westchester County, New York, July 7th, 1919.

*To the Editor of THE LANCET.*

SIR,—With reference to the recent letters in your columns on the subject of the Origin of Life, I would like to thank all those who have kindly contributed to the discussion and have themselves repeated certain experiments. It would take up too much of your space to reply in detail to all your correspondents. May I point out, however, that Professor W. D. Halliburton is mistaken in supposing that I am not fully acquainted with most, if not all, of the published reports to which he refers. The whole literature of the subject is very familiar to me, not only on account of my father's work, but because I have always taken an interest in the subject myself, and, I hope, without prejudice. Given a primary creation of living organisms, by whatsoever means this may have been brought about in the long-ago past, we are faced with the difficulty of believing that existing micro-organisms are in every case the lineal descendants thereof. It seems, in fact, not unreasonable to suppose that this same genesis of living matter may be constantly occurring to-day under suitable conditions of radiant energy, temperature, season of the year, and suitable combination of the necessary constituents of protoplasm; though, of course, the earliest stages of such a process would necessarily take place beyond our ken in Nature's laboratory, and would be quite invisible even with the aid of the most powerful microscope now available.

With regard to the negative results of the Hon. H. Onslow's researches, referred to by Professor Halliburton, when he says, "This work settles the question of spontaneous generation (in Dr. Bastian's sense) once and for all," it is a significant fact that my father was quite familiar with such simulacra and pseudo-organisms as are described by Mr. Onslow, Prof. Benjamin Moore, F.R.S., Mr. Sydney G. Paine, and others. He frequently found these and nothing else in whole series of his experimental tubes, and recognised them as such. But he did not find that these pseudo-organisms multiplied under the cover glass or in nutrient media after the manner of bacteria and fungi. Moreover, I suggest that Mr. Onslow kept some of his "white solution" tubes far too long—three years in some cases—before finally opening them

and examining their contents. Is it surprising, therefore, that no living organisms were found, but only dead ones? For bacteria in a non-nutrient medium cannot subsist and flourish indefinitely by living on one another.

On referring again to Mr. Onslow's detailed account of his experiments, as published in *Proceedings of Royal Society (B., vol. xc., p. 266)*, I notice that his "yellow solution" was composed of dilute sodium silicate and pernitrate of iron in addition to the other ingredients as contained in the "white solution." This may very well account for his failure to confirm my father's results as described in "The Origin of Life." Professor Hewlett's results, to which Professor Halliburton also refers, if they did not go so far as to prove the truth of archebiosis, certainly do not disprove it, as he himself says in *Nature* of Jan. 22nd, 1914, p. 579. On the other hand, we have the testimony very largely in favour of my father's doctrines from M. Albert Mary, of Paris, in his letter published in your issue of June 28th.

I am, indeed, grateful for the great amount of time and trouble taken by the various observers who have been good enough to investigate these matters for themselves. In view of the importance of the subject, however, it is sincerely to be hoped that experiments on somewhat more extensive lines may now be carried out and that some of the funds from which we hope so much for scientific research may be devoted to this object, so all-important from many points of view, but particularly so from the point of view of medical science.—I am, Sir, yours faithfully,

W. BASTIAN,

Chesham Bois, Bucks, July 26th. Surgeon Commander, R.N.

EDINBURGH UNIVERSITY ROLL OF HONOUR.

*To the Editor of THE LANCET.*

SIR,—It is proposed to publish a roll of honour and war record of the University of Edinburgh, and a letter asking for information as to war service, promotions, honours, &c., with dates, is being sent to all graduates and to the relatives of the fallen whose addresses are known. The number of medical graduates who have given their lives is large, and it has been found difficult to obtain the addresses of their relatives. Will those interested in the forthcoming publication communicate particulars to the undersigned?

I am, Sir, yours faithfully,

JOHN E. MACKENZIE, Major,

Editor of the Roll of Honour.

University of Edinburgh, July 15th, 1919.

THE REMUNERATION OF MEDICAL MEN  
SERVING ON PENSIONS BOARDS.

*To the Editor of THE LANCET.*

SIR,—In a recent issue of THE LANCET there was a letter stating that the Cheltenham practitioners had held a meeting and formulated the terms under which they were willing to serve on Pensions Boards. The majority of us now serving as members on Pensions Boards feel that the present fee of £1 1s. per session of two and a half hours and often longer is quite inadequate payment for the work done. The cases, especially those of suspected tuberculosis, require most careful examination and consideration. There is a feeling amongst us that a good deal of the clerical work of a non-medical character should be done by a clerk. Every few days more clerical work is thrust upon us, but the fees are not raised, although we now have to spend a good deal of extra time in each case. Many of us are demobilised from the R.A.M.C. and while on the look-out for permanent work we are trying to keep the wolf from the door by doing part-time work. The present remuneration is not enough to meet the increased cost of living.—I am, Sir, yours faithfully,

July 28th, 1919.

MEMBER OF THE BOARD.

ACUTE OEDEMA OF THE FACE DUE TO  
POTASSIUM IODIDE.

*To the Editor of THE LANCET.*

SIR,—The occurrence of acute and marked oedema of the face, arising during a course of treatment by potassium iodide, is, I think, sufficiently rare to be of interest.

The patient, a man aged 65, consulted me on account of attacks of giddiness, from which he had been suffering lately, and he also gave a typical history of attacks of angina. His radial and temporal arteries were considerably thickened, cardiac dullness extended beyond the nipple line, the first



apical sound was prolonged and the second aortic sound accentuated. The urine contained neither albumin nor sugar. The patient was advised as to a limitation of diet, given a prescription for (1) some tabella trinitrini, and (2) pot. iod. gr. v., t.d.s. He returned five days later suffering from considerable oedema of both upper and lower eyelids and face. There was no oedema anywhere else in his body, nor was there a history of previous attacks of oedema or a family history of angioneurotic oedema. He also complained of frontal headache and sorethroat. It became necessary to discontinue the iodides, as even with increased doses the symptoms persisted.

Having failed to discover any other cause for this oedema, I believe it to have been due to the administration of the iodides, possibly aggravated by the simultaneous administration of nitrites.—I am, Sir, yours faithfully,

SIDNEY S. LINDSAY, L.R.C.P. Lond., M.R.C.S.

West End Lane, West Hampstead, July 8th, 1919.

## ARMY SURGEONS AND THE F.R.C.S. EXAMINATION.

To the Editor of THE LANCET.

SIR,—Some time ago the Royal College of Surgeons of England announced that "surgeons who hold, or have held, commissions in H.M. Forces during the war and who have done commendable surgical work during such service, may be admitted to the First Examination for the diploma of Fellow on special conditions." It is unnecessary for me to repeat these conditions, as your readers must have seen them. They were also issued to units. Nevertheless I do not think anyone has drawn attention to the anomaly of the conditions or to the unfairness with which they operate. One would have thought that if facilities were to be given at all they would have been in respect of the subject in which special experience might have been gained when on service—viz., operative surgery. That would have been the only legitimate reason for creating short cuts to the F.R.C.S. Even then, the granting of these facilities to a few would not have been fair, because one cannot control one's postings and their resultant opportunities in the Army. The relief provided, however, refers to embryology and physiology—two subjects of which no one by his Army service can have possibly gained any experience. This makes the conditions still more unfair. I submit that if facilities are to be given—and those in respect of ancillary studies difficult for a service man to return to—all who joined voluntarily should be given them. It is quite bad enough that these higher examinations were held at all during the war, thus giving opportunities to the stay-at-homes, but it is worse to reward only some of those who freely and unsparingly gave themselves and jeopardised their prospects.

I am, Sir, yours faithfully,

July 25th, 1919.

LATE R.A.M.C. AND INELIGIBLE.

## THE PAY OF TERRITORIAL MEDICAL OFFICERS.

To the Editor of THE LANCET.

SIR,—I gather that the response of medical men to the War Office appeal for doctors has not been satisfactory. Perhaps the authorities have no idea how bitter still is the feeling among Territorial and Special Reserve medical officers at the difference in treatment recently meted out to them as compared with the temporary R.A.M.C. medical officer. Letters have appeared, representations made, but all to no purpose.

If the War Office were to supplement gratuities of all Territorial and S.R. medical officers (and so compensate them for the monetary loss they have suffered by being a Territorial or S.R. instead of a temporary R.A.M.C. officer), making their gratuities up to a total of, say, £500 for four years' embodied service (the same exactly as a naval medical officer is offered in peace-time after the same length of service, at which rate, too, a regular R.A.M.C. officer's gratuity after eight years' service is calculated), it would help to mitigate some of that soreness still so prevalent. The Territorial and S.R. medical officer is paid at the same rate as the regular: why, then, should not his gratuity be worked out at the same rate—namely, £125 a year for each year of embodied service, or 7s. a day pay? The temporary R.A.M.C. officer gets, after all, the equivalent of this in increased pay daily.—I am, Sir, yours faithfully,

CAPTAIN, R.A.M.C. (T.),  
late Surgeon, R.N.

July 28th, 1919.

## Medical News.

**GRANTS FOR MEDICAL EDUCATION.**—We learn that certain London medical schools, which have prepared schemes for the reconstruction of their clinical teaching, have been officially informed that they can count upon financial assistance from the State based upon the approved expenditure incurred in carrying out those schemes.

**EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.**—At the Final Examination, held from July 1st to 17th, the following candidates were approved in the under-mentioned subjects, but are not eligible for diplomas, viz:—

**Medicine.**—W. J. McB. Allan, Guy's; F. T. Allen, St. Thomas's; H. E. Archer, St. Bart's; S. T. Barrett, B.A. Cantab., Cambridge and Guy's; G. F. Baxter, Westminster; Grace Mary Beaven, L.M.S.S.A., St. George's; Julia Bell, Royal Free and St. Mary's; W. H. Bennett, L.R.C.P. & S. Edin., L.F.P. & S. Glasg., Manchester; P. C. Brett and J. D. M. Cardell, St. Thomas's; Marjorie Carnesw Chapel, Royal Free; B. H. Cole, Cambridge and St. Bart's; Alison Margaret Collie, St. Mary's; K. G. Danie, King's College; Sarah Helen Davies, Royal Free; K. A. Denholm, Queen Univ., Canada; H. Donovan, Birmingham; T. Draper, Edinburgh; A. J. Fenn, King's College; P. C. C. Fenwick, L.M.S.S.A., St. Thomas's; I. Frost, St. Bart's; A. E. Gravelle, L.M.S.S.A., King's College; E. C. Grey, D.Sc. Lond., F.I.C., Guy's; H. M. Guggenheim, M.D. Paris, Paris; H. W. Hardy, L.D.S. Eng., Charing Cross; E. F. Hicks, Cambridge and St. Bart's; T. R. E. Hillier, Middlesex; Mabel Marian Ingram, Royal Free and London; C. A. Kirton, University College; J. V. Landau, St. Bart's; F. G. Lewtas, Cambridge and St. George's; R. T. McKee, London; Margaret Ombler Meek, Cambridge and Charing Cross; G. E. Morgan, Oxford and London; W. P. Newman and C. Nicory, St. Thomas's; Sibyl Gertrude Overton, St. Mary's; G. Packham, L.D.S. Eng., and W. W. Payne, Guy's; J. Posner, Dublin; Eleanor Margaret Reece, Royal Free; H. N. Schapiro, Guy's; Ruth Mary Scutt, St. Mary's; J. T. Short, M.D. Penn., Pennsylvania; J. V. A. Simpson, Middlesex; W. A. M. Smart, B.Sc. Lond., London; H. E. Smith, Sheffield; G. M. Trist, Charing Cross; W. A. Turner, Guy's; G. van Acker, Oxford and Birmingham; A. D. Weedon, Middlesex; Effie Adell Wharton, St. George's; J. S. White, St. Bart's; Octavia Margaret Wilberforce, Royal Free and St. Mary's; Kathleen Mary Wilkinson and Margaret Aileen Williams, Birmingham; T. Williams, Middlesex; W. R. Williams, Liverpool; C. Young, Middlesex; and T. F. Zerolo, St. Bart's.

**Midwifery.**—F. F. Abdullah, St. Mary's; W. G. Bsrnard, London; H. Beger, University College; T. L. Bonar, St. George's; J. Bonfield, M.B. Kingston, Queen's Univ., Ont.; C. H. Bulcock, St. Bart's; G. F. Burnell, Charing Cross; J. W. Chadwick, Manchester; F. Christian, University College; O. T. J. C. de H. Clayre, St. Bart's; G. L. Clements, Birmingham; H. Cohen, Westminster; M. Cohen, Guy's; J. C. Copp, M.B. Tor., Toronto; F. C. Cozens, Cambridge and St. Bart's; A. R. Crane, London; J. J. da Gama Machado, St. Bart's; R. W. M. Dendy, Cambridge and St. George's; K. A. Denholm, M.D. Queen's Univ., Kingston; C. J. C. de Silva, Middlesex; T. Draper, Edinburgh; D. G. Garnett, Cambridge and St. Thomas's; W. Girgis, St. Mary's; A. E. Gravelle, L.M.S.S.A., King's College; E. C. Grey, D.Sc. Lond., F.I.C., Guy's; F. B. Hobbs, Cambridge and St. Thomas's; F. James, Charing Cross; C. E. Kennedy, M.B. Queen's Univ., Kingston; J. V. Landau, St. Bart's; F. F. Langridge, London; T. J. Lesser, Royal Free; H. T. Le Vieux, Guy's; F. C. Lewis, Liverpool; P. T. Liang, Cambridge and St. Thomas's; W. A. Low, St. Thomas's; P. T. McIlroy, M.B. Queen's Univ., Kingston; S. F. Mahmood, St. Bart's; C. G. Martin, Cambridge and St. Bart's; D. J. Millar, M.B. Queen's Univ., Kingston; L. Moss, Guy's; G. G. Newman, London; Olga Grace Mary Payne, M.Sc., M.B., Ch.B. Manch., Manchester; N. A. M. Petersen, London; J. A. M. Ross, St. Bart's; M. Sawhney, Cambridge and Middlesex; J. T. Short, M.D. Penn., Pennsylvania; C. J. Slim, Birmingham; W. A. M. Smart, B.Sc. Lond., London; F. D. Spencer, Birmingham; B. W. Thompson, St. Bart's; B. M. Tonkin, Guy's; D. L. Tucker, Cambridge and Edinburgh; W. G. D. H. Urwick, St. Bart's; G. v. L. van Acker, Oxford and Birmingham; N. V. Wadsworth, Guy's; Mary Howarth Wild, M.B., Ch.B. Liverp., Liverpool; Kathleen Mary Wilkinson and Margaret Aileen Williams, Birmingham; W. R. Williams, Liverpool; Grace Elizabeth Winn, Royal Free and St. Mary's; Jane Edith Wood, Leeds; C. Woode, Charing Cross; and F. B. Yonge, L.D.S. Eng., Middlesex.

**Surgery.**—C. M. Billington, Cambridge and St. Thomas's; M. R. Boe, M.D., C.M., Queen's Univ., Kingston; H. Brockman, Middlesex; G. P. Evans, St. Mary's; L. P. Garrod and N. J. Macdonald, Cambridge and St. Bart's; T. Menase-Annan, Cambridge and King's College; Sibyl Gertrude Overton, St. Mary's; Olga Grace Mary Payne, Manchester; H. W. Pigeon, M.D. C.M. McGill, McGill; R. E. R. Sanderson, Cambridge and St. Bart's; E. R. Sarra, Cambridge and London; Ruth Mary Scutt, St. Mary's; S. D. Sturton, Cambridge and St. Bart's; W. S. R. Thomas, Cambridge and Guy's; R. Thurz, King's College; D. L. Tucker, Cambridge and Edinburgh; Kathleen Suzanne Vine, L.M.S.S.A., Royal Free; W. Walsam, St. Mary's; and M. L. Young, Cambridge and St. Thomas's.

**ROYAL COLLEGE OF SURGEONS OF ENGLAND.**—An ordinary meeting of the Council was held on July 24th, Sir Henry Makins, the President, being in the chair.—The President reported that H.R.H., the Prince of Wales had consented to become an Honorary Fellow of the College. The votes of the Council were taken in accordance with the requirements of the Charter of 1899, and the President declared His Royal Highness to be duly and unanimously elected an Honorary Fellow. The President stated that



the Prince of Wales hoped on his return from Canada towards the end of the year to attend at the College to receive his diploma. The President reported that H.R.H. the Duke of Connaught (Colonel-in-Chief of the R.A.M.C.), had also consented to become an Honorary Fellow of the College. Whereupon the votes of the Council were taken and His Royal Highness was duly and unanimously elected an Honorary Fellow. The Secretary laid before the Council a balance sheet dated June 24th, and a statement of the receipts and expenditure of the College for the year ending on that date, with the certificates of the auditors attached thereto, together with a list of the investments, showing their value on that date. The balance sheet and the statements as to receipts and expenditure were approved and adopted, and it was resolved to publish them in the College calendar and in the annual report of the Council to the Fellows and Members. It was decided that the annual meeting of the Fellows and Members should be held on Thursday, Nov. 27th, at 3 P.M.

**UNIVERSITY OF LONDON.**—At examinations for internal and external students held recently the following candidates were successful:—

#### M.D. EXAMINATION.

*Branch I., Medicine.*—Frank Cyril Harvie Bennett, B.S., St. Mary's Hosp.; Dorah Challis Colebrook, B.S., London School of Medicine for Women; Clement Cooke, B.S., St. Bartholomew's Hosp.; Annie Mary Forster, B.S., London School of Medicine for Women; George Edward Genge-Andrews, B.S., Guy's Hosp.; \*Mary Esther Harding, B.S., London School of Medicine for Women; John Stephen Herbert Lewis, B.S., University College Hosp.; Harold Arundel Moody, B.S., King's College Hosp.; and John Alfred Ryle, B.S. (University medal), Guy's Hosp.

*Branch II., Pathology.*—Graham Selby Wilson, B.S., Charing Cross Hosp.

*Branch III., Mental Diseases.*—Millais Culpin, B.S., London Hosp.; Charles Wesley Forsyth, Victoria University of Manchester and University College Hosp.; and Thomas Chivers Graves, B.S., B.Sc. (Vet. Sci.), University College Hosp.

*Branch IV., Midwifery and Diseases of Women.*—Joseph Anthony Ferrière, B.S., University College; Jerusha Jacob Jhirad, B.S., London School of Medicine for Women; Martin Herbert Oldershaw, B.S., and Victor Jorge E. C. del S. Perez y Marzan, B.S., University College Hosp.; and Cecil George Richardson, B.S., Westminster Hosp.

\* Obtained the number of marks qualifying for the University medal.

#### M.S. EXAMINATION.

*Branch I., Surgery.*—William Bashall Gabriel and Leonard George Phillips, B.Sc., Middlesex Hosp.

N.B.—This list, published for the convenience of candidates, is issued subject to its approval by the Senate.

**UNIVERSITY OF OXFORD.**—At examinations held recently for the Diploma in Ophthalmology the following satisfied the examiners:—

Herbert William Archer-Hall, Ernest Milne Eaton, Vernon O'Hea Cussen, Walter Herman Kiep, and William Clark Souter.

**UNIVERSITY OF SHEFFIELD.**—At examinations held recently the following candidates were successful:—

#### M.B., CH.B. DEGREES.

*Final Examination.*—William Collins, Raymond E. Ford, Robert H. Greaves, Dorothy E. Mathews, Reginald E. Pleasance, Frederick Roper, Lazarus Samuels, Frederick L. Smith, and Alice White.

*Third Examination.*—May T. Bassett, Constance M. Chappell, and Raymond E. Ford.

*Second Examination.*—Edgar S. Clayton, Robert Platt, and Elsa F. Paige.

*First Examination.*—George R. Bailey, Oswald H. Billington, Clifford S. Dunbar, Camille Francotte, Rene Francotte, John E. Tannan, William H. Harding (with distinction in Physics), Sidney G. Meanley, James B. Schofield, and Francis A. Wrench.

**LONDON SCHOOL OF TROPICAL MEDICINE.**—The following are the results for the examination held at the end of the sixtieth session (May–July, 1919):—

\*W. B. W. Cheyne (Duncan and Lalaca medals), \*J. I. Connor, \*G. S. Glass, \*R. D. Fitzgerald (Straits Settlements Medical Service), \*Surg. Lieut.-Cmdr. T. C. Patterson, R.N., Capt. W. C. Spackman, I.M.S., P. A. Djal, A. C. Price, Capt. H. N. Stafford, R.A.M.C., J. T. Smeall, Miss Y. H. Hoashoo, Miss S. A. Finch, Miss A. Bransen, N. E. Watch, H. C. Gilmore, S. Fokett, J. W. Scharf, J. P. Tibbles, Miss E. Warren, B. Mountain, B. B. Jareja, C. Farrell, A. R. Neckles, and J. A. Liley.

\* With distinction.

**CENTRAL MIDWIVES BOARD.**—A meeting of the Central Midwives Board was held at Queen Anne's Gate Buildings, Westminster, on July 24th, with Sir Francis H. Champneys in the chair. A letter was considered from the medical officer of health for Winchester, inquiring (a) whether the rules of the Board deal with the question of practice by a midwife supposed to be a chronic carrier of disease; (b) whether such a woman, if suspended from practice in order to prevent the spread of infection, would be entitled to compensation from the Board, or from the local supervising authority which has suspended her. The Board directed that the replies be (a) that the question of practice by a midwife liable to be a source of infection is dealt with

in Rule E.6; (b) that by Section 6 (2) of the Midwives Act, 1918, where "a midwife has been suspended from practice in order to prevent the spread of infection the Board, or the local supervising authority by whom she was suspended, may, if they think fit, pay her such reasonable compensation for loss of practice as under the circumstances may seem just."—The secretary tendered his resignation, which was received by the Board with much regret, and it was decided that, subject to the approval of the Ministry of Health, Mr. Herbert George Westley, M.A., LL.B. Cantab., be appointed secretary.

A special meeting was held on the same day when four midwives were struck off the Roll, the following charges, amongst others, having been brought forward:—

A child suffering from inflammation and discharge from the eyes the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required, as provided by Rule E.21 (5). Medical aid having been sought for a child the midwife neglected to notify the local supervising authority thereof, as required by Rule E.22 (1) (a). The midwife not being scrupulously clean in every way, as required by Rule E.2; when attending patients she did not wear a clean dress of washable material that can be boiled, as required by Rule E.2, and when called to a confinement she did not take with her the appliances required by Rule E.3. The midwife did not take and record the pulse and temperature of her patients at each visit, as required by Rule E.14; she did not enter her records of pulse and temperature in a notebook or on a chart carefully preserved, as required by Rule E.14, and she did not keep her register of cases as required by Rule E.24. When called to a confinement the midwife neglected to take with her in a metal case or bag or basket, kept for that purpose only and furnished with a removable lining which can be disinfected, the appliances and antiseptics required by Rule E.3; she neglected to disinfect her hands and forearms before touching the generative organs or their neighbourhood, as required by Rule E.4; she neglected to wash the patient's external parts with soap and water and to swab them with an efficient antiseptic solution, as required by Rule E.8; she neglected to remove soiled linen, placenta, and membranes from the patient's neighbourhood and from the lying-in room before leaving the patient's house, as required by Rule E.11, and she neglected to give the necessary directions for securing the cleanliness, comfort, and proper dieting of the mother and child during the lying-in period, as required by Rule E.12. Medical aid having been sought for a patient the midwife neglected to notify the local supervising authority thereof, as required by Rule E.22 (1) (a). A child suffering from imperforate urethra the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required, as provided by Rule E.21 (5). A patient suffering from rigor with raised temperature, and on subsequent days from other illness, the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required, as provided by Rules E.20 and 21 (4). A patient suffering from puerperal fever, and the midwife being herself liable to be a source of infection, she neglected to notify the local supervising authority, as required by Rule E.6.

Lieutenant-Colonel J. F. Donegan, R.A.M.C., has been awarded the honorary degree of LL.D. by the National University of Ireland.

Dr. H. Beecher Jackson has been appointed coroner for Croydon.

**SEATON V.A. HOSPITAL.**—This hospital, which was recently closed, was one of the two most economically worked in Devonshire. There was a balance in hand of £1088. £161 were given to the Royal Devon and Exeter Hospital and the balance divided amongst the parishes which had subscribed to the hospital.

**LONDON HOSPITAL MEDICAL COLLEGE.**—A course of clinical lectures for advanced students on "Intermittent Blood Infections and their Relation to Certain Common Diseases of the Kidney, Prostate, Testicle, and other Organs" will be delivered by Mr. Frank Kidd, surgeon in charge of the Genito-Urinary Department, in the Clinical Theatre of the Hospital, on four successive Wednesdays beginning August 6th, at 4.15 P.M. A special course of instruction in the surgical dyspepsias is being repeated on Mondays and Fridays, commencing on August 1st, by Mr. A. J. Walton, assistant surgeon to the hospital. The lectures will be continued till Oct. 27th. Members of the medical profession will be admitted to all these lectures on presentation of their cards.

**LONDON HOSPITAL: AWARD OF PRIZES.**—At a recent meeting of the College Board of the London Hospital the following prizes were presented:—"Price" and entrance scholarships in Science, (£100, £20), Messrs. G. N. Golden, J. A. H. Andre, K. W. Todd (equal, scholarships divided); Epsom scholarship (for students of Epsom College), Mr. G. L. Peskett; prize in Clinical Medicine (£20), Mr. A. B. K. Watkins; prize in Clinical Surgery (£20), Messrs. E. L. Sergeant and A. B. K. Watkins (equal, prize divided); prize in Clinical Obstetrics and Gynaecology (£20), Mr. M. W. B. Bulman; "Duckworth Nelson" prize in Practical Medicine and Surgery (£10), Mr. A. B. K. Watkins; "Letheby" prizes in Elementary Clinical Surgery, Messrs. J. E. Zeitlin, F. H. W. Tozer, and Miss O. G. Potter; "Anderson" prizes in Elementary Clinical Medicine, Miss M. E. Kennedy, Miss D. W. Roughton, Mr. D. C. Williams.



**POST-GRADUATE MEDICAL TEACHING IN GLASGOW.**—Under the joint auspices of the Faculty of Medicine, Glasgow University, and the General Committee for Post-Graduate Medical Teaching in Glasgow a successful emergency course of post-graduate medical study in various institutions in Glasgow has just drawn to a conclusion. The course was arranged to meet the needs of graduates who had been on Service and were returning to take up civilian duties. The facilities offered were taken advantage of by doctors from places as far away as America and China, India and the West Indies, and Basutoland, and while the majority of the graduates who attended the course were officers or ex-officers of the Navy or Army a few local practitioners also availed themselves of the opportunities offered. A further course has been arranged to be held during September and October in Glasgow, and this is to be essentially a practitioners' course. The classes will be clinical and practical, and specially designed to meet the needs of those who have been on Service and are entering or re-entering general practice. In addition to the usual classes in medicine, surgery, and obstetrics a special course on tuberculosis has been arranged at the Consumption Sanatoria, Bridge of Weir, and at the tuberculosis dispensary in Glasgow. In gynaecology and obstetrics exceptional opportunities are available. Special evening demonstrations have been arranged in diseases of the throat, nose, and ear. The syllabus may be obtained from the acting secretary, Dr. A. M. Kennedy, Pathological Institute, Royal Infirmary, Glasgow.

**SOCIÉTÉ DE BIOLOGIE, PARIS.**—Two recent meetings of this society—June 14th and 21st—were devoted to a consideration of the physiology and pathology of aviation. Among the 16 papers read were the following:—

Ferry, A.—Flying Sickness and its Sequelæ.

Elles permettent : 1° De rapprocher des manifestations azotémiques et urémiques de la sclérose rénale, de certains troubles accusés par les aviateurs. 2° De rattacher ces troubles de l'influence surrénale. A. Influence du repos sur la tension sanguine de l'aviateur : il supprime l'hypertension de l'intervalle des vols, réduit l'hypertension consécutive au vol. B. Signes prémonitoires de l'asthénie des aviateurs. C. Rechercher surtout le dédoublement très précoce du 2e bruit, à l'examen du cœur.

Guillain, G., et Ambard, L.—Reaction-time and Flying Aptitude.

La détermination des temps de réaction élémentaire chez les candidats à l'aviation est utile au point de vue documentaire ; mais qu'il ne faut en tirer que des conclusions très prudentes.

Tara.—Blood Pressure Measurements.

Les mesures ont abouti aux résultats suivants : 1° Au fur et à mesure que l'altitude croît, les chiffres des maxima et minima baissent, mais pas aussi vite que la pression atmosphérique. 2° Après grands vols aux hautes altitudes il persiste de l'hypertension surtout aux maxima.

Josue, M. O.—The Airman's Asthenia.

En général la pression maxima est basse. La pression minima est normale. Après repos la pression revient à la normale. Quand on a une maxima très basse et qui se maintient telle, il y a lieu de redouter l'apparition de l'asthénie des aviateurs.

C'est une variété particulière d'insuffisance surrénale. Les signes sont : 1° Asthénie avec perte de la maîtrise de soi, tendance syncopale, quelquefois phénomènes neurasthéniques. 2° Hypotension artérielle portant sur la maxima, quelquefois sur la minima. 3° Ligne blanche surrénale de Sergeant. Durée : un mois 1/2 à 3 mois et plus. Traitement : repos absolu et l'opothérapie surrénale.

## The Services.

### THE HONOURS LIST.

The following awards to medical officers are announced:—

*Bar to Military Cross.*—Capt. F. G. Flood, M.C., R.A.M.C. (Spec. Res.). During operations at Vigozero and Petrovski Yam on March 18th, 1919, he dressed wounded under heavy machine-gun and rifle fire, and under most trying conditions saved many lives. After the action he successfully evacuated all the wounded over 60 versts of most difficult country without losing a case. He showed great gallantry and marked ability and devotion to duty.

*C.B.E.*—Surg. Cdr. R. J. MacKeown, R.N., Surg. Cdr. H. B. Marriott, R.N., Surg. Lt.-Cdr. E. A. G. Wilkinson, R.N., for valuable services in the First Battle Squadron.

### Foreign Decorations.

*Légion d'Honneur (French).*—Officer: Maj.-Gen. M. W. O'Keefe, K.C.M.G.; C.B. Chevalier: Temp. Capt. (acting Maj.) L. D. Woods, R.A.M.C.; Temp. Capt. M. S. Bryce, M.C., R.A.M.C. *Croix de Guerre:* Maj.-Gen. H. N. Thompson, C.B., C.M.G., D.S.O.; Temp. Capt. P. B. Belanger, M.C., R.A.M.C.; Maj. J. M. Bowle, R.A.M.C.; Temp. Capt. (acting Maj.) D. Cowin, R.A.M.C.; Temp. Capt. (acting Maj.) A. R. Green, R.A.M.C.; Temp. Capt. A. A. Greenwood, R.A.M.C.; Capt. (acting Lt.-Col.) H. A. Harbison, M.C., R.A.M.C.; Temp. Capt. (acting Maj.) E. B. Herga, M.C., R.A.M.C.; Maj. (temp. Col.) T. Kay, D.S.O., R.A.M.C.; Maj. B. E. Kelly, Canadian A.M.C.; Temp. Capt. H. Neame, R.A.M.C.; Capt. C. L. Franklin, M.C., R.A.M.C.; Capt. (acting Maj.) N. V. Lothian, M.C., R.A.M.C. *Palme Académique:* Maj. (temp. Lt.-Col.) W. D. C. Kelly, D.S.O., R.A.M.C.; Temp. Capt. (acting Maj.) T. C. Ritchie, O.B.E., R.A.M.C.; Temp. Capt. H. T. Retallack-Moloney, R.A.M.C. *Ordre de l'Etoile Noire:* Maj. (acting Lt.-Col.) T. B. Moriarty, D.S.O., R.A.M.C.

*Order of the Redeemer (Hellenes).*—Chevalier: Temp. Capt. J. Watson R.A.M.C. *Order of George I.*—Officer: Surg.-Cdr. R. C. Sawdy, R.N. *Military Order of Avis (Portuguese)*—Grand officer: Maj.-Gen. H. Carr, C.B., A.M.S.; Maj.-Gen. R. H. S. Sawyer, C.B., C.M.G. (ret. pay), late A.M.S. Commander: Maj. (temp. Lt.-Col.) G. N. Biggs, R.A.M.C.; Lt.-Col. (temp. Col.) J. H. Campbell, D.S.O., R.A.M.C.; Col. H. E. Cree (ret. pay), late A.M.S.; Brev. Col. W. E. Eames, C.B., R.A.M.C.; Col. J. M. Elder, C.M.G., Canadian A.M.C.; Lt.-Col. J. R. Harper, R.A.M.C.; Col. E. M. Hassard, A.M.S.; Col. R. H. Penton, D.S.O., A.M.S.; Lt.-Col. S. J. C. P. Perry, R.A.M.C.; Lt.-Col. (acting Col.) W. L. Steele, C.M.G., R.A.M.C.; Col. H. S. Thurston, C.B., C.M.G., R.A.M.C.; Col. A. H. Waring, D.S.O., R.A.M.C.; Maj. M. C. Wetherell, R.A.M.C. *Cavaleiro:* Temp. Capt. M. du B. Ferguson, R.A.M.C.; Capt. (acting Maj.) A. D. Stirling, D.S.O., R.A.M.C.; Maj. J. L. Wood, R.A.M.C.

*Distinguished Service Medal (Ame. torn).*—Maj.-Gen. (temp. Lt.-Gen.) Sir C. H. Burchell, K.C.B., C.M.G., K.H.S.; Lt.-Gen. Sir T. H. J. C. Goodwin, K.C.B., C.M.G., D.S.O., K.H.S. *Croix de Guerre (Belgian).*—Capt. D. L. Stevenson, M.B.E.

### Mentioned in Despatches.

In a despatch received from the Commander-in-Chief in India the names of the following medical officers and others are mentioned: Maj. F. A. H. Clarke, R.A.M.C.; Capt. F. G. Cross, R.A.M.C.; Maj. A. L. Davies, Hon. Supt. Red Cross D.P., Bombay; Maj. (temp. Lt.-Col.) P. Dwyer, M.C., R.A.M.C.; Maj. W. F. Harvey, I.M.S., Director, Central Research Institute, Kasauli; Maj.-Gen. P. Hehir, C.B., C.M.G., C.I.E., I.M.S.; Lt.-Col. K. V. Kuklay, I.M.S.; Dr. S. K. Millick, C.B.E., Calcutta; Lt.-Gen. Sir T. J. O'Donnell, K.C.I.E., C.B., D.S.O., A.M.S., D.M.S. in India; Dr. S. P. Sarabdhikari, C.I.E., Calcutta; Capt. A. G. Tressider, I.M.S.; Maj. G. S. Wallace, R.A.M.C.; Lt.-Col. H. E. Winter, R.A.M.C.

### Brought to Notice.

The names of Surg.-Lt. E. St. G. S. Goodwin, R.N., and of Surg.-Lt. L. Moss, R.N., have been brought to the notice of the Admiralty for valuable services in the prosecution of the war.

### ROYAL NAVAL MEDICAL SERVICE.

Temp. Surg. Lieut. K. McFadyen, who has been invalided on account of ill-health contracted in the Service, to retain his rank.

To be Surgeon Lieutenants: R. P. Ninnis, E. Heffernan.

Temp. Surg. Lieut. R. A. Brown is transferred to Permanent List of Surgeon Lieutenants.

### ROYAL NAVAL VOLUNTEER RESERVE.

To be temporary Surgeon Lieutenant: E. L. Adendorff.

### ARMY MEDICAL SERVICE.

Col. (temp. Maj.-Gen.) Sir Samuel Hickson, K.B.E., C.B., is granted the honorary rank of Major-General on ceasing to be employed.

Col. Albert L. F. Bate, C.M.G., retires on retired pay.

Col. W. H. Gratton, C.B.E., D.S.O., to be Deputy Director of Hygiene at War Office.

Temp. Col. Sir T. Myles, C.B., relinquishes his commission and retains the rank of Colonel.

### ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. J. C. Jameson retires on retired pay.

Major H. W. Farebrother relinquishes the acting rank of Lieutenant-Colonel on reposting.

The undermentioned relinquish the acting rank of Major: Capt. and Brevet Major F. C. Cowtan; Capt. C. Russell, R. A. Hepple, E. B. Marsh, R. Ellis, A. P. O'Connor, N. Cantlie, F. R. H. Mollan; Temp. Capt. C. A. R. McEay, W. C. Douglass, T. Bragg, H. B. D. y. J. S. Doyle, A. P. Saint, J. W. Tocher, J. G. Ackland, A. W. D. Coventon, J. R. Collins, G. Rankine, B. W. Armstrong, H. F. Warwick, A. Leyland Robinson, C. A. Weller, J. E. G. Calverley, A. Poole, T. Kelly, E. G. D. Pineo, A. Felling.

To be acting Majors: Capt. A. L. Stevenson; Temp. Capt. J. Buchanan, W. D. Cruickshank, A. Mathieson, A. K. H. Pollock, D. Cowin, J. V. Grant, T. V. Somerville, E. G. D. Pineo, A. H. Macklin. Capt. F. W. M. Cunningham retires, receiving a gratuity.

Capt. St. J. D. Buxton and H. A. Harbison resign their commissions. To be Captains: Capt. F. K. Tomlinson (from T.F.), H. S. Griffith (from Spec. Res.), K. O'Kelly (from Spec. Res.), T. Young (from Spec. Res.).

To be Temporary Captains: C. L. G. Powell, L. A. J. Graham, W. G. D. McCall, J. M. Ryan.

Captains from Special Reserve to be Lieutenants and to be temporary Captains: D. R. Heunessy, T. Parr, J. D'Arcy Champney, J. W. Hyatt. Temp. Capt. J. K. Holland to be Lieutenant and to be temporary Captain.

Temp. Lieut. T. C. Hughes to be temporary Captain.

Officers relinquishing their commissions: Temp. Lieut.-Col. G. B. Price (retains the rank of Lieutenant-Colonel). Temp. Hon. Lieut.-Col. W. J. Richard (retains the honorary rank of Lieutenant-Colonel). The notification of the relinquishment of the acting rank of Lieutenant-Colonel by Major P. T. C. Davy is cancelled. Temporary Majors retaining the rank of Major: C. D. O. Grange, H. Irving, E. R. Fothergill. Temporary Captains granted the rank of Major: W. K. McIntyre, A. T. Todd, F. J. O. Klug, A. C. Renton, W. H. Bryce, J. H. Legge, R. R. Wallace, T. W. Buckley, R. Millar, J. B. Alexander, G. Rankine, T. Bragg, S. Brown. Temporary Captains retaining rank of Captain: W. A. Wilson-Smith, A. J. D. Cameron, R. Vincent, E. A. O. Travers, O. A. Beaumont, G. C. Wells-Cole, G. H. Urquhart, A. O. Sergeant, W. A. Wheelton, A. Brownlie, D. Kelly, J. Stephenson, J. M. Biggs, M. A. C. Buckell, J. A. Dickson, T. L. Fleming, E. T. C. Hughes, G. F. Hlgden, J. D. Lyle, A. V. Craig, O. J. W. Adamson, F. H. Mosse, J. C. Neil, W. F. Hare, W. P. Philip, P. B. Belanger, M. C. R. Grabame, J. F. C. O'Meara, W. H. Gibson, R. G. Gordon, R. M. Paterson, V. G. Ward, J. Cross, J. G. Lee, P. W. L. Andrew, N. J. Newbould, S. W. Fisk, H. S. Metcalfe, G. W. Pope, W. H. Duncan, P. G. Leeman, P. Ashe, E. O. Marks, C. Garner, C. R. Young, G. Macdonald, A. N. Fell, E. S. Johnson, F. H. Young, H. L. Burton, J. Ross, L. L. Cassidy, A. Vella, T. A. Davidson, F. R. Doughtan, H. T. Retallack-Moloney, T. C. Harte, J. A. H. Teifer, O. R. M. Kelly, C. I. Ilderton, F. V. Hanratty, C. H. G. Gostwyck, R. Lewis, J. F. Venables, T. S. Reeves, H. J. Rawson, J. D. C. Swan, G. B. Charters, J. M. Richey, S. H. Kingston, I. D. Ramsay, H. C. Wert,



M. Gross, J. A. Wood (late temp. Capt., is granted the rank of Captain); Temp. Hon. Capt. D. E. Carter (retains the hon. rank of Captain); Temp. Lieut. O. M. Halsall, W. Hickey, W. E. Thompson, W. Napier, J. E. G. Calverley, E. B. Bate, F. Altken (retain the rank of Lieutenant).

#### Canadian Army Medical Corps.

Temp. Lieut.-Col. (acting Col.) K. St. J. MacDonald relinquishes the acting rank of Colonel.

The undermentioned temporary Majors (acting Lieutenant-Colonels) relinquish the acting rank of Lieutenant-Colonel: S. L. Walker, W. H. Lowry.

The undermentioned temporary Captains (acting Majors) to be temporary Majors: J. H. Slayter, C. T. Wallbridge, C. A. Davies.

Temporary Captains (acting Majors) relinquishing the acting rank of Major: C. B. Kidd, H. B. Van Wyck, R. F. Slater, A. Sterling, H. G. Murray, G. S. Murray, G. S. Gordon, E. P. Lewis, L. F. Jones, D. G. K. Turnbull.

The undermentioned temporary Lieutenants to be temporary Captains: J. E. Wadsworth, M. A. Wittick.

The undermentioned retire in the British Isles: Temp. Major G. J. Gillam; Hon. Major F. Lessore; Temp. Capt. D. G. K. Turnbull, G. J. Preston, A. B. Roberts, R. H. Fisher, R. D. Cowan, A. Keay, G. More; Hon. Capt. F. White.

#### Canadian Army Dental Corps.

Temp. Major (acting Lieut.-Col.) B. L. Neiley to be temporary Lieutenant-Colonel.

The undermentioned retire in the British Isles: Temp. Major L. N. Trudeau; Temp. Capt. W. Kennedy.

#### GENERAL RESERVE OF OFFICERS.

H. A. Harbison and S. J. D. Buxton, late Captains, R.A.M.C., to be Captains.

#### SPECIAL RESERVE OF OFFICERS.

Captains relinquishing the acting rank of Major: H. T. Cbatfield, J. W. Malcolm, T. F. Corkill, F. Cook, J. W. Cannon.

Capt. F. G. Flood, M.C., to be acting Major.

Lieutenants to be Captains: B. G. Derry, J. C. McGregor, J. K. T. Mills.

#### TERRITORIAL FORCE.

Lieut.-Col. (acting Col.) J. Mackinnon, D.S.O., relinquishes the acting rank of Colonel on ceasing to be specially employed.

Major R. B. Purves to be acting Lieutenant-Colonel whilst specially employed.

Capt. (acting Lieut.-Col.) J. Bruce to be Major, and to retain the acting rank of Lieutenant-Colonel.

Captains (acting Lieutenant-Colonels) relinquishing the acting rank of Lieutenant-Colonel on ceasing to be specially employed: P. Moxey, W. B. Keith, T. H. Richmond, T. A. Green.

Captains (acting Majors) relinquishing the acting rank of Major on ceasing to be specially employed: T. C. Britton, A. C. Tibbits, H. Foxton, D. R. Kilpatrick, H. J. Blackler, T. G. Buchanan, G. B. Buchanan.

Capt. (acting Major) A. Leggat relinquishes the acting rank of Major on vacating the appointment as Deputy Assistant Director of Medical Services.

Capt. M. S. Double to be a Deputy Assistant Director of Medical Services, and to be acting Major whilst so employed.

Captains to be acting Majors whilst specially employed: M. Brannan, J. P. Milton, G. Davidson, J. Muir, A. W. Paterson.

2nd Scottish General Hospital: Capt. (acting Major) A. A. S. Skirving relinquishes the acting rank of Major on ceasing to be specially employed.

1st Southern General Hospital: Lieut.-Col. F. W. Ellis is seconded for duty with the 2/1st Southern General Hospital.

2nd Southern General Hospital: Major (Bt. Lieut.-Col.) (acting Lieut.-Col.) A. B. Prowse and Major J. Swain to be Lieutenant-Colonels. Majors (acting Lieut.-Col.) G. Parker and R. G. P. Lansdown relinquish the acting rank of Lieutenant-Colonel on ceasing to be specially employed. Capt. (acting Major) J. L. Firth relinquishes the acting rank of Major on ceasing to be specially employed.

3rd Southern General Hospital: Capt. N. B. Clowes is restored to the establishment.

4th London General Hospital: Major (acting Lieut.-Col.) W. G. Spencer relinquishes the acting rank of Lieutenant-Colonel on ceasing to be specially employed. Capt. (acting Major) C. Gibbs relinquishes the acting rank of Major on ceasing to be specially employed. Capt. W. Turner to be acting Major whilst specially employed.

1st Northern General Hospital: Major T. M. Allison is restored to the establishment.

1st Western General Hospital: Major (acting Lieut.-Col.) R. W. Murray relinquishes the acting rank of Lieutenant-Colonel on ceasing to be specially employed.

1st London Sanitary Company: Lieut. R. Wood to be Captain.

2nd London Sanitary Company: Lieut. S. G. Reed to be Captain.

#### ROYAL AIR FORCE.

Medical Branch.—Major E. M. W. Hearn (Staff Surgeon, R.N.) relinquishes his commission on ceasing to be employed.

Capt. R. L. Roe to be acting Major whilst employed as Major.

T. C. Backhouse (Captain, A.A.M.C.) is granted a temporary commission as Captain.

The undermentioned are transferred to unemployed list: Major H. Pritchard; Capt. N. R. Williamson, I. L. Waadell; Lieuts. L. C. Broughton-Head, C. H. Vernon, P. E. Williams.

Dental Branch.—Lieut. P. J. Proud is transferred to unemployed list.

## A MONTHLY RECORD OF ATMOSPHERIC POLLUTION.

METEOROLOGICAL OFFICE: ADVISORY COMMITTEE ON ATMOSPHERIC POLLUTION: SUMMARY OF REPORTS FOR THE MONTHS

June 30th, 1918.

ENDING

July 31st, 1918.

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre.									Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre.								
		Insoluble matter.			Soluble matter.		Total solids.	Included in soluble matter.					Insoluble matter.			Soluble matter.		Total solids.	Included in soluble matter.		
		Tar.	Carbonaceous other than tar	Ash.	Loss on ignition.	Ash.		Sulphate as (SO <sub>2</sub> ).	Chlorine (Cl).	Ammonia (NH <sub>3</sub> ).			Tar.	Carbonaceous other than tar	Ash.	Loss on ignition.	Ash.		Sulphate as (SO <sub>2</sub> ).	Chlorine (Cl).	Ammonia (NH <sub>3</sub> ).
ENGLAND.																					
London—																					
Meteorological Office	32	0.04	0.97	1.66	0.76	1.67	5.10	0.57	0.40	0.06	154	0.07	1.54	2.32	3.08	8.00	15.01	2.92	0.87	0.38	
Embankment	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Gardens	18	0.04	0.76	0.58	1.80	3.68	6.86	1.60	0.51	0.08	—	—	—	—	—	—	—	—	—	—	
Finsbury Park	31	0.03	0.56	3.11	0.78	1.85	6.32	0.80	0.20	0.06	111	0.02	1.44	3.55	4.53	4.53	14.07	2.90	0.68	0.08	
Ravenscourt Park	25	0.02	0.69	1.80	1.02	1.93	5.45	0.86	0.59	0.11	114	0.10	2.77	7.06	3.42	6.84	20.19	2.74	0.68	0.34	
Southwark Park	14	0.05	1.01	3.25	1.51	3.11	8.93	1.60	0.38	0.07	56	0.24	2.06	9.07	3.89	2.77	18.02	1.50	0.44	0.03	
Victoria Park*	—	—	—	—	—	—	—	—	—	—	39	0.17	2.13	7.98	2.13	1.75	14.15	0.93	0.23	0.08	
Wandsworth Com.	12	0.02	0.44	1.18	0.72	1.50	3.85	0.57	0.24	0.03	13	—	0.01	0.00	0.58	0.91	1.51	0.36	0.14	0.04	
Golden Lane	26	0.05	1.58	2.22	1.12	2.35	7.33	1.18	0.69	0.15	120	0.08	2.48	4.20	1.92	4.31	12.98	2.34	0.72	0.30	
Malvern*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Manchester—																					
Whitworth Street (garden)	41	—	—	—	—	—	12.50	—	—	—	106	—	—	—	—	—	14.30	—	—	—	
College* (roof of)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Newcastle-on-Tyne	14	0.11	1.12	2.43	0.97	1.92	6.55	0.94	0.26	0.02	93	0.16	5.24	7.35	3.63	11.21	27.61	4.16	0.92	0.14	
Rochdale	—	—	—	—	—	—	34.80	—	—	—	—	—	—	—	—	—	32.88	—	—	—	
St. Helens	56	0.23	3.52	9.82	2.92	4.58	21.08	2.50	1.28	0.36	83	0.21	1.92	3.44	2.27	4.96	12.80	1.99	1.16	0.16	
Southport—																					
Hesketh Park	43	0.01	0.22	0.32	0.63	3.46	4.64	1.32	0.51	0.03	103	0.02	0.35	0.47	0.76	5.07	6.67	1.83	0.32	0.06	
Woodvale Moss	35	—	—	—	—	—	4.36	—	—	—	56	—	—	—	—	—	7.22	—	—	—	
SCOTLAND.																					
Coatbridge	31	0.10	1.45	5.43	1.22	3.18	11.38	1.71	0.19	0.14	65	0.13	1.63	6.27	2.42	4.95	15.40	2.60	0.30	0.21	
Glasgow—																					
Alexandra Park	18	0.24	1.04	2.95	0.80	1.80	6.83	0.76	0.06	0.03	72	0.12	6.58	3.43	1.09	3.13	14.35	1.83	0.24	0.18	
Bellahouston Park	27	0.23	1.29	4.18	0.56	2.42	8.68	1.09	0.14	0.04	76	0.08	2.09	4.31	0.70	2.10	9.88	1.71	0.12	0.01	
Blythswood-sq.	26	0.16	1.09	2.82	1.16	0.90	6.13	0.65	0.12	0.05	50	0.09	1.23	3.00	0.52	1.20	6.04	1.11	0.13	0.01	
Botanic Gardens	26	0.32	1.42	4.35	0.46	1.85	8.40	0.82	0.13	0.04	93	0.06	1.71	3.59	1.31	5.59	12.26	2.59	0.22	0.05	
Richmond Park	26	0.19	1.32	3.05	1.78	2.24	8.58	1.27	0.13	0.05	73	0.19	1.64	5.82	1.62	2.97	12.24	2.09	0.51	0.22	
Rucbill Park	26	0.23	1.27	3.03	0.81	2.29	7.63	1.21	0.11	0.02	53	0.08	1.17	3.53	0.39	1.26	6.43	0.99	0.09	0.06	
South Side Park	27	0.18	0.77	3.24	0.57	2.69	7.45	1.03	0.22	0.02	77	0.05	0.71	2.14	3.67	4.50	11.07	1.94	0.14	0.07	
Tollcross Park	27	0.29	1.70	4.11	1.27	2.54	9.91	1.31	0.22	0.04	72	0.08	1.45	5.58	5.12	4.47	16.70	2.32	0.14	0.11	
Victoria Park	27	0.29	1.29	3.88	0.71	1.62	7.86	0.93	0.11	0.03	95	0.08	1.79	3.92	1.58	2.87	10.24	2.39	0.33	0.01	

\* No returns.

"Tar" includes all matter insoluble in water but soluble in CS<sub>2</sub>. "Carbonaceous" includes all combustible matter insoluble in water and in CS<sub>2</sub>. "Insoluble ash" includes all earthy matter, fuel, ash, &c. One metric ton per sq. kilometre is equivalent to: (a) Approx. 91b. per acre; (b) 2.56 English tons per sq. mile; (c) 1 g. per sq. metre; (d) 1/1000 mm. of rainfall.

The personnel of public health authorities concerned in the supervision of these examinations and of the analytical work involved remains the same as published in previous tables. The analyses of the rain and deposit caught in the gauge at the Meteorological Office are made in THE LANCET Laboratory.



## Parliamentary Intelligence.

### HOUSE OF LORDS.

MONDAY, JULY 28TH.

#### *Ministry of Health: Consultative Councils.*

On the motion that the House approve of the Ministry of Health (Consultative Councils) Order, 1919, and the Ministry of Health (Welsh Consultative Council) Order, 1919,

Lord DOWNHAM expressed the opinion that the setting up of the proposed four consultative councils was a costly and cumbersome experiment in government, and one which struck at the root of Ministerial responsibility. There was no precedent for it whatever. If the Ministry of Health was to set up these councils with a large amount of machinery, why should not it be permitted to 10 or 12 other great Departments of State also to do so? He wished to know if any estimate had been formed of the cost of setting up these four councils. He moved an amendment to limit the number of councils to two, one for medical services and the other for national health insurance, and to strike out the proposed councils for local health administration and general health questions respectively, on the ground that they were uncalled for, as the Minister could obtain all the advice he required for the numerous bodies who were engaged day by day in the administration of sanitary law.

Viscount SANDHURST (Lord Chamberlain) said he had done his best on a former occasion to show why, in the opinion of the Government, the proposed consultative councils ought to form a most important part of the Ministry of Health Act. He was not prepared with any estimate of the cost, but it was only proposed to have one secretary and one staff, and to use the present health offices. The idea behind these consultative councils was that everything should not be done from Whitehall. The council on the general health question was hardly less important than the other three councils, and he believed the other three to be most important. To make the Ministry of Health Act a success they must endeavour to get the confidence of the people, and having got it, they must enlist the most sympathetic health knowledge and co-operation of all. He submitted that these councils would supply that, and he appealed to the House to support the Orders now before them.

On a division the amendment was lost by 31 votes to 23, and the motion was then agreed to.

### HOUSE OF COMMONS.

WEDNESDAY, JULY 23RD.

#### *Medical Advice for Officers on Leave.*

Colonel YATE asked the Secretary for India whether he was aware of the expenses involved in obtaining medical advice in London for officers on leave from India; and whether he could do anything to assist these officers in that respect.—Mr. MONTAGU replied: All Indian Army officers on sick leave in this country during the war have been admitted to the same medical treatment in hospitals or by private practitioners as British Service officers. Through the generous aid of the London School of Tropical Medicine it has also been possible to arrange to send civil and military officers suffering from tropical diseases to the School hospital at the Albert Docks for diagnosis and preliminary treatment. I hope it may be possible to continue this arrangement. It secures to the officer the best advice on his case and as to its treatment. The hospital charges in these cases are borne by the revenues of India.

#### *Service Disability Pensions.*

Sir B. FALLE asked the Secretary to the Admiralty if he could make any statement as to the service pensions of men invalided, apart from any award in respect of disability.—Dr. MACNAMARA replied: Under present regulations only a man with fourteen years' service is entitled to a life pension on the service disability scale in addition to any award from the Ministry of Pensions in respect of permanent disablement. The whole question of the service disability side of the award made to the men invalided is now being considered.

Sir B. FALLE: Is it on the new basis?—Dr. MACNAMARA: That is the point, whether the service disability side shall be reassessed to an amount proportionate to the new scale basis, but as to that I can give no undertaking at the moment.

#### *Welsh Board of Health.*

Sir DAVID DAVIES asked the Minister of Health when he proposed to appoint the remaining members of the Welsh Board of Health; whether he proposed to give definite powers and duties to the Welsh Board as a corporate body; and whether he would give an assurance that the organisation of his department in Wales would not be proceeded with until the Welsh Board had been fully constituted?—

Major ASTOR (Parliamentary Secretary to the Ministry of Health) replied: My right honourable friend cannot yet say how soon any further members will be appointed nor when the whole Board will have been completed. Such powers and duties as may be exercised in Cardiff under Section 5 of the Act will be exercised in manner provided by that Section. The organisation in Cardiff will be developed from time to time in whatever manner the circumstances may render expedient. It would be premature for me to make any forecast in this respect to-day.

THURSDAY, JULY 24TH.

#### *Artificial Limbs for Officers.*

Major COHEN asked the Pensions Minister if he would say whether officers who, as the result of their war service, required to wear artificial appliances were required to bear the cost of repair and renewal of these appliances themselves, although in the case of the sailor or soldier the cost was borne by the State.—Sir L. WORTHINGTON-EVANS replied: I am glad to be able to announce that the cost of repairs and renewals of artificial limbs and other appliances will in future for officers, as for men, be borne by the State. The decision which was some time ago arrived at in regard to artificial limbs has already been announced, and it has now been extended to artificial appliances other than limbs. The serving officer must bear the cost of renewals and repairs until retired, but on his retirement my department will undertake such expenses when necessary from fair wear and tear.

#### *Dental Register in Isle of Man.*

Mr. SEDDON asked the Minister of Health whether he was aware that dental practitioners in the Isle of Man were on a register separate from that of Great Britain; whether he was aware that gentlemen whose names were on the British register could practise in the Isle of Man but not vice versa; and whether the coming amending Bill to The Dentists Act, 1878, would take cognisance of this position and confer the benefit of registration in Great Britain on men on the register of the Isle of Man, in order to give them equal status to gentlemen on the British register.—Commander EYRES-MONSELL (Treasurer of the Household) replied: The Dentists' Register is now common to the United Kingdom and the Isle of Man. By the Isle of Man Dental Act, 1908, provision was also made for a "supplemental register" of persons in practice in the island on Jan. 1st, 1908, and such persons can only practise locally. As regards the latter part of the honourable Member's question it is premature to say what will happen to persons so situated, but the recommendations on the point contained in the Report of the Dentists' Committee suggesting machinery through which claims might be considered will be carefully considered.

MONDAY, JULY 28TH.

#### *Dental Caries in Children.*

Mr. SUGDEN asked the Minister of Health if he would state what steps he was taking to prevent dental caries in children under school attendance age, children in attendance at school, and adults, respectively; and, in view of the prevalence of dental caries, as revealed by recent examinations, in adult males, whether he would issue instructions to local authorities to institute inquiries and forward recommendations thereon for its elimination.—Dr. ADDISON replied: Adequate provision of dental treatment for the whole population as suggested in the honourable Member's question can only properly be produced as an integral part of that complete scheme of national health services which will be amongst the earliest matters to be considered by the Ministry with the advice of the consultative councils. A prime necessity, however, must be certain improvements in the existing arrangements for dentistry suggested in the Report of the Departmental Committee, which will require legislation in certain respects. In the meantime the provision of dental treatment for mothers and children is being developed by several local authorities under the Regulations of the Ministry of Health and by help of its grants; in several school clinics by and of the Board of Education; and in some areas in connexion with Health Insurance. The importance of the matter is emphasised in all suitable communications from the Ministry to local bodies.

#### *Medical Benefit under National Insurance.*

Mr. NEWBOLD asked the Minister of Health if he could state the number of invalided seamen, marines, and soldiers entitled to medical benefit under the National Insurance Acts in England, Scotland, and Wales respectively.—Dr. ADDISON replied: In September, 1917, special arrangements were made as to the provision of medical benefit for men invalided from war services. The approximate number of men admitted to this benefit under these arrangements is 318,000, being 270,000 in England, 28,000 in Scotland, 20,000 in Wales. But there is an additional number of such men who, having commenced to be eligible for medical benefit before September, 1917, are not included in these figures; the number of these is not known, as they are merged in the civil population.



*The Physical Condition of Recruits.*

Major FARQUHARSON asked the Pensions Minister if it was the case that all the scientific data and documents collected by the Ministry of National Service in regard to the physical condition of recruits of His Majesty's Army had now passed into the possession and custody of his department; and, if so, would he forthwith transfer these documents to the Ministry of Health.—Sir JAMES CRAIG (Parliamentary Secretary to the Ministry of Pensions) replied: The whole of the medical and statistical staff of the Ministry of National Service were transferred to the Ministry of Pensions on April 1st last. Part of the staff had been for some time engaged on the work of collating and analysing the scientific data and documents to which the honourable Member refers, and it was considered advisable that they should bring the work with them and complete it. My right honourable friend the Minister of Health has throughout approved of this course of action. It is hoped that the results of this work will be published in the autumn. In the meantime any information is at the service of the Ministry of Health.

*Vaccination in the Royal Navy.*

Mr. JOHN DAVISON asked the First Lord of the Admiralty whether he was aware that Stoker P. O. Arthur Simmons and other men serving on H.M.S. *Culypas* in the Black Sea had been confined to the ship for three months because of their refusal to be vaccinated; whether he was aware that Simmons had already been vaccinated three times whilst in the Navy; whether this punishment was in accordance with the regulations; and whether he would have inquiry made into the matter.—Dr. MACNAMARA (Parliamentary Secretary to the Admiralty) replied: The Admiralty has no information as to the particular case quoted, but the circumstances related in the question are in accordance with the regulations which provide that persons who decline revaccination were not to land in ports where there is danger of contracting small-pox. A virulent type of small-pox is endemic in the Black Sea. The confinement to the ship in such cases is not a punishment, but a necessary precaution to protect both those who decline revaccination and their shipmates.

*Trade Marks and Patent Drugs.*

Sir AUCKLAND GEDDES (President of the Board of Trade), in moving the second reading of the Trade Marks Bill, said that under the first part of the Bill it was intended to have a list or register of trade marks which had Common Law existence. It was proposed to have a part "B" of the register of trade marks, and it would be much easier for anyone who wished to register such marks to get them on to part "B" than on to part "A." The second part of the Bill had very considerable practical importance. There was a great abuse at the present time in connexion with the use of words as trade marks, and it was to deal with that abuse that the second part of the Bill was designed. They had, for example, the case of drugs which in the past were patent drugs. During the period of their existence the name had become the one practical description of them, and when the name became a trade mark they had got a permanent continuation of the patent protection. There was, for instance, among chemical substances the well-known case of aspirin. It was to deal with the difficulties arising from the use of such names as absolutely blocking names upon other manufacturers of the same chemical substance that the second part of the Bill was brought forward. The second reading of the Bill was agreed to.

TUESDAY, JULY 29TH.

*Medical Officers Serving in India.*

Mr. CAPE asked the Secretary of State for War whether Royal Army Medical Corps officers in India who contracted to serve for the duration of the war were being detained whilst other medical officers who only signed yearly contracts were to be demobilised first.—Mr. CHURCHILL replied: Every Regular medical officer of the Royal Army Medical Corps who can possibly be spared has been placed under orders for India so as to release temporary commissioned officers who are serving there.

Mr. CAPE asked the Secretary of State for War whether Regular Royal Army Medical Corps officers were being retained at home stations whilst doctors who took temporary commissions were being detained in India and elsewhere at great personal and financial sacrifice.—Mr. CHURCHILL replied: Officers serving under a yearly contract have been sent home from India, as there is no authority to retain them beyond the period of their contract.

Fleet Surgeon Alfred J. Corrie, R.N., has been elected a governor of St. Bartholomew's Hospital, London.

THE Wellcome Historical Medical Museum will be closed for cleaning and redecoration from August 9th until the end of September.

*Medical Diary for the ensuing Week.***LECTURES, ADDRESSES, DEMONSTRATIONS, &c.**

LONDON HOSPITAL MEDICAL COLLEGE, in the Clinical Theatre of the Hospital.

A Course of Clinical Lectures for Advanced Students on Intermittent Blood Infections and their Relation to Certain Common Diseases of the Kidney, Prostate, Testicle, and other Organs will be delivered by Mr. F. Kidd:—

WEDNESDAY, August 6th.—4.15 P.M., Lecture I:—Infections of the Kidney: Pyelonephritis and Pyelitis. Clinical Course; Diagnosis; Treatment.

A Special Course of Instruction in the Surgical Dyspepsias will be given by Mr. A. J. Walton:—

FRIDAY.—4.30 P.M., Lecture II:—The Clinical History Taking of Surgical Dyspepsias.

*Appointments.*

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

DULBERG, JOSEPH, M.D. Würzburg, L.S.A., has been appointed a Medical Referee under the Workmen's Compensation Act for County Court Circuits Nos. 7 and 8.

EVANS, WILLMOTT H., M.D. Lond., F.R.C.S. Eng., Consulting Surgeon to the Royal Free Hospital.

HIGGINS, T. T., F.R.C.S., Surgeon to the Hospital for Sick Children, Great Ormond-street, W.C.

JAMES, Surgeon-Colonel W. C., M.D., Consulting Physician to the Westminster General Dispensary.

NEWSHOLME, H. P., M.D. Oxon., D.P.H., County Medical Officer of Health, North Riding of Yorkshire.

St. Bartholomew's Hospital and College: BALL, W. G., F.R.C.S., and ROBERTS, J. E. H., M.B., F.R.C.S., Demonstrators of Practical Surgery; WATSON, Sir Charles G., F.R.C.S., Demonstrator of Operative Surgery; DONALDSON, M., M.B., F.R.C.S., Demonstrator of Midwifery; CUNNINGTON, W. A., Demonstrator of Biology;

JOHNSTON, J. H., M.Sc., Demonstrator of Chemistry; HOPWOOD, F. L., D.Sc., Demonstrator of Physics; SHELLSHEAR, J. L., M.B., Ch.M. Sydney, Senior Demonstrator of Anatomy; RAMSAY, R. A., M.C., M.B., GRIFFITHS, H. E., M.B., B.S., and HUME, J. B., M.R.C.S., L.R.C.P., Demonstrators of Anatomy; TREVAN, J. M.B., B.S., Senior Demonstrator of Physiology; DREYER, N. B., and HILTON, R., Demonstrators of Physiology; CANTI, R. G., M.B., B.C., JOEKES, T. M.B., and MURRAY, E. G. D., Demonstrators of Pathology; and SHORE, T. H. G., M.D., B.C., Curator of the Museum.

General Infirmary, Leeds: WATSON, GEORGE W., M.D., F.R.C.P., Honorary Physician; BRAITWAITE, L. R., M.B., Ch.B., F.R.C.S., Surgeon in Charge of Out-patients; LEE, HARRY, M.B., B.C., F.R.C.S., Honorary Ophthalmic Surgeon; BURROW, J. LE F., M.B., Ch.B., Honorary Assistant Physician.

London (Royal Free Hospital) School of Medicine for Women: KEENE, MARY L., M.B., B.S., Lecturer in Anatomy and Head of the Anatomy Department; KEDDEN, J. W., M.B., B.S., ABEL, L., M.B., B.S., HOUNSFIELD, MARY, M.B., B.S., and JOLL, MARY, M.D., B.S., Demonstrators of Anatomy; SPILSBURY, B. H., M.B., Ch.B., Lecturer in Forensic Medicine and Toxicology; SCARBOROUGH, ELEANOR, M.B., B.S., Demonstrator in Pharmacology; ROSS-JOHNSON, M., Nat. Sci. Tripos, Camb., and WOODMAN, D., B.Sc., Demonstrators of Physiology.

Miller General Hospital, Greenwich: JOLL, C. A., M.S., B.Sc. Lond., Surgeon; HINE, M. L., M.D. Lond., F.R.C.S. Eng., Ophthalmic Surgeon.

Victoria Hospital for Children: EVERIDGE, J., F.R.C.S., JOLL, C. A., F.R.C.S., and MARSHALL, C. J., F.R.C.S., Surgeons to Out-patients; GOULDER, C. B., F.R.C.S., Ophthalmic Surgeon; KAY, VAL, L.D.S., Dental Surgeon.

Certifying Surgeons under the Factory and Workshop Acts: R. J. BRUCE, M.B., Ch.B. Aberd. (Turriff); MALONEY, J. A., (Clurehill); DAVIES, H. O., M.B., Ch.B. Glasg. (Nanigaredig); GRIFFITHS, D. H., M.R.C.S., L.R.C.P. Lond. (Cross Hands).

*Vacancies.*

For further information refer to the advertisement columns.

Bedfordshire Education Committee.—School Dentist. £400.

Birmingham City.—Municipal Bacteriologist. £700.

Birmingham Municipal Anti-tuberculosis Centre.—Sen. Asst. Tuberc. O. £600.

Birmingham, Rubery Hill Asylum and Annex at Hollymoor.—Med Supt. £1250.

Brighton, Royal Sussex County Hospital.—Sen. H.S. £140.

Cairo, Egyptian Government School of Medicine.—Professors and Lecturers. ££1000 and ££600. Also Radiologist and Lect. in Radiology, ££500, Anaesthetist and Lect. in Anaesthetics, ££500, and Registrar and Tutor, ££600.

Carmarthen Mental Hospital.—Second Asst. M.O. £250.

Croydon County Borough.—M.O. £400.

Devonport, Royal Albert Hospital.—Res. H.S. £200.

Dorchester, Dorset County Council Education Committee.—School Dentist. £350.

Downpatrick, Down District Asylum.—Asst. M.O. £250.

East Ham County Borough Education Committee.—School Dentist. £400.

Ely, Isle of Ely County Council.—Asst. Tuberc. O., M.O.H., and School M.O. £450.



*Fulham Infirmary, St. Dunstan's-road, W.*—Three Asst. M.O.'s. £350 and £300.  
*George Town Municipality, Penang, Straits Settlements.*—Asst. M.O.H. \$4200.  
*Gravesend Hospital.*—H.S. £270.  
*Great Northern Central Hospital, Holloway, London, N.*—H.P. £150.  
*Home Office, Whitehall, S.W.*—Med. Inspector of Factories. £500.  
*Hong Kong Government.*—Bact. and Path. £500.  
*Bradley Wood Sanatorium for Pulmonary and Surgical Tuberculosis.*—Res. M.O. £500.  
*Huddersfield County Borough Education Authority.*—Full-time Dent. Surg. £350.  
*Hull Education Committee.*—Asst. Sch. M.O. £450.  
*Kettering and District General Hospital.*—Res. M.O. £200.  
*Kharloun, Wellcome Tropical Research Laboratories.*—Asst. Bacteriologist. £2E.600.  
*Lancaster County Asylum.*—Temp. Asst. M.O. 7 guineas per week.  
*Leeds Public Dispensary, North-street.*—Res. M.O. £230.  
*Liverpool, Samaritan Hospital for Women, Upper Parliament-street.*—Asst. S.'s.  
*Liverpool School of Tropical Medicine.*—Asst. Lect. in Parasitology. £250.  
*Liverpool University.*—Chair of Anatomy. £800.  
*Macclesfield, Cheshire County Asylum, Parkside.*—Locum Tenens. £7 1s. per week.  
*Maidstone, West Kent General Hospital.*—Jun. H.S. £125.  
*Manchester, Baguley Sanatorium for Tuberculosis.*—First, Second, and Third Asst. M.O.'s. £400, £350, and £300 respectively.  
*Manchester Royal Infirmary.*—H.S.'s. £25 for first six months, £50 for second six months.  
*Newark Hospital and Dispensary.*—Res. H.S.  
*Newcastle-upon-Tyne, University of Durham College of Medicine.*—Demonstrators of Anatomy and Physiology. £350 to £500 and £300.  
*Newport Borough Asylum, Caerleon, Mon.*—Asst. M.O. £300.  
*Northampton County Borough Education Committee.*—Female Asst. School M.O. £350.  
*Nottingham, Notts Education Committee.*—Asst. School M.O. £425.  
*Peckham House, 113, Peckham-road, S.E.*—Sen. Asst. M.O. £400.  
*Poplar Hospital for Accidents, Poplar, E.*—Sen. Res. M.O. £200.  
*Rainhill, near Liverpool, County Asylum.*—Temp. Asst. M.O. 7 gs. p.w.  
*Rochester, Kent, St. Bartholomew's Hospital.*—Jun. Res. M.O. £150.  
*Royal Chest Hospital, City-road, E.C.*—Res. M.O. £200.  
*St. Mary's Hospital Medical School, Paddington, W.*—Lecturer on Chemistry. £300.  
*St. Mary's Hospital for Women and Children, Plaistow, E.*—Dent. S. £50.  
*St. Marylebone Infirmary, Rackham-street, W.*—Third Asst. M.O. £200.  
*Salford Royal Hospital.*—Hon. P. and Hon. Asst. P.  
*Serbtu Hospital.*—Surgeon.  
*Severelles Government.*—Asst. M.O. and Visiting Magistrate. Rs.5000.  
*Sheffield Royal Infirmary.*—Asst. H.P. £150.  
*Taunton, Somerset and Bath Asylum, Colford.*—Asst. M.O. £300.  
*West African Medical Staff.*—Number of appointments. £400.  
*Westminster Hospital, Broad Sanctuary, S.W.*—H.S.  
*Weymouth, Princess Christian Hospital.*—H.S. £200.  
*Wigan Infirmary.*—Jun. H.S. £225.  
*Willesden Urban District Council.*—Asst. M.O.'s. £550 to £650.  
**THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Belth and Crossbills.**

## Births, Marriages, and Deaths.

### BIRTHS.

**ANDERSON.**—On July 23rd, at Yealm Cottage, Loughton, Essex, the wife of Dr. A. W. Anderson, Ogmere Vale, Glam., of a daughter.  
**COWAN.**—On July 24th, at Thetford, the wife of Geoffrey Cowan, M.D., of a daughter.  
**DOWNES.**—On July 22nd, at "Palmers," Great Marlow, Bucks, the wife of Dr. G. E. Downes, of a son.  
**DUNLOP.**—On July 22nd, at Conyers House, Newcastle-upon-Tyne, the wife of E. Craig Dunlop, M.B., B.S., of a daughter.  
**KEMP.**—On July 24th, at Caversham, Lemsford-road, St. Albans, the wife of C. Gordon Kemp, M.D., of a daughter.  
**WILLAN.**—On July 25th, 1919, at 23, Claremont-place, Newcastle-upon-Tyne, to Dorothy (*née* Shawyer), wife of R. J. Willan, M.V.O., F.R.C.S., a daughter.

### MARRIAGES.

**BATTEN-TURNBULL.**—On July 23rd, at Essex Church, Nottingham Gate, W., Captain Lindsey Willett Batten, R.A.M.C., to Ellen Mary, elder daughter of Dr. and Mrs. G. Lindsay Turnbull, of Ladbroke-square, W.  
**EDWARDS-BIRD.**—On June 11th, at All Saints' Church, Srinagar, Kashmir, the Hon. Major-General W. R. Edwards, C.B., C.M.G., K.H.P., I.M.S., Director-General, Indian Medical Service, to Nell, widow of Lieutenant-Colonel R. Bird, C.I.E., M.V.O., I.M.S., and daughter of the late Lieutenant-Colonel R. Dewar, R.A.  
**FARQUHARSON-BANES.**—On July 16th, at the Church of St. Michael and All Angels, Southampton, Donald Charles Farquharson, M.R.C.S., L.R.C.P., to Loveday S. Banes, M.B., B.S. Lond.  
**WOODHOUSE-FERGUSON.**—On July 24th, at St. Peter's, Cranley-gardens, Kensington, Sydney C. Woodhouse, M.B. Lond., M.R.C.S. Eng., Temporary Surgeon Lieutenant, R.N., to Erica, younger daughter of the late Donald and of Mrs. Ferguson, of Croydon, formerly of Colombo, Ceylon.

### DEATHS.

**HUBBARD.**—On July 23rd, in London, Daniel Lovett Hubbard, M.B., B.S., of Bordighera, aged 99 years.  
**POCOCK.**—On July 23rd, at Oxford-gardens, Frederick Ernest Pocock, M.D., M.R.C.S., late of "The Limes," St. Mark's-road, North Kensington, aged 67.  
**READ.**—On July 23rd, at Downshire-hill, Hampstead, Charles Read, M.D. Lond., aged 81.  
**YOUNGER.**—On July 24th, at 2, Mecklenburgh-square, W.C.1, Edward George Younger, M.D., M.R.C.P., aged 69 years.

**N.B.**—A fee of 5s. 4s. charged for the insertion of Notices of Births, Marriages, and Deaths.

### BOOKS, ETC., RECEIVED.

**ARNOLD, EDWARD, London.**  
*Diseases of Women.* By Ten Teachers under the direction of Comyns Berkeley, M.C. Cantab. Pp. 650. 30s.  
**BAILLIÈRE, TINDALL, AND COX, London.**  
*Aids to Ophthalmology.* By N. Bishop Harman, M.B., F.R.C.S. 6th ed. Pp. 226. 3s. 6d.  
*Manual of Anatomy.* By the late A. M. Buchanan, M.D. Edited by a Committee of Anatomists in London. 4th ed. Pp. xli. + 1743. 30s.  
**BAILE, JOHN, SONS, AND DANIELSSON, London.**  
*The Urethroscope in the Diagnosis and Treatment of Urethritis.* By Major N. P. L. Lumb, R.A.M.C. (T.C.). Pp. 52. 10s. 6d.  
*Eugenics and Environment.* By Prof. C. Lloyd Morgan, F.R.S. Pp. 82. 2s.  
*The Problem of Sex Diseases.* By A. Corbett-Smith. 2nd ed. Pp. 103. 2s. 6d.  
**CASSELL AND CO., London.**  
*The Welfare of the Expectant Mother.* By Mary Scharlieb, C.B.E., M.D. Pp. 152. 5s.  
**CHURCHILL, J. AND A., London.**  
*Volumetric Analysis.* By C. H. Hampshire, B.Sc. Lond. 2nd ed. Pp. 128. 5s.  
**DORNAN, W. J., Philadelphia.**  
*Transactions of the American Gynaecological Society.* Vol. XLIII. (1918). Pp. 480.  
*Transactions of the Southern Surgical Association.* Vol. XXX. (1917). Edited by H. A. Royster, M.D. Pp. 494.  
**FROWDE, H., AND HODDER & STOUTON, London.**  
*Members of the Maimed.* By Arthur Keith, M.D. Pp. 336. 16s.  
*Venerer Diseases: A Practical Handbook for Students.* By C. H. Browning, M.D., and David Watson, M.B. With introduction by Sir John Bland-Sutton. Pp. 336. 16s.  
**GALE AND POLDEN, London.**  
*Ten Lectures on Field Sanitation.* By C. B. Moss Blundell, M.D. Pp. 134. 5s.  
**HEINEMANN, W., London.**  
*Practitioner's Manual of Venereal Diseases, with Methods of Diagnosis and Treatment.* By A. C. Magian, M.D. Pp. 215. 10s. 6d.  
**LEA AND FEBIGER, Philadelphia and New York.**  
*Human Infection Carriers.* By Charles E. Simon, M.D. Pp. 250.  
**LEWIS, H. K., London.**  
*Auto-Erotic Phenomena in Adolescence.* By K. Menzies. With a foreword by Dr. Ernest Jones. Pp. 83. 4s. 6d.  
*Notes on Galvanism and Faradism.* By E. M. Magill. 2nd ed. Pp. 224. 6s.  
**LONGMANS, GREEN, AND CO., London and University Press, Manchester.**  
*Shell Shock and its Lessons.* By Prof. G. E. Smith, M.D., and T. H. Pear, B.Sc. 2nd ed. Pp. 135. Cheap edition, 1s. 6d.

### Communications, Letters, &c., to the Editor have been received from—

**A.**—Mr. W. Appleyard, Bradford.  
**B.**—Baby Saving League of British Guiana; Dr. B. G. M. Baskett, Rayleigh; Mr. G. Buckle, Edinburgh; Surg.-Comdr. W. Bastian, R.N.; Dr. W. Langdon Brown, Lond.  
**C.**—Dr. E. F. Cyriax, Lond.; Dr. R. H. Cole, Lond.; Mr. W. Cowdery, Lond.; Dr. M. Cosgrave, Dublin; Fleet-Surg. A. T. Corrie, R.N.; Colonial Office, Lond.  
**D.**—Lieut.-Col. J. F. Donegan, C.B., Lond.; Mr. L. J. Devota, Kota Bharu, Kelantan; Mr. H. Dickinson, Lond.; Dr. V. Dickinson, Lond.  
**E.**—Dr. W. A. Evans, Keighley.  
**F.**—Dr. C. Flandin, Paris; Dr. J. N. F. Fergusson, Brighton; Mr. P. Franklin, Lond.; Factories, Chief Inspector of Lond.  
**G.**—Mr. J. J. Grace, Lond.; Dr. H. O. Gunewardene, Lond.; Lieut.-Col. E. Goodall, R.A.M.C.; Dr. A. G. Gibson, Oxford.  
**H.**—Dr. H. Head, Lond.; Lieut.-Col. C. L. Hunter; Mr. R. W. Hatt, Bath.  
**I.**—Insurance Committee for the County of London; Industrial Fatigue Research Board, Lond.  
**J.**—Dr. F. Wood Jones, Lond.  
**K.**—Dr. A. M. Kennedy, Glasgow.  
**L.**—London Hospital Medical College, Sec. of; Miss M. M. Lee, Lond.; London School of Tropical Medicine, Sec. of.  
**M.**—Mr. S. R. Meaker, Esher; Mrs. M. McConnell, Petersfield; "Member of Board"; Ministry of Health, Lond.  
**N.**—*Nursing Times*, Lond., Editor of; Miss O. Nethersole, Lond.; Dr. A. J. Nyulasy, Perth; National Food Reform Association, Lond.; National League for Health, Maternity, and Child Welfare, Lond.; Dr. R. H. Norman, Harpenden.  
**P.**—Dr. B. Pierce, York; Col. A. G. Phear, A.M.S., Lond.; Dr. S. Porterfield, Widnes.  
**R.**—Dr. J. D. Rolleston, Lond.; Rockefeller Institute for Medical Research, Lond.; Royal Faculty of Physicians and Surgeons, Glasgow; Dr. W. C. Rivers, Alton.  
**S.**—Société de Biologie, Paris; Mr. R. E. Smith, Barry; Dr. E. B. Sherlock, Lond.; Summer School of Civics and Eugenics, Lond.; Save the Children Fund, Lond.; Mr. P. B. Shawe, Boxmoor; Prof. W. Stirling, Manchester; Dr. H. Sharman, Lond.; Selborne Society, Lond.; Chairman of; Mr. F. St. J. Steadman, Lond.; Dr. A. G. Spera, Eastbourne; Dr. D. M. Shaw, Lond.  
**T.**—Dr. H. H. Thomson, Hertford; Dr. A. H. Thompson, Lond.; Dr. A. H. Turner, Meols; Dr. H. H. Tooth, C.B., C.M.G., Lond.  
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Dr. MacDowel Cosgrave, 5, Gardiner-row, Dublin, will be grateful for book-plates of medical men, and will gladly send his own in exchange.



## Notes, Short Comments, and Answers to Correspondents.

### MUSCLE TRAINING IN RECLAIMING CRIPPLES.

By JAMES PATTERSON, M.D.,

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THE ideas underlying this paper may be expressed thus: success in restoring function demands a common-sense application of a simple knowledge of physics, anatomy, and psychology. Given that, and sufficient help, muscle training will play an increasingly satisfactory rôle in the reclaiming of crippled men. And the greatest efficiency will be attained under unity of direction. The hydro-therapy, massage, electro-therapy, gymnasium games and remedial workshops must form one department with coördinate effort to that end.

#### *Physical Remedies.*

Heat, whether in the form of the eau courante baths, whirlpool baths, hot packs, or the radiant-heat box, makes possible a greater range of motion, either passively or voluntarily. Next comes massage and passive movement, the application of which is universally conceded to be efficacious. Great care is necessary in applying this remedial agent. It must be done without pain until the operator has the absolute psychic and muscular coöperation of the patients. Then it is possible, and often desirable, to push passive movements to the point of causing distress. But unless this happy coördinate effort between masseur and patient obtains, we find that although the patient may be willing to suffer pain in order to secure movement, the muscles controlling the part affected are in a state of rebellion, the one set acting absolutely independently of his consciousness against the set from which we desire to obtain action. But with massage properly given this muscle terror is entirely overcome.

As to electro-therapy the galvanic current has a use in helping to maintain function in muscles to which the nerve-supply is destroyed. The faradic current has tremendous helpful influence in building up weakened muscles that have been out of use for a period, from any cause whatever, but to which the nerve is intact. And we cannot neglect what may be termed a psychic lameness—that is, a habit of thought that the affected part is not usable.

In muscle training itself two elementary facts must be noted. The first is, we must put the muscle group we are working on in such a position that it does not contend against the force of gravity. The other is that a most useful aid comes by having the patient perform the motion with the good limb that he is being taught to perform with the crippled one.

Our method of attack, then, entails a knowledge of the subjects mentioned. The war has forced on the profession the value of all these physical remedies, and each one has its use, its limit, and its definite place. To secure the best results the hospital should have a department of physical remedies under one head, and with plenty of help, alike of fully trained medical officers, competent masseurs, and remedial instructors. These medical officers and trained assistants must know not only massage, but hydro- and electro-therapy and physical training, because only by the most close coöperation between the workers in these very closely allied lines can we hope to obtain rapid and effective results. The sooner expert treatment of this sort is established the better, thus preventing adhesions forming. However, we must at present deal with the cases that come to us, where there may be more or less firm fixation between muscle planes, tendons, and tendon sheaths, and deformities due to contractures. [A rough ground-plan of a treatment department, suitable to take the cases from a hospital of about 1400 beds, was here put forward, showing a logical arrangement of heat, massage, and electro-therapy.] Continuous with this should be the gymnasium, into which the patient may be at once taken to carry on his treatment, or from which he may be sent after his efforts there. The building should be large enough, light enough, and warm enough to be comfortable, with little and simple apparatus, and plenty of room for games.

#### *Metatarsalgia.*

We now come to some special problems. The first of these forms too large a percentage of disabilities, and is preventable—namely, metatarsalgia. Primarily the term refers to the condition known as Morton's disease, but here we must group not only the metatarsalgias, but also the deformities of the anterior part of the foot, bunions, hammer toes, and law feet. These conditions have, as a most notable contri-

butory cause, the wearing of boots too short and improperly shaped. The hampering of the toes causes a distortion of their joints, particularly a partial luxation of the proximal phalanges on the metatarsals.

For cure we must have first of all boots of the proper size, which is three sizes longer than the foot. The foot being measured for a boot is lifted from the ground. When a person puts his full weight on his foot it spreads antero-posteriorly from one to two shoe lengths, sometimes more. Again, we are placing two curved surfaces together; when the foot bends in the boot it is the inner of the two curved surfaces. The sole of the boot must be sufficiently long to allow of this curving of the foot without distorting the inner curve. A man working in this department must provide himself with a shoemaker's foot measure, and be ready to explain why such a sized boot is worn. A size is three-eighths of an inch. But how much better it would be if each non-commissioned officer in charge of the boot stores had such an instrument and issued proper sized boots to each soldier.

Next to consider is the shape of the boot. It must be wide at the toe to allow the toes to come straight from their respective metatarsal bones, and the cap must be firm and extend sufficiently far back to prevent wrinkling of the upper from pressing on the already deformed toes. Besides that it must have a snug-fitting heel seat, and grasp the waist of the foot firmly, widening forward to allow the metatarsals to spread and the toes to come straight. Given this, a bar put across the sole, as recommended by Sir Robert Jones, is of inestimable value. Other men have used successfully an adhesive strap around the foot, with or without a pad of felt to lift the transverse arch, and Goldthwaite's figure-of-8 strap has its sphere of usefulness. For the more stubborn cases a sandal, cut to allow of the toes assuming their correct position, with a bar behind the metatarsal heads and with adjustable straps or tapes to pull the deformed toes into their proper places, has been most effective.

These things are palliative, and we must not only use them but re-educate the intrinsic muscles of the feet so as to obtain full and strong action at the metatarso-phalangeal joints. The set of drills adopted for this purpose can be drawn up by anyone with a knowledge of the muscles involved. A bar of wood works well, curved to lift the transverse arch, and perforated for a strap or a heavy cord, so that when the patient adjusts this behind the metatarsal heads and pulls on the cord he has a counter force on which to work at obtaining flexion at the metatarsal phalangeal joints. The difficulty that patients tend to flex the inter-phalangeal joints must be overcome by supervision. Other exercises are drills in abduction and adduction of the toes, and here, again, the game idea is the most satisfactory aid. Patients can early begin to pick up marbles and golf balls and regain prehensile power; after that games can be devised.

#### *Flat-foot.*

In flat feet the longitudinal outer arch rarely gives trouble, but the inner, longer, and more springy arch frequently results in casualties, and it is mainly the tarsal bones and the muscles and ligaments that hold them in place with which we have to deal. It is on the tibialis posterior that we mainly depend for cure. The symptoms of flat-foot are numerous, and the examination is not always satisfactory. One gets all the grades from the beginning with only vague pains, to the most pronounced luxation of the tarsus, with marked deformity and absolute rigidity. In the early stages we can be pretty sure of our ground if we keep in mind the position of attachment of the tibialis muscle, its action, and the relief or increase of pain on pressure along it, and along the inner longitudinal arch when we invert or evert the foot. One very characteristic place for pain to be obtained by this manoeuvre is where the belly of the muscle changes to the tendon.

Any of the various methods of treatment succeeded more or less: moulding over a triangular block followed by plaster-of-Paris fixation; plates; alteration of the boots by advancing the inner side of the heel; and raising the inner side of the heel and sole. Relief may also be obtained by use of adhesive plaster strapping and corrected boots. But unless we develop and strengthen the tibialis posterior muscle we do not obtain a permanent cure. The first thing to recognise in weakness of the tibial muscles is the concomitant contracture of their opponents, the peroneals; and with the weakening of the ligaments on the inner side there is a corresponding contracture of the ligaments and fibrous tissues on the outer side of the tarsus. In order to get a coördinate relaxation of the muscles in question it is necessary to re-establish tone in the muscles that have lost their power. One very effective means that we use is having the patients walk on an angled board, the two boards being joined at an angle of 45°. With that we have a series of drills in ankle rocking, also some steps of the sailor's hornpipe. Other dances can be used as strength increases. When one considers the attachments of the muscles one can devise a variety of movements.



It is essential that the patient stand and walk, and do all his exercises with the feet parallel and 5 inches apart. This gives an even pull for all the muscles, and if persisted in will, with other measures, cure any case of acquired flat-foot. The usual position of attention, with the feet at an angle of 45°, gives the peroneal group advantage over the tibial group and tends to produce flat-foot.

#### Internal Derangements of the Knee.

Another special problem is the internal derangements of the knee, of the internal lateral ligaments, and dislocation of the internal semilunar cartilage; they are most unsatisfactory, causing recurring disability to the patient and an enormous loss of time to the army. These injuries always occur as the result of an inward twist to the knee when it is partially flexed and the foot turned out. When we consider the anatomy of the knee-joint it is not strange that the majority of our injuries are to the inner lateral ligaments and the inner semilunar cartilages. It is the weaker part of the joint.

On examining a knee of this sort we observe, whether there be swelling or not, tremendous atrophy of the vastus internus. In the early stages heat and massage play a part in relieving pain and swelling, but perhaps faradic stimulation to the vastus internus is the most important physical remedy in restoring tone. However, unless this electric treatment is followed by muscle training we do not attain our end. With the intelligent co-operation of the patient it is possible to get results without either massage or electrical treatment. A combination of all, however, gives best results.

One of the earliest exercises to develop this muscle may be termed "knee-rolling." This can be done in the early stage when it is not advisable to have the patient bear weight on the joint, by having him sit so that the heel touches the floor, and with the tip of the affected side nearly free from the bench. Here he begins describing circles with the knee, either inward or outward, and the instructor sees that he gets the proper contraction of the vastus internus muscle. The straighter the leg the more action is got in that muscle, but long before he can get complete extension contractions occur.

But knee-rolling is not sufficient in itself. Frequently a lift on the inner side of the heel and sole is of decided advantage. Far beyond the use of this, however, is the insistent observance of the placing of the feet parallel and 5 inches apart in all walking, standing, or drilling. The double knee bend is bad in internal derangement of the knee, and has resulted more than once in dislocation of the semilunar cartilage. The stronger position of the knee with the feet parallel and 5 inches apart over that of the usual position of attention can easily be felt in one's own joints. For these reasons and because of the very notable improvement and not infrequent cures obtained, we consider it essential in all remedial muscle training that patients stand and move with the feet parallel and 5 inches apart. Were this adopted universally in the physical training, both in the army and in schools, it would very much reduce the casualties from sprained knees and also flat feet.

Of great importance is the manner in which the exercises are given. Individual drill is impracticable, so cases are arranged in classes, which will as nearly as possible group similar disabilities. These classes are named from the parts to which most of our effort is directed—i.e., shoulder, elbow, wrist and hand, thigh, leg, foot, back, special, and general or Swedish drill. The leg class includes flat-foot cases. The special class is devoted to cases that do not fit in the others, or need individual attention, and also to stump cases learning to walk on peg legs. To these classes the patient is sent, as his progress in the massage and electro-therapy departments indicates.

Psychic lameness is a tremendous factor. The closer one is to the bed the more simple and gentle must the commands for exercises be in order to restore co-ordinate movement. The reason is obvious. When function has been eliminated for any period of time it takes some mental training before the patient can hope to get any muscular action, consequently the commands given should be given distinctly, and should call for very simple movements. In a hospital where the patients come almost directly from the bed sharp commands and complicated movements have a distinctly deleterious effect, and this is particularly true in neurasthenics, hysterics, and shell shock cases.

When the patient is advanced to a reasonable stage the next step is to introduce him to outdoor games. Any game with a ball seems to take with the Anglo-Saxon, and the element of competition leads to many involuntary efforts, often with surprisingly beneficial results. As soon as possible one must get away from treating the injured part, and make the patient feel that he need no longer focus his attention on his disability. For example, much can be done for upper extremity injuries by skipping-rope dances.

Vocational training has its sphere, but that is not in our province to discuss now. Workshops have a potent part to play. The effectiveness of that part, however, depends on the

creative interest evoked in the patient by the work he chooses, and can in no way be measured by marketable value or usefulness. If the result of the patient's activity be useable or saleable so much the better. That idea can often be instilled to incite interest. The workshops should be equipped simply, with reasonable expenditure, as to material and tools—all hand and foot power—and should offer as varied activities as can be arranged. An effort to combine the treatment shops with splint or hospital requisite factories is futile, a failure either way.

For measuring progress, complicated apparatus is a distinct disadvantage in dealing with large numbers. With the simplest goniometer one can get a very satisfactory idea of progress in the movement of joints. A statement of how far the patient can travel on a Ling beam or parallel bars, or how often he can "chin himself," is an accurate enough index of the strength in arm cases; while a march over a measured route, with notations of where the patients drop out, serves in leg cases. And in order to co-relate the work done in hospitals with later progress a note of weekly examinations should be made by the medical officer in charge of the treatment department—i.e., massage, electro-therapy, and gymnasium—as to improvement or lack of improvement. This record should follow the patient up, so as to save duplication of effort.

#### THE CONVERTED ARMY HUT.

THE Disposal Board of the Ministry of Munitions have erected on the Horse Guards Parade, St. James Park, London, S.W., a 60 ft. x 15 ft. army hut which has been converted into a bungalow. As remodelled, the hut comprises a living-room 20 ft. x 15 ft.; three bedrooms, one 15 ft. x 10 ft., and two others 10 ft. by 10 ft., the height of the rooms being about 7 ft. 9 in. There are also a scullery, larder, bath, w.c., and coal house. The hut is lined with asbestos filled in with coke breeze. A cooking range, stoves for the bedrooms, and an 18-gallon farm boiler are provided. The price of the hut unconverted is £100, the cost of turning it into a dwelling being approximately £300, whilst the furnishing, as carried out by Messrs. Heal and Sons, of Tottenham Court-road, which includes furniture, linoleum, rush mats, curtains, toilet ware, table ware for six people, fireproof kitchen ware, and bedding costs about £325. The life of a hut is estimated at from 15 to 20 years. The lighting and ventilating arrangements are good, the upper halves of the 12 windows being arranged as fanlights. The conversion of these huts may help towards the solution of the house famine, though the price, reasonable enough, is none the less too high for the small man desiring to own his home. Moreover, while the life of the hut is stated to be 15 years or more—and this need not be challenged—the premises are liable to supervision by local authorities at the expiration of a five years' licence.

#### TRAVELLING HEALTH EXHIBITIONS.

THE National Union of Women has long made the travelling child welfare exhibition into a fine art as a method of public instruction, and the National Association for Combating Tuberculosis has made similar if sporadic efforts in popularising its own activities. At a recent meeting of the Medical Council of the People's League of Health, held under the chairmanship of Sir G. Sims Woodhead, the honorary organiser, Miss Olga Nettersole, outlined her scheme for public travelling exhibitions as one channel to be employed by the League for the dissemination of knowledge regarding health. The exhibitions would cover the whole field of physical, mental, and moral health, with sections, such as tuberculosis, food, housing, waste, teeth, eyes, parentage, hygiene and respiration, child welfare, venereal disease, crime, alcohol, physical education and gymnastics. The scheme was adopted on the understanding that other associations should be invited to co-operate with the League of Health in the arrangement of the exhibitions.

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# Investigations

ON

## THE NORMAL VITAL CAPACITY IN MAN AND ITS RELATION TO THE SIZE OF THE BODY.

THE IMPORTANCE OF THIS MEASUREMENT AS A  
GUIDE TO PHYSICAL FITNESS UNDER DIFFERENT  
CONDITIONS AND IN DIFFERENT CLASSES  
OF INDIVIDUALS.<sup>1</sup>

By GEORGES DREYER, M.A., M.D.,  
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(From the Department of Pathology, University of Oxford.)

DURING the last few years questions relating to the vital capacity of man have acquired prominent importance, since this measurement has been a decisive factor in the selection or exclusion of candidates for our Flying Service. A definite minimum standard of "vital capacity" was fixed, more or less arbitrarily, for the admission of cadets to the Royal Air Force, and standards were also decided upon for the grading of flying officers for different types of service. In laying down rules in this connexion, the question of the size of the man was entirely disregarded as though of no consequence, and the standards were arrived at simply as the result of examining a number of successful pilots, and determining their average vital capacity.

### PIONEER WORK OF JOHN HUTCHINSON.

Justification for this arbitrary course was possibly found in the fact that no definite relationship between vital capacity and size was believed to exist, and that vital capacity was regarded as an extremely variable measure in different individuals, although the question of its relation to size had been approached in the remarkable and fundamental work of John Hutchinson as long ago as 1846. He claimed that vital capacity increases in a simple arithmetical progression with increasing height, and believed that he had disproved the existence of any definite relationship between vital capacity and either body weight, stem length, or chest measurement.

Although his work stands out as a pioneer achievement by one who realised, as none before or since has done, the vast importance and wide scope of the problem which he attacked, and forms a model of careful and accurate observation and measurement, yet, as will be shown in this paper, his mathematical analysis of his results failed to reveal the true relationship which vital capacity bears to certain other body measurements. The conclusions at which he arrives are as follows:—

1. That there exists a definite relationship between *standing height* and vital capacity, and he lays down the rule "that for every inch of height (from 5 ft. to 6 ft.) 8 additional cubic inches of air at 60° are given out by a forced expiration."

2. That, as regards the influence of *weight* on vital capacity, the vital capacity increases from the 7st. men to the 12st. men, and then becomes more or less irregular. Further, that it may be said that the vital capacity increases nearly in the ratio of 1 cubic inch per pound from 105 lb. to 155 lb., and that from 155 lb. to 200 lb. this increase is over-powered, and there is a loss of 39·5 cubic inches as the effect of weight.

3. That, in relation to *circumference of chest*, "contrary to what I ever expected, and agreeable to the opinion of others, I do not find there exists any direct relationship between the circumference of the chest and the vital capacity." And he concludes, having analysed his tables: "Hence the absolute breadth of chest is not a direct, ready guide to estimating the vital capacity."

In referring to these remarkable observations of Hutchinson, one cannot but express the greatest admiration for the scientific manner in which they are collected. The fact that the conclusions which I, drawing upon his material as well as my own, have reached in regard to vital capacity

and various body measurements differ from his on practically every single point, cannot affect my profound admiration for this quite unusual piece of pioneer work—an admiration to which I cannot better testify than by quoting the fine sentences with which he ends his exhaustive and excellent treatise on the Respiratory Functions:—

"The matter of this communication is founded upon a vast number of facts—immutable truths, which are infinitely beyond my comprehension. The deductions, however, which I have ventured to draw therefrom, I wish to advance with modesty, because Time, with its mutations, may so unfold Science as to crush these deductions, and demonstrate them as unsound.

Nevertheless, the facts themselves can never alter, nor deviate in their bearing upon respiration—one of the most important functions in the animal economy."

### THE AUTHOR'S RESULTS.

Before entering into detailed discussion of my results, it would be well to state here that the result of my investigations has enabled me to establish definite relationships between vital capacity and body surface, body weight, stem length and chest measurement, and to show that vital capacity is *not* a simple function of height, as Hutchinson claimed. In order of importance the relations are as follows:—

1. The vital capacity is a function of the *weight*. This can be expressed in the formula  $\frac{W^n}{V.C.} = K_1$  where W is the net weight of the body expressed in grammes, V.C. the vital capacity expressed in cubic centimetres, and the power n is approximately  $\frac{3}{2}$ , though more accurately 0·72, and  $K_1$  is a constant. As it is already established that  $\frac{W^n}{S} = K_2$  where W = net weight, S = body surface, and the

power n is approximately  $\frac{2}{3}$  though more accurately 0·72, it follows that *the vital capacity is a simple function of the body surface*. In other words, that the smaller and lighter individual, with his relatively larger surface, has a greater vital capacity per unit of body weight than the larger individual.

2. The relation between the vital capacity and *stem length* can correctly be expressed by the formula  $\frac{\lambda^n}{V.C.} = K_3$  where  $\lambda$  = stem length in centimetres, V.C. = vital capacity in cubic centimetres, the power n is approximately 2, and  $K_3$  is a constant.

3. The relation between vital capacity and *circumference of chest* can be expressed by the formula  $\frac{Ch.^n}{V.C.} = K_4$  where Ch. = circumference of chest expressed in centimetres, V.C. = vital capacity expressed in cubic centimetres, the power n is approximately 2, and  $K_4$  is a constant.

4. Finally,  $\frac{\lambda \times Ch.}{V.C.} = K_5$  where  $\lambda$  = stem length in centimetres, Ch. = circumference of chest in centimetres, V.C. = the vital capacity in cubic centimetres, and  $K_5$  is a constant.

I shall now proceed to prove the existence of the above-mentioned relationships. In order to do so I will deal first with my own observations and subsequently with those of Hutchinson and other observers.

### THE AUTHOR'S OBSERVATIONS.

The data given in the following tables was obtained from 16 men and boys who were carefully selected on account of their physical fitness, and covered as widely different a range in weight, height, &c., as possible.

The weight varied from 29·8 kg. to 88·8 kg.; the standing height from 140 cm. to 186 cm.; the stem length from 71·5 cm. to 98·5 cm.; the circumference of chest from 67·5 cm. to 96·1 cm., and the vital capacity ranged from about 2300 c.cm. in the lightest to about 5100 c.cm. in the heaviest individual. The ages ranged from 13 to about 52 years.

In this paper all measures are expressed in grammes, centimetres, and cubic centimetres unless otherwise stated. The weight is net weight, without clothing; the standing height in stockinged feet is taken in the usual manner; the circumference of chest was measured by tape measure placed directly on the skin round the chest just on the nipple line. While being measured the subject was made to stand

<sup>1</sup> An abstract of this paper was read to the delegates at the Convegno Sanitario Internazionale d' Aeronautica, Rome, Feb. 15th 1919. No. 5006.



with his arms hanging loosely down at his sides, breathing normally. This method of measurement was chosen because it was found to yield more regular results for comparison than measurements taken during extreme inspiration and expiration. The subject should be encouraged to talk whilst being measured, as the muscles are then more or less perfectly relaxed. The stem length was obtained by seating the subject on the floor or a board, with his back against a perpendicular triangular projection, to which the scale is fixed. To secure accurate measurement it is necessary for him to place his hands on the floor or board, close to his body, and, drawing up his knees, to raise himself for a moment and press his os sacrum as close as possible against the scale. It will be found that different persons bend the knees to different degrees when attempting to achieve this result. In such a position a constant measurement of stem length is provided from the top of the head to the ischial tuberosities, and one that does not vary in repeated measurements of the same individual. On account of the influence of the muscles the stem length taken when the subject is seated on a chair does not afford a constant measure of an individual, nor a measure which lends itself to accurate comparison of one individual with another—a point to which Walker has also drawn attention. The measurements taken by this latter method have been found to be about 3 per cent. greater than those obtained by the methods used in this paper.

For the measurements of vital capacity a spirometer of the dry type, made by Boullite, of Paris, was selected, as it offers a minimum resistance to expiration. The measurements were taken while the subject was sitting on a high stool with his back straight. He was always first shown carefully how to proceed, and then five measurements were taken. The subject was kept in ignorance of the readings while being examined, as it was found that any such knowledge tended to interfere with the accuracy of the results. The highest reading of the five measurements is the figure recorded in the tables. In a large number of observations the highest reading was found to be about 5 per cent. greater than the mean of the five observations. The measures are all reduced to room temperature (15° C.) and 760 mm. pressure.

In Table I. are given the details of the 16 persons as regards age, weight, standing height, stem length, circumference of chest, and vital capacity. It is seen from this

TABLE I.

(A) Body weight (g.). (D) Circumference of chest (cm.).  
(B) Standing height (cm.). (E) Vital capacity (c.cm.).  
(C) "Stem length" (cm.).

No.	Age.	(A)	(B)	(C)	(D)	(E)	No.	Age.	(A)	(B)	(C)	(D)	(E)
16	12½	29,800	140.0	71.5	67.5	2330	9	25	63,500	171.0	88.0	85.2	4160
15	13½	38,900	156.0	74.0	73.3	2340	11	22	66,900	179.6	91.0	86.0	4400
14	14½	41,200	150.0	77.5	76.7	3030	5	43½	69,100	164.2	86.0	91.3	4400
10	28½	56,300	160.5	87.0	87.4	3830	3	31½	74,630	184.5	95.2	93.2	4660
13	18½	58,600	168.8	83.5	79.6	3300	7	35½	77,400	172.5	91.5	96.4	4300
4	27½	63,500	172.0	85.0	88.8	4200	8	25	81,000	184.0	95.4	92.2	4890
6	31½	63,500	171.0	90.2	92.2	4200	12	24	81,100	178.0	90.0	95.2	5140
35	1½	63,500	172.0	92.0	85.2	4443	1	16½	88,800	186.0	98.5	96.1	5130

g., grammes. cm., centimetres. c.cm., cubic centimetres.

table that there is an almost steady increase of vital capacity with increasing weight, while this regularity is but poorly maintained with increase in standing height.

#### *The Relation between Vital Capacity, Body Surface, and Body Weight.*

In attempting to find the best mathematical expression for the relationship between body weight and vital capacity it was found that the body weight to the  $n$ th power, divided by the vital capacity, gives a constant, and it will be further seen that the power  $n$  is approximately  $\frac{2}{3}$ , though more accurately 0.72. But since it has already been shown that  $\frac{W^n}{S} = K$  where  $W$  = net weight in grammes,  $S$  = surface in square centimetres, and the power  $n$  is approximately  $\frac{2}{3}$ , but more accurately 0.72, it follows that the vital capacity is a simple function of the body surface.

In Table II. is calculated the "vital capacity constant" from the formula  $K = \frac{W^{0.72}}{V.C.}$  as well as the vital capacity expressed in percentage of the body weight in grammes. In comparing these two columns it is obvious that there is an almost regular decrease in the percentage of vital capacity

TABLE II.

(A) Body weight (g.).  
(B) Vital capacity observed (c.cm.).  
(C) Vital capacity constant:  $K = \frac{W^{0.72}}{V.C.}$   
(D) Vital capacity calculated:  $V.C. = \frac{W^{0.72}}{0.690}$   
(E) Difference between vital capacity calculated and observed (per cent.).  
(F) Vital capacity as percentage of body weight.  
(G) Vital capacity calculated as per cent. (6.625) of body weight.  
(H) Difference between vital capacity calculated and observed (per cent.).

No.	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
16	29,800	2330	0.714	2410	3.32	7.819	1975	17.97
15	38,900	2340	0.710	2922	2.81	7.301	2577	10.21
14	41,200	3030	0.693	3044	0.43	7.354	2730	10.99
10	56,300	3830	0.638	3312	0.47	6.802	3730	2.68
13	58,600	3800	0.712	3222	3.11	6.485	3383	2.14
4	63,500	4200	0.683	4160	0.96	6.614	4207	0.17
6	63,500	4200	0.683	4160	0.96	6.614	4207	0.17
2	63,500	4443	0.646	4160	6.73	6.992	4207	5.64
9	63,500	4160	0.693	4160	0.00	6.552	4207	1.12
11	66,900	4400	0.677	4315	1.97	6.577	4433	0.74
5	69,100	4403	0.693	4419	0.43	6.368	4578	3.69
3	74,600	4560	0.691	4668	0.17	6.247	4943	5.73
7	77,400	4800	0.689	4793	0.15	6.202	5130	6.43
8	81,000	4890	0.699	4954	1.29	6.037	5367	8.89
12	81,100	5140	0.656	4958	3.67	6.338	5374	4.35
1	88,800	5130	0.713	5293	3.08	5.777	5884	12.82
Average ...			0.690	...	1.85	6.625	...	5.87

as the individuals increase in weight, while the "vital capacity constant" does not show any periodical change with the increase in weight, the variations only being such as depend on slight individual differences. It is further seen that the mean vital capacity constant is 0.69 and that the average figure representing the vital capacity as a percentage of the body weight is 6.626.

In the same table is also calculated the vital capacity from the formula  $V.C. = \frac{W^{0.72}}{0.69}$  (i.e., as a function of the surface), and from the average vital capacity percentage, 6.626, as well as the percentage differences between the observed figures and those calculated under the two procedures. In the first case the greatest individual deviations of the observed from the calculated figures are + 6.73 per cent. and - 3.32 per cent., while the average deviation is only 1.85 per cent. If, on the other hand, the vital capacity is calculated as a percentage of the body weight, the greatest individual deviations become as much as + 12.82 per cent. and - 17.97 per cent., the average deviation being 5.87 per cent., or about three times as large as in the former case. From this there is no doubt that the formula expressing the vital capacity as a function of the body surface represents the experimental data in a highly satisfactory manner, while the same data cannot rightly be expressed in percentage of body weight.

In Table III. the observations are arranged in eight groups, by grouping together the individuals of approximately the same weight and averaging their vital capacity. The vital capacity constant and the vital capacity expressed as percentage of the body weight are then calculated. It is again seen that the percentage of vital capacity decreases with almost absolute regularity from 7.819 per cent. in the lightest group to 5.77 per cent. in the heaviest group, while the vital capacity constant shows no periodic deviation.

In the same table are calculated the vital capacity as a function of the surface, and also as a simple function of the weight. In the former case the percentage deviation is only 1.57, while in the latter it is 5.23, taking into consideration the number of individuals in each group, or more than three



times as great. It is obvious that the greater the range of weight covered by the observations the greater must be the difference in the results arrived at by the two methods of calculation.

If, instead of making use of the best value for  $n$  (0.72) in the formula one uses, for the sake of convenience, the power  $\frac{2}{3}$ , the average  $K$  for the 16 observations is 0.380, and

TABLE III.

(A) Numbers from Table I, forming groups.

(B) Number in group.

(C) Average body weight (g.).

(D) Average vital capacity observed (c.cm.).

(E) Vital capacity constant:  $K = \frac{W^{0.72}}{V.C.}$

(F) Vital capacity calculated:  $V.C. = \frac{W^{0.72}}{0.691}$

(G) Difference between vital capacity calculated and observed (per cent.).

(H) Vital capacity as percentage of body weight.

(I) Vital capacity calculated as per cent. (6.643) of body weight.

(J) Difference between vital capacity calculated and observed (per cent.).

(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)
16	1	29,800	2330	0.714	2407	3.20	7.819	1979	17.74
15, 14	2	40,050	2935	0.702	2981	1.54	7.329	2690	9.11
10, 13	2	57,450	3815	0.700	3867	1.34	6.640	3816	0.03
4, 6, 2, 9	4	63,500	4250	0.686	4156	2.26	6.693	4218	0.76
11, 5	2	68,000	4400	0.685	4363	0.85	6.471	4517	2.59
3, 7	2	76,000	4730	0.691	4730	0.00	6.223	5049	6.32
8, 12	2	81,000	5015	0.682	4952	1.27	6.188	5384	6.85
1	1	88,800	5130	0.713	5285	2.93	5.777	5898	13.02
Average ...				0.691	...	1.57	6.643	...	5.23

the percentage difference between observation and calculation increases from 1.58 in the case of the best  $n$  (0.72) to 2.46, taking  $n$  as  $\frac{2}{3}$ . Whenever a great range of weight is covered by the observations it becomes imperative to make use of the best  $n$  (0.72) in the formula, while this is of less importance when only a relatively small range of weight is covered.

In Table IV. are calculated my own observations on vital capacity, according to Hutchinson's idea that it increases in a simple arithmetical progression with increasing height. By applying this method it was ascertained that the best approximation to be found was that for each 1 cm. increase in height there is an increase of 65 c.cm. in vital capacity. In this table the greatest individual differences between the calculated and observed figures are seen to be + 15.39 per cent. and - 13.42 per cent., while the average difference between calculation and observation is 6.02 per cent.—more than three times greater than the deviation found if the vital capacity be calculated as a function

of the body surface by means of the formula  $V.C. = \frac{W^{0.72}}{K}$ , where the percentage deviation is found to be as little as 1.85.

It is further of interest to note that if the vital capacity be calculated as a simple function of the height the percentage deviation is even larger than if the vital capacity be calculated as a simple function of the body weight—a procedure which has already been proven to be entirely fallacious.

Both from this table and from Table I. it will also appear that the vital capacity of man is not (as claimed by Hutchinson) a simple function of the height, since it does not increase at a fixed rate with each unit increase in height, but irregularly, and in the following manner. From a certain point the rate of increment of vital capacity per unit increase of height at first quickens, but presently a maximum is reached at a certain body height, and thereafter the rate of increment of vital capacity diminishes for a period before it again increases.

#### The Relation between Vital Capacity and Stem Length.

In Table V. the 16 observations are arranged according to their stem length. It is seen that, with increase in stem length there is also a more or less regular increase in vital capacity, though the regularity is very much less pronounced than was the case when the same observations were arranged by weight. The mathematical relationship

between stem length and vital capacity was found to be  $\frac{\lambda^n}{V.C.} = K$  where the power  $n$  is approximately 2. In Table V. this constant is calculated, as well as that of the vital capacity from the formula  $V.C. = \frac{\lambda^2}{1.9}$ . Looking at the column where the constants are given it will be found that, though they exhibit considerable individual variations, there is no evidence of periodicity. By applying the formula it

TABLE IV.

(A) Standing height (cm.).

(B) Vital capacity observed (c.cm.).

(C) Vital capacity calculated from height (Hutchinson's method).

(D) Difference between vital capacity calculated and observed (per cent.).

TABLE V.

(A) Stem length ( $\lambda$ ) (cm.).

(B) Vital capacity observed (c.cm.).

(C) Constant:  $K = \frac{\lambda^2}{V.C.}$

(D) Vital capacity calculated:

$V.C. = \frac{\lambda^2}{1.9}$

(E) Difference between vital capacity calculated and observed (per cent.).

No.	(A)	(B)	(C)	(D)	No.	(A)	(B)	(C)	(D)	(E)
16	140.0	2330	2240	4.02	16	71.5	2330	2.20	2690	13.38
14	150.0	3030	2890	4.84	15	74.0	2840	1.83	2880	1.39
15	156.0	2840	3280	13.42	14	77.5	3030	1.98	3160	4.11
10	160.5	3830	3702	3.46	4	85.0	4200	1.72	3810	10.24
5	164.2	4400	3813	15.39	5	86.0	4400	1.68	3900	12.82
13	168.8	3800	4092	7.14	10	87.0	3830	1.98	3930	4.01
6	171.0	4200	4255	1.29	9	88.0	4160	1.86	4080	1.96
9	171.0	4160	4255	2.23	13	88.5	3800	2.06	4125	7.85
4	172.0	4260	4320	2.78	12	90.0	5140	1.68	4280	20.09
2	172.0	4440	4320	1.39	6	90.2	4200	1.94	4282	1.92
7	172.5	4800	4352	10.29	11	91.0	4400	1.98	4370	0.69
12	178.0	5140	4710	9.13	7	91.5	4800	1.75	4420	8.60
11	179.6	4400	4814	8.60	2	92.0	4440	1.91	4460	0.45
8	184.0	4390	5100	4.12	3	95.2	4660	1.95	4780	2.51
3	184.5	4660	5132	9.20	8	95.4	4890	1.86	4800	1.88
1	186.0	5130	5230	1.91	1	98.5	5130	1.89	5115	0.29
Average ...				6.02	Average ...				1.90	5.76

is made clear that there is an average percentage deviation of observation from calculation of 5.76. This percentage deviation is nearly three times as great as in the case where the vital capacity is calculated as a function of the surface, and only slightly smaller than if it be calculated as a simple function of the weight. Such a considerable percentage deviation of observation from calculation is caused by the fact that the stem length in individuals of the same weight varies considerably. That this interpretation is true becomes patent when we arrange the observations in five groups according to their stem lengths and average their vital capacities, as done in Table VI. In this case the percentage deviation of observation from calculation of the vital capacity, using the formula  $V.C. = \frac{\lambda^2}{1.9}$ , is only 3.54, while

the percentage deviation found if the vital capacity be calculated as a simple function of the body weight hardly diminishes by grouping but remains more or less unchanged.

If we consider for a moment the significance of this relationship which has been found to exist between stem length and vital capacity, it is easy to demonstrate that it is entirely rational and must exist in view of the relationship which has been shown to hold between weight and stem length. The same considerations will make it clear that there exists no definite relationship between standing height and vital capacity.

In an unpublished analysis which I made nearly ten years ago of a number of existing observations of standing height and body weight in man I found it was impossible to demonstrate any simple regular relationship between these two measurements. On the other hand, in different animals a definite relationship between stem length and weight was to be traced. This relationship could be expressed by the formula  $\frac{W^n}{\lambda} = K$  and the power  $n$  is approximately equal to  $\frac{2}{3}$ . It was therefore probable by analogy that a similar relationship between stem length and weight would exist in



man. This point was cleared up, at my suggestion, by Dr. Ainley Walker. The results of his investigations have already been published, and proof given that the relationships between stem length and body weight can be

TABLE VI.

- (A) Numbers from Table I. forming groups.  
(B) Number in group.  
(C) Average stem length.  
(D) Average vital capacity observed (c.cm.).  
(E) Vital capacity calculated:  
 $V.C. = \frac{\lambda^2}{1.90}$   
(F) Difference between vital capacity calculated and observed (per cent.).

(A)	(B)	(C)	(D)	(E)	(F)
16, 15, 14	3	74.3	2733	2910	6.08
4, 5, 10	3	86.0	4143	3900	6.23
9, 13, 12, 6	4	89.2	4325	4200	2.98
11, 7, 2	3	91.5	4413	4405	0.18
3, 8, 1	3	96.4	4890	4900	0.20
Average ...				3.12	

TABLE VIII.

- (A) Numbers from Table I. forming groups.  
(B) Number in group.  
(C) Average circumference of chest (cm.).  
(D) Average vital capacity observed (c.cm.).  
(E) Vital capacity calculated:  
 $V.C. = \frac{Ch^2}{1.82}$   
(F) Difference between vital capacity calculated and observed (per cent.).

(A)	(B)	(C)	(D)	(E)	(F)
16, 15, 14	3	72.5	2733	2890	5.43
13, 2, 9	3	83.3	4257	3815	11.48
11, 10, 4, 5	4	88.4	4208	4300	2.14
6, 8, 3	3	92.5	4583	4790	2.49
12, 1, 7	3	95.9	5023	5050	0.54
Average...				4.27	

expressed by the same formula in animals and man, and that the formula  $\frac{W^n}{\lambda} = K$ , where the power  $n$  is approximately  $\frac{1}{2}$ , holds good.

As we have just seen that  $\frac{W^{\frac{1}{2}}}{V.C.} = K$ , and also that  $\frac{W^{\frac{1}{2}}}{\lambda} = K$ , it follows directly that  $\frac{\lambda^2}{V.C.} = K$ , which exactly represents the formula which was deduced from the experimental data.

#### The Relationship between Circumference of Chest and Vital Capacity.

In examining the relationship between the circumference of the chest and the vital capacity during normal breathing it was found that this relationship could be expressed by the formula  $\frac{Ch^n}{V.C.} = K$ , and the power  $n$  was again found to be approximately 2.

TABLE VII.

- (A) Circumference of chest (Ch.) (cm.)  
(B) Vital capacity observed (c.cm.).  
(C) Constant:  $K = \frac{Ch^2}{V.C.}$   
(D) Vital capacity calculated:  
 $V.C. = \frac{Ch^2}{1.82}$   
(E) Difference between vital capacity calculated and observed (per cent.).

No.	(A)	(B)	(C)	(D)	(E)
16	67.5	2330	1.96	2505	6.99
15	73.3	2840	1.89	2955	3.89
14	76.7	3630	1.94	3240	6.48
13	79.6	3800	1.67	3495	8.73
2	85.2	4440	1.64	3995	11.14
9	85.2	4160	1.74	3995	4.13
11	86.0	4400	1.68	4070	8.11
10	87.4	3830	1.99	4200	8.81
4	88.8	4200	1.88	4340	3.23
5	91.3	4400	1.89	4595	4.24
6	92.2	4200	2.02	4630	10.26
8	92.2	4890	1.74	4680	4.49
3	93.2	4660	1.86	4780	2.51
12	95.2	5140	1.76	4990	3.01
1	96.1	5130	1.80	5090	0.79
7	96.4	4800	1.94	5110	6.07
Average ...			1.84	5.80	

TABLE IX.

- (A) Body weight (G.).  
(B) Circumference of chest (cm.).  
(C) Constant:  $K = \frac{W^{\frac{1}{2}}}{Ch}$   
(D) Circumference of chest calculated:  $Ch = \frac{W^{\frac{1}{2}}}{0.457}$   
(E) Difference between circumference of chest calculated and observed (per cent.).

No.	(A)	(B)	(C)	(D)	(E)
16	29,800	67.5	0.459	67.8	0.44
15	38,900	73.3	0.462	74.1	1.08
14	41,200	76.7	0.450	75.5	1.59
10	56,300	87.4	0.438	83.8	4.30
13	58,600	79.6	0.488	84.9	6.24
2	63,500	88.8	0.449	87.2	1.83
6	63,500	92.2	0.432	87.2	5.73
9	63,500	85.2	0.468	87.2	2.29
2	63,500	85.2	0.468	87.2	2.29
4	66,900	86.0	0.472	88.8	3.15
5	69,100	91.3	0.449	89.8	1.67
3	74,600	93.2	0.451	92.1	1.19
7	77,400	96.4	0.442	93.2	3.43
8	81,000	92.2	0.469	94.6	4.65
12	81,100	95.2	0.454	94.7	0.53
1	88,800	96.1	0.464	97.6	1.54
Average ...			0.457	...	2.62

In Table VII. the observations are arranged according to the chest measurements. It is seen that with increase in chest measurement there is also a more or less regular increase in vital capacity, though exhibiting similar irregularities as in the case of the stem length, the individual variations here also being much more marked than if they were arranged according to weight. In the same table are also given the individual constants calculated from the formula  $\frac{Ch^2}{V.C.} = K$ , as well as the vital capacity calculated from the formula  $V.C. = \frac{Ch^2}{1.82}$ . Here, again, it will be observed that there is no periodic variation in the size of the constant, the variations being caused only by individual differences. The percentage deviation of observation from calculation is found to be 5.8—a deviation practically identical with that found if the vital capacity be calculated

as a function of the stem length by the formula  $V.C. = \frac{\lambda^2}{K}$ , while it is about three times as great as when the vital capacity is calculated as a function of the body surface by the usual formula. If these observations are arranged in five groups according to the chest measurement and the vital capacity averaged (as done in Table VIII.) the percentage deviation of calculation from observation is reduced to 4.27, or a difference somewhat larger than the deviation found if the vital capacity is calculated by the stem length by means of the proper formula.

The above-mentioned relationship between vital capacity and chest measurement having been established, it became a mathematical necessity that a relationship similar to that which has already been shown between stem length and weight should exist between weight and circumference of chest; in other words, that  $\frac{W^n}{Ch} = K$ , and the power  $n$  is approximately  $\frac{1}{2}$ . The proof of the existence of such relationship will be given below.

#### Relationship Between Circumference of Chest and Body Weight.

In Table IX. are given the weights of the 16 persons and the corresponding chest measurements. There is also to be found the constant  $K = \frac{W^{\frac{1}{2}}}{Ch}$ , as well as the chest

measurement calculated from the formula  $Ch = \frac{W^{\frac{1}{2}}}{0.457}$ . 0.457 is the average constant for the 16 individual observations. The percentage deviations of the observed from the calculated circumference of chest are also given.

It is clear that the chest constant shows no periodic variations, but only such irregularities as depend on individual differences. The average percentage deviation of observation from calculation is only 2.62—a difference somewhat smaller than that found by Walker in calculating the stem length from the weight. The mean deviation of observation from calculation, as determined by the method of least squares, is found to be 3.25, which indicates that if an individual be found to differ by about 6 per cent. from the normal chest measure for his weight he is probably abnormal in this respect; and if he exhibit a chest measurement 12 per cent. smaller or larger than the theoretical he is almost certainly abnormal. Hence it follows that the formula

$\frac{W^n}{Ch} = K$ , where the power  $n$  is approximately  $\frac{1}{2}$ , expresses the relationship between body weight and circumference of chest in an extremely satisfactory manner.

If from the data given in Table I. we calculate the average constant for stem length and weight by means of the formula  $\frac{W^{\frac{1}{2}}}{\lambda} = K$ , it is found to be 0.449. If we use this constant in calculating the stem length from the weight by the formula  $\lambda = \frac{W^{\frac{1}{2}}}{0.449}$ , the average percentage deviation of observation from calculation is 2.58, while the mean percentage deviation by the method of least squares is 3.21—or practically identical with those deviations above mentioned, where the chest measurement was calculated from the weight.

From the constants found in the two cases—viz., 0.457 (in case of the chest measurement) and 0.449 (in case of the



stem length)—it follows that in the normal healthy man the circumference of chest is, on an average, about 1.5 per cent. smaller than the stem length, though in a fair number of the individual cases the chest measurement may be greater than the stem length.

*The Relationship between Stem Length, Circumference of Chest, and Vital Capacity.*

From what has been said above with regard to the relationships of the vital capacity to stem length and chest measurement, and their relationships to body weight, it follows that  $\frac{\lambda \times \text{Ch.}}{\text{V.C.}} = K$ . In Table X. this constant is calculated from

TABLE X.

(A) Vital capacity observed (c.cm.).

(B) Constant:  $K = \frac{\lambda \times \text{Ch.}}{\text{V.C.}}$

(C) Vital capacity calculated:  $\text{V.C.} = \frac{\lambda \times \text{Ch.}}{1.85}$

(D) Difference between vital capacity calculated and observed (per cent.).

TABLE XI.

(A) Body weight (g.).

(B)  $\lambda \times \text{Ch.}$  observed.  $\frac{W^{\frac{2}{3}}}{\lambda \times \text{Ch.}}$

(C) Constant:  $K = \frac{W^{\frac{2}{3}}}{\lambda \times \text{Ch.}}$

(D)  $\lambda \times \text{Ch.}$  calculated:  $\frac{W^{\frac{2}{3}}}{K}$

(E) Difference between  $\lambda \times \text{Ch.}$  calculated and observed (per cent.).

No.	(A)	(B)	(C)	(D)	No.	(A)	(B)	(C)	(D)	(E)			
16	2330	2.07	2610	10.73	16	29,800	4826	0.199	4579	5.40			
15	2840	1.91	2930	6.07	15	38,900	5438	0.211	5467	0.53			
14	3030	1.96	3215	5.75	14	41,200	5944	0.201	5677	4.70			
10	3830	1.99	4110	6.81	10	56,300	7604	0.193	7329	3.75			
13	3800	1.86	3815	0.39	13	58,600	7044	0.214	7186	1.98			
4	4200	1.80	4080	2.94	4	63,500	7548	0.211	7582	0.45			
6	4200	1.98	4500	6.67	6	63,500	8316	0.191	7582	9.68			
2	4440	1.77	4240	3.77	2	63,500	7839	0.203	7582	3.24			
9	4160	1.80	4050	2.72	9	63,500	7497	0.212	7582	1.12			
11	4400	1.73	4110	7.06	11	66,900	7826	0.211	7849	0.29			
5	4400	1.79	4245	3.65	5	69,100	7852	0.215	8020	2.09			
3	4660	1.90	4800	2.92	3	74,500	8872	0.200	8439	5.13			
7	4800	1.84	4770	0.63	7	77,400	8821	0.206	8649	1.99			
8	4890	1.80	4750	2.95	8	81,000	8796	0.213	8916	1.35			
12	5140	1.67	4630	11.01	12	81,100	8568	0.219	8925	4.00			
1	5130	1.85	5130	0.00	1	88,800	9465	0.210	9477	0.13			
Average...					1.85	...	4.44	Average ...			0.210	...	2.74

the individual data given in Table I. The average constant is 1.85, and by means of this constant the vital capacity is calculated from the formula  $\text{V.C.} = \frac{\lambda \times \text{Ch.}}{1.85}$ , as well as the percentage deviation of observed from calculated figures. The average percentage deviation is found to be only 4.44, as compared with 5.76 and 5.80 if the vital capacity were calculated from the stem length and the circumference of chest respectively.

That the agreement between observation and calculation is improved by taking into account both stem length and chest measurement was a priori to be expected, as we are making use of two dimensions instead of one. Moreover, the two measures often tend to correct each other. If, for instance, a person is found to have too big a stem length in proportion to his weight, the circumference of chest is usually too small in proportion to weight. We see, therefore, that the errors thus introduced will be partly, and sometimes entirely, eliminated by taking both measurements into account.

From the various formulæ already given, it follows directly that  $\frac{W^n}{\lambda \times \text{Ch.}} = K$  where the power  $n$  is approximately  $\frac{2}{3}$ . That this is the case will be seen from Table XI. where the constant  $K = \frac{W^{\frac{2}{3}}}{\lambda \times \text{Ch.}}$  is calculated from the data in Table I.  $\lambda \times \text{Ch.}$  is also here calculated

from the formula  $\lambda \times \text{Ch.} = \frac{W^{\frac{2}{3}}}{0.21}$ , as well as the percentage difference between  $\lambda \times \text{Ch.}$  observed and  $\lambda \times \text{Ch.}$  calculated. The percentage deviation of observation from calculation is found to be 2.74—or only slightly greater than when the stem length or the chest measurement individually are calculated from the body weight.

Though the relationships here shown to exist in normal man between vital capacity, body weight, stem length, and chest measurement are all rational relationships, there can be no question that the most accurate manner in which to express the vital capacity is as a function of the body surface, by means of the formula  $\frac{W^n}{\text{V.C.}} = K$ , where  $n$  is approximately  $\frac{2}{3}$ , or, more accurately, 0.72.

The importance and utility of the other relationships at once become obvious when one begins to deal with individuals whose weight has become abnormal as a result of disease—as, for example, in the study of the effect of pulmonary tuberculosis and other diseases definitely resulting in emaciation on vital capacity. For it is evident that with loss of weight a vital capacity which was definitely abnormal when calculated in relation to the normal weight of the person might appear normal if calculated in relation to the reduced weight found during disease, whereas no such interference with the size of the constant would take place if the vital capacity were calculated in relation to stem length, and only to a small extent if calculated in relation to circumference of chest.

By taking all three relationships into account information is therefore gained not only as regards the vital capacity, but also as regards the condition of weight, whether it be increased or decreased beyond the normal measure.

*HUTCHINSON'S OBSERVATIONS COMPARED WITH THE FOREGOING RESULTS.*

Before dealing any further with my own observations, which have led to conclusions so contrary to those of Hutchinson, it is important to consider his observations, as well as those of others, in the light of what has been said above. I have already given in a previous paragraph the conclusions at which Hutchinson arrived. I shall now proceed to show not only that his observations entirely bear out my own results, but also to point out why he arrived at some of his own erroneous conclusions.

Table XII. is a reprint of Table E (p. 163) in Hutchinson's paper, where the results of his observations on the vital capacity of 1285 men are arranged, the grouping being according to weight, but at the same time keeping the height in view. It is at once seen that the vital capacity seems to increase to a maximum at the weight of 150 lb., and then to become stationary, or even decrease. He concludes himself: "It seems the vital capacity increases 42 cubic inches with the weight from 100 to 155 lb., and from 155 to 200 lb., the effect is balanced by minus 5 and plus 5 cubic inches."

It was of interest and importance to examine this marked discrepancy between the results obtained in my own observations, and the mean of results obtained by Hutchinson in observing such a large number of people, and to find out whether the discrepancy was real or only apparent. By analysis of the data given in Table D (p. 162) in Hutchinson's paper, from which he himself had constructed the table reprinted above, it soon became evident that the reason why he reached results so absolutely contrary to those which I have obtained was the manner in which he arrived at his average vital capacity for each given weight. The fact is that he entirely disregarded the number of individuals in each of the series from which he was making up his groups; in other words, in arriving at the average vital capacity for the group, if he has a single case with a very small vital capacity, he gives the same value to this as to 50 or more cases which have a large vital capacity, or vice versa. Such a procedure naturally leads not only to marked irregularities, but to definite errors in the estimation of the proper relationship between vital capacity and body weight.

To prove this point, Table XIII. has been constructed from Hutchinson's Table D (p. 163), and here due consideration has been given to the number of cases in each series in arriving at the average vital capacity for each group. In the same table are also given the values for the constant  $K = \frac{W^{\frac{2}{3}}}{\text{V.C.}}$  as well as the vital capacity expressed in percentage of body weight.

It is seen that the vital capacity increases gradually and steadily from the lowest to the highest weight. There is, in fact, no evidence whatever that from a weight of 150 lb. upwards the vital capacity becomes stationary or decreases, as appears to be the case from Hutchinson's



Table XII. above. It is therefore obvious that his observations are so far entirely in agreement with my own. From Table XIII. it is also seen that if the vital capacity be expressed in percentage of body weight, there is a steady and regular decrease in the percentage as the weight increases, falling from 1.63 per cent. in the lightest, to

TABLE XIII.

(A) Number of individuals in group.

(B) Body weight (lb.).

(C) Vital capacity observed (cubic inches).

(D) Constant:  $K = \frac{W^{\frac{2}{3}}}{V.C.}$ (E) Vital capacity calculated:  $V.C. = \frac{W^{\frac{3}{2}}}{0.128}$ 

(F) Difference between vital capacity calculated and observed (per cent.).

(G) Vital capacity as percentage of body weight.

(H) Vital capacity calculated as per cent. (1.47) of body weight.

(I) Difference between vital capacity calculated and observed (per cent.).

TABLE XII.

(A) Body weight

(lb.)

(B) Vital capacity (cubic inches).

(A)	(B)	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)
110	181	63	110	179.5	0.128	179.4	0.06	1.63	161.7	11.01
130	199	318	130	200.0	0.128	200.5	0.25	1.54	191.1	4.64
150	223	504	150	221.6	0.127	220.6	0.45	1.48	220.5	0.50
170	218	301	171	233.6	0.129	239.7	0.46	1.40	219.9	4.52
190	223	91	190	245.6	0.135	253.3	4.92	1.29	279.3	12.07
190	223	1235	Average ...	0.123	...	0.72	1.47	...	...	3.86

1.29 per cent. in the heaviest, group; while if it be expressed in relation to the body weight to the  $\frac{2}{3}$  power, the relationship is constant. Thus in Hutchinson's observations also we find that the vital capacity is a function of the surface of the body,

correctly expressed by the formula  $\frac{W^n}{V.C.} = K$ , where the power  $n$  is approximately  $\frac{2}{3}$ , so proving from his own data and observations how erroneous was his conclusion that no definite relationship between vital capacity and body weight could exist.

Furthermore, in Table XIII. the vital capacity is calculated as a function of the body surface by means of the formula

$V.C. = \frac{W^{\frac{3}{2}}}{0.128}$  and also as a simple function of the body

weight from the formula  $V.C. = W \times 1.47$ , as well as the percentage difference between observation and calculation by these two procedures. In the first case the average percentage deviation is only 0.72, taking the numbers in the groups into consideration, while in the latter case the average deviation is as much as 3.86 or about five times as great as in the former.

To take the matter a step further, we will now test the validity of Hutchinson's statement that there exists a simple relationship between the height of the individual and his vital capacity. In Table XIV. are given the average vital

TABLE XIV.

(A) Number of individuals in group.

(B) Standing height (inches).

(C) Vital capacity observed as tabulated by Hutchinson (cubic inches).

(D) Vital capacity observed correctly tabulated (cubic inches).

(E) Vital capacity calculated from height by Hutchinson.

(F) Difference between vital capacity calculated and observed (per cent.).

(A)	(B)	(C)	(D)	(E)	(F)
36	61	176.0	171.7	174	1.32
99	63	191.0	185.6	190	2.32
239	65	207.0	200.2	206	2.82
697	67	228.0	232.2	222	4.59
530	69	241.0	238.4	238	0.17
226	71	258.0	255.0	254	0.39
1827		Average ...	...	...	2.37

capacities for Hutchinson's observations, detailed in Table A (p. 156), as tabulated by him for heights ranging from 5 ft. to 6 ft. inclusive; also the average vital capacities for the corresponding heights arrived at by my calculation, which takes into account the number of individuals in each series forming the groups, as should obviously be done. There is

also given the series of vital capacities in arithmetical progression as calculated by Hutchinson; and, finally, the percentage deviation of observation from calculation. It is seen that, considering the number of individuals in each group, this deviation is as much as 2.37 per cent., which is an error more than three times as great as the percentage difference found above between observation and calculation; for when the same data was expressed as a function of the body surface the deviation was only 0.72 per cent. Thus it is evident from Hutchinson's observations, as well as from my own, that the vital capacity of man is not a simple function of the body height, as he contended, since it increases in an irregular manner and not at a fixed rate with each unit increase in height.

#### The Variations of Vital Capacity in Normal Individuals.

Having once established the actual existing relationships between vital capacity and different body measurements, it is necessary to determine the magnitude of the deviations from the average met with in normal and healthy individuals, as it is otherwise impossible to decide whether the vital capacity found in any given person should be considered as normal or abnormal.

In the case of the 16 persons examined, the average constant in the formula  $\frac{W^n}{V.C.} = K$ , was found to be 0.380 if

the power  $n$  be taken as  $\frac{2}{3}$  and 0.690 if the best power, 0.72, be used. The mean deviation of observation from calculation, employing the method of least squares, was found in the two cases to be 3.56 and 2.64 per cent. respectively, or distinctly greater if the power  $\frac{2}{3}$  is used. This indicates that if a person is found to have a vital capacity 6 per cent. smaller or larger than that calculated from his surface by means of

the formula  $\frac{W^n}{V.C.} = K$ , where  $n$  is 0.72, it is probable that he has an abnormal vital capacity, and if the vital capacity is 10 per cent. above or below the normal it is almost certain that he is abnormal in this respect.

If we deal with the material of Haldane and FitzGerald on 11 men in a similar manner we find that if the vital capacity be calculated as a function of the surface the mean deviation by the method of least squares for the individual observations are as much as 15.8 per cent., or a mean deviation five times greater than that found in my own observations. The explanation of this enormous difference is most likely to be found in the fact that their observations have been carried out on a highly mixed material, and therefore necessarily exhibit great individual variations. The existence of such individual differences and their causes is a factor of the utmost importance in attempting to fix definite standard limits of vital capacity in normal persons, as will be shown in the following paragraph.

#### Variations of Vital Capacity in Normal Individuals of Different Classes and Occupations.

In the course of further observations on the vital capacity in apparently normal persons of various classes and positions it became evident that a distinct variation was found in the vital capacity constant, resulting upon the varying nature of the life and habits of the individuals in question. It was therefore obvious that unless due attention were paid to these influences any fixed standard would become vitiated by them. Fortunately, we possess in Hutchinson's careful observations a material which, when properly used, gives us important information with regard to the value of the vital capacity in judging the physical fitness and development of different classes of the population.

To demonstrate this fact I have compiled and calculated some 1900 cases from Hutchinson's recorded observations. I have classified these men according to their occupation, and calculated the vital capacity constant from the formula

$\frac{W^{\frac{2}{3}}}{V.C.} = K$ . The results of the calculation are given in

Table XV. Before calculation Hutchinson's observations, recorded in pounds and cubic inches, were reduced to grammes and cubic centimetres, the weight of the body being the net weight without clothing. From the construction of the formula it is obvious that the larger the constant the smaller the vital capacity for any given weight. The classes are arranged according to vital capacity, that with the highest vital capacity heading the list, and the remainder being graded in order of decreasing rate.



TABLE XV.

- A) Number of individuals in group.  $W^{\frac{2}{3}}$   
 (B) Vital capacity constant:  $K = \frac{W^{\frac{2}{3}}}{V.C.}$   
 (C) Physical fitness (per cent.).

(A)	Occupation.	(B)	(C)	(A)	Occupation.	(B)	(C)
172	Chatham recruits.	0.412	100.0	69	Grenadier Guards.	0.441	95.4
27	Pugilists.	0.420	98.1	20	Draymen.	0.443	93.0
563	Woolwich marines.	0.425	96.9	23	Pressmen.	0.450	91.5
119	Seamen.	0.426	96.7	158	Mixed classes.	0.455	93.4
74	Thames police.	0.427	96.4	82	Miscellaneous.	0.458	89.9
30	Horse Guards.	0.433	95.1	47	Compositors.	0.467	88.1
130	Metropolitan police.	0.434	94.8	101	Gentlemen.	0.488	84.3
92	Fire brigade.	0.439	93.7	116	Paupers.	0.493	82.5

It is seen that Hutchinson's "Chatham Recruits" represent the best class, and it is interesting to note that he himself characterises these individuals as "a remarkably fine body of young men." Taking the constant calculated from this group of men as representing 100 per cent. of physical fitness, the fitness of the other classes appears in the table in percentage of this class. It is noted that the percentage falls steadily from 100 per cent. in the best class in a way that might be expected from the nature of the occupations of the different groups, until we come to paupers, with about 20 per cent. less vital capacity than the best group. It will be observed, probably with some astonishment, how very low is the position taken in this respect by the class of gentlemen in 1846—a fact doubtless connected with the life and habits of gentlemen in London at that date.

Table XV. indicates that it would appear promising to make use of the vital capacity in its proper relation to the size of the body to obtain important knowledge regarding the physical condition of the various classes of the population, and to express this in relation to the standard of perfect health.

In Table XVI. I have arranged my own observations of a few classes of the people of the present day. Here also the constant is calculated from the formula  $\frac{W^{\frac{2}{3}}}{V.C.} = K$ , the weight is net weight in grammes, without clothing, and the vital capacity expressed in cubic centimetres. The constants

TABLE XVI.

- A) Numbers of individuals in group.  $W^{\frac{2}{3}}$   
 (B) Vital capacity constant:  $K = \frac{W^{\frac{2}{3}}}{V.C.}$   
 (C) Physical fitness (per cent.).

(A)	Occupation.	(B)	(C)
16	Men and adolescents selected for physical fitness ... ..	0.380	108.3
14	Oxford undergraduates (own).	0.380	108.3
959	" " (Schuster's).	0.381	108.1
7	Boy Scouts.	0.390	105.7
12	Men (mixed upper class).	0.416	99.0
12	" " (lower " " ).	0.445	92.6
12	Females (mixed classes).	0.493	83.6

are therefore directly comparable with those in the above table, and the percentages were expressed in percentages of Hutchinson's "Chatham Recruits," equalling 100 per cent. of fitness.

It is most interesting to observe from this table how the active, athletic class of gentlemen of the present day heads the group of my own observations with actually 9 per cent. more relative fitness than the above-mentioned "remarkably fine body of young men."

From observations that I have made it seems clear that the difference in vital capacity exhibited by different classes has nothing to do with fundamental bodily deficiencies, but is simply a result of conditions depending upon occupation and mode of life. Taking, for example, two sets of boys from the same elementary school, from similar homes and living under similar conditions—with the exception, however, that one of the two sets of boys were Boy Scouts—it was

found that the latter had, on an average, a vital capacity constant approaching the magnitude of that found in Oxford undergraduates, and exhibited a vital capacity of about 15 per cent. greater than that of the lads who were not Boy Scouts. The army training has brought out, in those who have undergone it, the same marked increase in vital capacity when they are compared with similar classes of the population who have not had this physical training.

#### The Fixing of Standards of Normal Vital Capacity.

From a comparison of the results obtained on the limited number of individuals hitherto examined sufficient information has been gathered to make it clear that it would not be justifiable to employ the data collected by Hutchinson for the fixing of standards for the different classes of the population at the present date. Before definite and valid standards can be arrived at it is inevitable that a relatively large number of subjects drawn from the different classes and trades of the population must be examined in regard to vital capacity and various body measurements. To help to carry out this extensive scheme the Medical Research Committee have already undertaken to give financial aid, and it is hoped that this inquiry may take its place in a larger scheme for the study of anthropometric standards.

At the present moment I can only consider the standard fixed from the examination of Oxford undergraduates as an accurate standard for this particular class of population. The average constants arrived at from my own observations upon

14 Oxford undergraduates were as follows:  $\frac{W^{0.72}}{V.C.} = 0.69$ ;  $\frac{\lambda^2}{V.C.} = 1.9$ ;  $\frac{Ch.^2}{V.C.} = 1.82$ .

Before accepting these constants, obtained from a very limited number of observations, as valid standards it became important to see how they would compare with the constants that could be obtained from calculation of Schuster's extensive series of measurements of vital capacity in 959 Oxford undergraduates. In Table XVII. I have

TABLE XVII.

- (A) Number of individuals in group. (B) Constant:  $K = \frac{W^{\frac{2}{3}}}{V.C.}$   
 (C) Body weight (g.). (D) Constant:  $K = \frac{W^{0.72}}{V.C.}$   
 (E) Stem length (cm.). (F) Constant:  $K = \frac{\lambda^2}{V.C.}$   
 (G) Vital capacity (c.cm.). (H) Constant:  $K = \frac{Ch.^2}{V.C.}$

(A)	Age.	(B)	(C)	(D)	(E)	(F)	(G)
129	18	64,210	88.5	4184	0.383	0.691	1.87
2.9	20	66,100	90.4	4268	0.383	0.691	1.91
59	23	66,100	90.4	44.8	0.370	0.669	1.85
330	19	66,240	90.5	4278	0.383	0.691	1.92
95	22	66,480	90.4	4301	0.381	0.689	1.90
137	21	68,000	91.1	4438	0.375	0.679	1.87
Average ... ..					0.381	0.690	1.90

made an abstract from Schuster's data. The weights are net weights in grammes, arrived at by the subtraction of the weight of clothing, using the proper reduction factor; the stem lengths in centimetres are the stem lengths recorded by Schuster, reduced by 3 per cent. This reduction is necessary to make the measurements comparable with my own observations, for it was found, as previously stated, that the measurement obtained by seating a person on a chair is about 3 per cent. greater than that obtained by measuring the stem length in the manner used in my own observations. The vital capacities are given in cubic centimetres.

In this table is calculated the constant K, by means of the formula  $\frac{W^n}{V.C.} = K$ , both when the power n is taken as  $\frac{2}{3}$  and when the best n (0.72) is used, as well as the K for the formula  $\frac{\lambda^2}{V.C.} = K$ . The constants found are  $\frac{W^{\frac{2}{3}}}{V.C.} = 0.381$ ;  $\frac{W^{0.72}}{V.C.} = 0.690$ ;  $\frac{\lambda^2}{V.C.} = 1.90$ . It is striking to see that the constants arrived at by an analysis of this



extensive series of careful observations of 959 Oxford undergraduates are absolutely identical with those found in my own very limited number, and also the same as those obtained in the 16 observations on persons selected for their physical fitness. In view of this fact, therefore, it seems entirely justifiable to accept these standards as true standards for the measurement of a condition of the most perfect health and fitness at the present time.

#### *Vital Capacity in Relation to Diagnosis of Disease.*

Since the vital capacity has been shown to exhibit such marked variations in the different classes of the population, depending upon their mode of life, and has also been shown during the war to be influenced by the strain on flying men (continued flying in high altitudes resulting in a temporary diminution of vital capacity), it is likely that various forms of fatigue would be found to influence it in the same manner. If this be the case it is probable that certain diseased conditions, more particularly of the respiratory and circulatory organs, would lead to a distinct diminution in the vital capacity. One's mind naturally turns at once to the question of the effect of pulmonary tuberculosis on vital capacity. This application is not novel, as already in 1846 Hutchinson had made use of the study of vital capacity as a help in diagnosis of diseases of the lungs—more particularly tuberculosis. He showed that cases of pulmonary tuberculosis exhibited a vital capacity distinctly inferior to what he considered normal, judging from the height of the individual.

From what has already been said it is self-evident that it is impossible to deduce valuable conclusions regarding the effect of disease on vital capacity before definite standards have been worked out for the various classes of the normal population. By means, however, of a few undoubtedly fairly accurate standards so far arrived at it has been possible to approach the study of the effect of pulmonary tuberculosis on vital capacity. And although it would be premature at the present moment to express a final opinion as regards the value of this method, it can already be stated that it has yielded very promising results in the examination of about 150 cases of pulmonary tuberculosis which I myself have dealt with in collaboration with Dr. L. S. T. Burrell, of the Brompton Hospital. The particulars of the results obtained will be published in detail when sufficient material has been collected and analysed. At the present moment I can only state the following: that I have been able, without seeing the cases or knowing anything about the diagnosis, but simply from measurements (recorded and sent to me by Dr. Burrell) of the vital capacity and the various body measurements mentioned above and by subsequent calculation, to classify these persons as normal individuals, or as examples of mild, of moderate, or of severe pulmonary tuberculosis, in practically absolute agreement, as afterwards appeared, with the clinical diagnosis and classification made at the time at the Brompton Hospital.

From the experience already gained it seems likely that the careful study of the vital capacity in its proper relationship to body size will give important information as to the beneficial effects derived from sanatorium treatment of pulmonary tuberculosis, and also enable us to distinguish between those cases likely to benefit from continued treatment and those for whom it would be of no further profit.

#### CONCLUSION.

From a consideration of the results arrived at in the present communication it seems likely that systematic measurement of the "vital capacity" and various body measures indicated above, in adults and adolescents in different trades and occupations, and in different ranks of life, will afford most important information from the point of view of national health, and will throw light upon the value of such measures as may be contemplated for the improvement of the general health and well-being of the people of this and other countries.

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## THE ÆTIOLOGY OF INFLUENZA.

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THE following is a section of a longer article dealing with influenza from the point of view of clinical signs and symptoms, and describing the results obtained by various therapeutic methods.

#### *Ætiology of the Disease.*

The cause of the disease will be discovered in the laboratory. Clinical observations enable one to diagnose it in the great majority of instances, but until the infective agent is described and uncontroversially recognised as such, diagnosis of obscure cases will remain doubtful.

In respect of influenza, bacteriologists are divisible into two classes—those who believe in the Pfeiffer concept, and the rest. At the commencement of this epidemic the generally accepted view was that Pfeiffer's bacillus is the cause of influenza, and it is interesting to see what has arisen to shake one's confidence in this orthodoxy.

Pfeiffer,<sup>1</sup> in January, 1892, described a bacillus as occurring in the sputum of acute cases of influenza. These organisms, he stated, were constantly present, but do not occur in the bronchial secretion of other bronchial or pulmonary affections. The bacillus has the following characteristics: It is very minute, about half the length, and the same thickness as the bacilli of Koch's mouse septicæmia. It is non-motile. It stains with difficulty with the aniline dyes, but when stained shows a granule at each end retaining the stain and a central unstained portion, showing only the outline of the sheath. The bacillus thus looks like a diplococcus, and where two such bacilli are placed end to end they look like a chain of four spherical cocci.

Kitasato in the same paper describes the cultural characteristics of the bacillus. It does not grow below 28° C. It grows well in broth and on glycerine agar at 37° C. The growth in broth appears as whitish small granules or flocculi, and the broth does not become turbid. The cultures soon die out—stained specimens from the cultures show the same bi-polar staining.

Pfeiffer later showed that the addition of blood to the culture medium greatly enhances the growth of the bacillus—especially on subcultures, and for this purpose smeared blood over the surface of the agar medium.

Klein<sup>2</sup> examined films of sputum in 20 cases of influenza, during February and March, 1892, and found the bacillus of Pfeiffer present in every case. The films were stained with carbol methyl blue. The organism was a minute bacillus (0.4  $\mu$   $\times$  0.8  $\mu$ ), with rounded ends and bi-polar staining. From washed sputum pure cultures were obtained in broth, and if subcultures were made every two or three days, the growth could apparently be carried on indefinitely. Growth was also obtained on ordinary agar, and subcultures for as many as 20 generations obtained.

Films made from the cultures showed the bacilli growing in long twisted threads or chains, the bacilli being placed end to end and enclosed in a continuous sheath. In all specimens, no matter how recent, spherical or oval bacilli appear, many times thicker than the typical bacillus. The number of these spheres is greater in later than in recent cultures and the largest of them often show a vacuole in their centre or at one side.

Canon, at the same time as Pfeiffer and Kitasato and in the same paper (vide Pfeiffer<sup>1</sup>), stated that he examined influenzal blood by making cover-slip films. The films were dried, fixed in absolute alcohol, and stained in methyl blue eosin for several hours at 37° C. He states that in every case he saw 5 to 20 bacilli in each cover-slip film, and these bacilli were definite and pathognomonic of the disease. Further, he states that by using 8 to 12 drops of blood he succeeded in every case in growing the bacillus on sugar agar.

Klein<sup>2</sup> examined 43 cases, and only found bacilli in cover-glass blood films in six of these. The bacilli had the characteristics of Pfeiffer's bacillus, but in no case was a growth obtained on subculture. He concludes that "any bacilli of influenza that may gain access to the circulation lose here their vitality and are present in the blood only as dead bacilli."

Klein also performed animal inoculation experiments, using sputum containing Pfeiffer's bacilli, and broth cultures of the bacilli as the inoculum. Rabbits and monkeys were injected, but although the subcutaneous, intravenous, and intratracheal routes were employed, in no case was the disease reproduced. The position at the commencement of the present epidemic was therefore this—a bacillus



was described which was found in the sputum in every acute case of influenza; it was also seen in the blood in a certain number of cases. Attempts to reproduce the disease in animals by injecting the bacillus had failed. It was generally considered that the bacillus was only seen in material obtained from patients suffering from influenza.

Now one may say that there is considerable doubt as to whether Pfeiffer's bacillus is the cause of influenza. Many papers have been published by workers in Europe on the bacteriology of influenza during the present epidemic, and their results are by no means concordant. The examinations comprise those of posterior nasal swabs, sputum, pleural effusions, blood, and post-mortem materials—chiefly lungs and lymphatic glands. The results of these investigations are shown below.

#### Posterior Nasal Swabs.

In the following table (I.) accounts of the experiments of eight different observers have been noted, and from the results shown it will be seen that Pfeiffer's bacillus or a diplococcus has been obtained.

TABLE I.

Observer.	No. of cases.	Pfeiffer's bacillus found.	Cocci.
		Per cent.	Per cent.
Abrahams, Hallows, and French <sup>3</sup> ...	10	50	100
Whittingham and Sims <sup>4</sup> ...	50	38	100
Braxton Hicks and Gray <sup>5</sup> ...	?	80	100
Little, Garofalo, and Williams <sup>6</sup> ...	20	0	100
Averil, Young, and Griffiths <sup>7</sup> ...	16	0	100
Matthews <sup>8</sup> ...	12	100	100
McIntosh <sup>9</sup> ...	12	66·8	100
Fildes, Baker, and Thompson <sup>10</sup> ...	15	80	100

The net result of these various investigations is that Pfeiffer's bacillus has been found in 51·8 per cent. of cases of naso-pharyngeal swabs taken from influenzal patients, cocci being also found in every case.

#### Sputum.

The result of the observations shown in Table II. is that Pfeiffer's bacillus has been found in the sputum in 42 per cent. of cases.

TABLE II.

Observer.	No. of cases.	Pfeiffer's bacillus found.	Observer.	No. of cases.	Pfeiffer's bacillus found.
		Per cent.			Per cent.
Gotch and Whittingham <sup>11</sup> ...	50	8	McIntosh <sup>9</sup> ...	25	84
Braxton Hicks and Gray <sup>5</sup> ...	?	75	Fildes <sup>10</sup> ...	106	43
Little, Garofalo, and Williams <sup>6</sup> ...	20	0	Leichentritt <sup>13</sup> ...	72	60
Averil, Young, and Griffiths <sup>7</sup> ...	41	78	Löwenfeld <sup>14</sup> ...	55	71
Selter <sup>12</sup> ...	33	0	Graetz <sup>15</sup> ...	182	1·5

As regards other organisms, Gotch and Whittingham<sup>11</sup> found a Gram-negative micrococcus resembling *Micrococcus catarrhalis* in 100 per cent. of cases during the first wave of the epidemic. Little, Garofalo, and Williams found a Gram-positive diplococcus with flattened adjacent sides in 100 per cent. of cases, whereas Bernhardt<sup>16</sup> describes a Gram-positive diplococcus (*Diploccoccus epidemicus*) as occurring in all cases.

#### Pleural Effusions.

Netter<sup>17</sup> examined 12 cases (all purulent) and found Pfeiffer's bacillus in 8 per cent. Braxton Hicks and Gray<sup>5</sup> found Pfeiffer's bacillus on two occasions in pleural exudate, in addition to a diplostreptococcus. This latter organism was allied to, if not identical with, the *Streptococcus mucosus* (of Stephan<sup>18</sup>), and was found in every case of pleural effusion, but the number of cases examined is not given.

**Blood cultures.**—These have either proved sterile, yielded Pfeiffer's bacillus or a coccus (of different varieties) in the proportions shown in Table III.

The resultant of this series is that 82·8 per cent. of blood cultures have proved sterile, 7·8 have yielded Pfeiffer's bacillus, and 9·4 per cent. cocci of different varieties. The

cocci which Whittingham and Sims<sup>4</sup> found in their blood cultures were of different varieties—a streptococcus, a pneumococcus, and a *Diploccoccus mucosus* (Stephan<sup>18</sup>) in the relative proportions of 5, 1, and 1. This *Diploccoccus mucosus*

TABLE III.

Observer.	No. of cases.	Sterile.	Pfeiffer's bacillus found.	Cocci found.
		Percent.	Percent.	Per cent.
Abrahams, Hallows, and French <sup>3</sup> ...	10	90	—	10
Whittingham and Sims <sup>4</sup> ...	50	86	—	14
Braxton Hicks and Gray <sup>5</sup> ...	?	50	—	50
Little, Garofalo, and Williams <sup>6</sup> ...	20	100	—	—
Averil, Young, and Griffiths <sup>7</sup> ...	9	100	—	—
Gotch and Whittingham <sup>11</sup> ...	?	100	—	—
Netter <sup>17</sup> ...	12	83·4	16·6	—
McIntosh <sup>9</sup> ...	10	80	—	20
Fildes, Baker, and Thompson <sup>10</sup> ...	?	100	—	—
Ortoni and Barbié <sup>19</sup> ...	62	39	61	Yes.*

\* ? How much.

was described by Stephan<sup>18</sup> at the end of the year 1916. He isolated it in an extensive outbreak of influenza in Strumpell's clinic at Leipsic, and obtained it both from blood and sputum. The cultural characteristics of this organism are described later. Post mortem Segale<sup>20</sup> obtained another coccus from heart blood. He called it the *Streptococcus pandemicus*, and finding it also in spinal fluid and lymphatic ganglia had 55 per cent. positive results in a series of 54 cases.

#### Post-mortem Material: Lungs and Lymph Glands.

In the post-mortem examination shown in Table IV. Pfeiffer's bacillus was found in 38·3 per cent. of cases, and cocci of different varieties in 47·5 per cent. of cases.

TABLE IV.

Observer.	No. of cases.	Pfeiffer's bacillus found.	Cocci.	Other organisms
		Per cent.	Per cent.	Per cent.
Abrahams, Hallows, and French <sup>3</sup> ...	28	25	96	—
Braxton Hicks and Gray <sup>5</sup> ...	?	0	?	—
Fletcher <sup>21</sup> ...	36	30·5	44·3	—
Netter <sup>17</sup> ...	7	71	?	—
Harris <sup>22</sup> ...	2	0	0	100 <sup>23</sup>
Segale <sup>20</sup> ...	?	0	50	—
Leichentritt <sup>13</sup> ...	6	100	—	—
Löwenfeld <sup>14</sup> ...	45	80	—	—

\* An organism resembling *B. pestis*.

Thus Abrahams, Hallows, and French<sup>3</sup> found a *Streptococcus longus* in 36 per cent. of cases, a diplostreptococcus in 36 per cent. of cases, and a pneumococcus in 26 per cent. of cases. Fletcher<sup>21</sup> found a meningococcus in 30·5 per cent. of cases, a pneumococcus in 8·3 per cent. of cases, and a streptococcus in 5·5 per cent. of cases. The organism found by Segale<sup>20</sup> was his *Streptococcus pandemicus*.

From the publications during the present epidemic, which have been quoted above, we see that Pfeiffer's bacillus has been isolated from—

Naso-pharyngeal swabs in 51·8 per cent. of cases.  
Sputum " 42 " "  
Pleural fluids " 8 " "  
Blood " 7·8 " "  
Lungs and lymph glands " 38·3 " "

During the epidemic various media have been devised which have been considered to have a specially selective action favouring the growth of Pfeiffer's bacillus. These are blood media in which the blood has been subjected to the action of trypsin, as in Matthews's medium,<sup>8</sup> or boiled as in Levinthal's medium.<sup>23</sup> Thus, Fildes<sup>10</sup> states "the classical blood-agar medium has been practically useless under the conditions met with," but using Levinthal's medium he recovered Pfeiffer's bacillus in a high percentage of cases. Fleming<sup>24</sup> stated that if blood is boiled with



water, and only the clear filtrate added to agar, an efficient medium for growing influenza bacilli is obtained, and I suggest that it is possible that the essential element is iron which is liberated from the hæmoglobin by boiling and present in the filtrate.

On the other side we have the records of observers who have examined large numbers of cases and used the very latest and most fashionable media, and yet failed to obtain Pfeiffer's bacillus in more than an inconsiderable percentage of cases, and we must remember that the bacillus was first isolated without the use even of the simplest form of blood medium, and was stated to grow in broth cultures.

The case for Pfeiffer's bacillus is still further weakened by the fact that it has been found in cases which are not influenzal in nature. Thus, Fildes<sup>10</sup> examined 71 naso-pharyngeal swabs from healthy individuals and found Pfeiffer's bacillus in 21 per cent. Fleischmann<sup>25</sup> has shown that Pfeiffer's bacillus may be found in healthy tonsils, and in the tonsils in diphtheria and scarlet fever; also in broncho-pneumonia occurring as a complication of measles, and in tuberculous cavities in lungs, and in bronchiectasis.

The organism does not, therefore, fulfil even the first postulate of Koch for specificity—which states that it shall be found in every case in lesions typical of the disease, and there alone. It has not been shown to be pathogenic to animals, and it only produces slight serological reactions in man during infection.

Ford Robertson,<sup>26</sup> a staunch supporter of the Pfeiffer school, states that by injection into man of a killed culture of Pfeiffer's bacilli he can at will produce a "controlled attack of influenza." How he can prove that the reaction following the giving of the vaccine differs in any way from that following the injection of any other vaccine he does not state; but to assert that an attack of the specific disease influenza is produced requires some evidence to support it, and that is not given.

If Pfeiffer's bacillus is not considered to be the cause of influenza, what alternatives are left?

First of all, the infective agent may be of small size and belong to the class of filter-passers. Nicolle and Lebaillly<sup>27</sup> showed in October, 1918, that filtered sputum of influenzal cases reproduced the disease in man when inoculated by the subcutaneous route; further, he used unfiltered sputum and injected it by the subconjunctival and nasal routes in monkeys, and produced a disease resembling influenza. Since then Gibson, Bowman and Connor,<sup>28</sup> and Rose Bradford, Bashford and Wilson,<sup>29</sup> working independently, have published results showing that a filtrable virus exists in material obtained from influenza patients (sputum, blood, pleural fluid). This virus, when injected into animals—monkeys and guinea-pigs—produces in some cases death, in others illness. Post mortem the lesions found in the lungs, trachea, pleura, and heart muscle resemble those seen post mortem in man in influenza. From this material the virus is recoverable, and by animal passage increases in virulence. It is anaerobic and can be grown by the Noguchi method.

It is thus demonstrated that a virus which is a filter-passer can be obtained from influenzal material; but whether the disease produced in the animals is influenza still requires proof. Leschke,<sup>30</sup> working with the filtrate obtained from an influenzal lung, sprayed man and produced typical attacks of influenza. In one instance two people who nursed the sprayed individual developed the disease.

Although the amount of work which has been done on filter-passing organisms in influenza is small, yet the evidence is weighty as regards the presence of a filtrable virus, but yet insufficient to prove that it is the actual causative agent either in toto or merely as a stage in the life-history of a larger organism.

*The cocci.*—Authors who have been unsuccessful in their search for Pfeiffer's bacillus, and who have not experimented with the filter-candle, have described cocci and put forward the suggestion that here we have the actual cause of the disease. Gotch and Whittingham<sup>11</sup> described a Gram-negative micrococcus occurring in all cases in the sputum and naso-pharyngeal swab cultures as the predominating organism. They inoculated it on the naso-pharynx of two healthy individuals and "produced the disease in a typical form." They therefore conclude that this micrococcus is probably the specific organism, either alone or in conjunction with *B. influenza* (Pfeiffer). The cultural characteristics of this organism are not described.

Whittingham and Sims<sup>4</sup> obtained from blood cultures streptococci, pneumococci, and an organism resembling the *Diplococcus mucosus* of Stephan.<sup>18</sup> When first isolated it is Gram-negative, but on subculture not only does its staining by Gram become variable, but it assumes a pleomorphic form—oval diplococci and bacillary forms appearing. These bacillary forms are always Gram-negative, stain readily with dilute carbol fuchsin and grow on ordinary agar. They occur mixed with the cocci in individual plate colonies.

Donaldson<sup>31</sup> has published some most suggestive notes on his bacteriological findings. In the first place he failed to find Pfeiffer's bacillus in every case examined, but he found constantly an organism previously undescribed. This is a coccus which he calls the organism "D." It is characterised by its remarkable pleomorphism.

"It may grow in the form of enormous bacilli, or as extremely long chains of giant cocci, or cocci alternating with giant bacilli of all shapes. Later on it loses this pleomorphism and comes to resemble a staphylococcus, and finally assumes the form of large deeply Gram-positive tetrads. The cultural characters vary with the different morphological phases, and it shows an extraordinary variability towards Gram's stain."

Donaldson also suggests that there may be a filter-passing stage to this organism. Rosenow<sup>32</sup> has described a similar pleomorphic coccus in acute epidemic poliomyelitis. Crookshank<sup>33</sup> has pointed out the resemblance between Rosenow's coccus, the organism found by Rajchman in encephalitis lethargica, and Donaldson's organism. Further, he points out that Rajchman from his pure cultures of "Rosenow" produced under strict anaerobiosis a free growth of minute bodies resembling Flexner's "globoid bodies" and also those obtained by Rose Bradford, Bashford and Wilson<sup>29</sup> from the filtrable virus in influenza.

The sugar reactions of various cocci isolated in influenza are given in Table V.

TABLE V.

Organisms.	Morphology.	Glucose.	Lactose.	Saccharose.	Maltose.	Mannite.	Lavulose.	Milk.
Donaldson's "D" organism.	Pleomorphic coccid and bacillary forms.	A.	A.	A.	A.	—	—	A.
<i>Diplococcus mucosus</i> (Stephan).	"	A.	—	A.	A.	—	—	A.C
<i>Diplococcus pandemicus</i> (Segale).	Gram + pairs and short chains of cocci	A.	A.	—	A.	—	—	—

A. = Acid. A.C = Acid clot.

The result of these investigations is that it has been demonstrated that in this epidemic a diplococcus, often growing in chains, has been present very constantly in the sputum, occasionally in blood, naso-pharyngeal swabs, and post-mortem material. The coccus is pleomorphic and variable in Gram staining, and possibly also in its sugar reactions.

Evidence that this pleomorphic coccus is the actual causative agent in influenza is at present incomplete.

#### Bacteriological Investigations.

I did not begin active laboratory work in connexion with influenza until the commencement of January, 1919. At that period I was impressed by two facts—the relative infrequency with which Pfeiffer's bacillus was being found, and the significance of the observations of Donaldson<sup>31</sup> on his pleomorphic organism "D" and its possible relation to the filtrable virus obtained by Nicolle<sup>27</sup> and Gibson.<sup>24</sup> Further, Captain H. J. B. Fry, R.A.M.C. (T.), pathologist at No. — General Hospital, had obtained results which suggested the occurrence of two other stages in the life-history of the parasite—a large spore stage and a hyphal stage. The results I am about to describe are those of my own experiments conducted in the laboratory of No. — General Hospital, which was then in the charge of Captain Fry. Much work has been done by Captain Fry alone, both before and after I commenced my investigations, and he has already sent in for publication a preliminary note on his findings. I therefore make no claim for originality, and the deductions drawn are merely the sequence of the deductions of previous observers.



**Examination of sputum.**—Sputum was collected in sterile Petri dishes and examined shortly after expectoration. Films were made and stained by Gram's method, carbol-fuchsin being used as a counter stain. In certain cases the sputum was examined daily throughout the disease; in others only one examination was made. A large number of sputa have thus been looked at. Examination of these films shows the presence of a variety of organisms, and it is suggested that certain of these are stages in the life-history of a mycotic parasite—that, in other words, influenza is a mycosis.

The evidence that is forthcoming to support this view will be detailed below, but a preliminary statement will help to unify the bacteriological findings and enable them to be considered in what is believed to be their true relations one to another.

Film preparations made from material from two sources show most, if not all, the different stages of the parasite; these sources are the lungs and the intestines. Thus sputum in cases of influenzal bronchitis or broncho-pneumonia, and faeces in cases of influenzal enteritis, yield films which when stained by Gram's method show the following forms:—

1. *Hyphae*, septate and branching.—In their substance large round or oval spores 4 to 5  $\mu$  in diameter may be formed, or smaller spores or smaller coccal bodies which occur in diplococcal and streptococcal forms. Further small exospores may be seen attached to and shed from their exterior. The finer filaments may septate into bacillary forms.

2. *Large spores* may occur singly or in groups. They may be round, oval, or elongated, and shaped like Zeppelins or spindles. Generally retaining Gram's stain with avidity, in some cases they are Gram-negative, or have a Gram-positive centre with a Gram-negative periphery. Further, they may be frankly Gram-negative, and contain Gram-positive granules. When seen unstained in hanging drop preparation they appear to have a smaller circular body inside the main body. Their size is about 5  $\mu$  in diameter.



1, Hyphae; 2, large spores; 3, coccal clusters; 4, small spores; 5, tetrads; 6, mulberry masses; 7, chains of cocci in hyphae; 8, bacilli.

3. *Coccal clusters*.—These consist of aggregations of small cocci, 0.5 to 1  $\mu$  in diameter, in circular masses. Generally they are Gram-negative, and contain towards the centre one or more larger Gram-positive coccal forms. They are believed to be derived from the large spores.

4. *Small spores*.—These are circular Gram-positive or negative bodies, about 2  $\mu$  in diameter. They may divide and form—

5. *Tetrads*, which are almost invariably intensely Gram-positive, or

6. *Mulberry masses*, which are knobby agglomerations of Gram-positive bodies, formed by incomplete fission of the small spores.

7. *Chains of cocci*.—These are often diplococci or diplostreptococci, and may be small with flattened opposed surfaces, and variable in Gram staining. Four, six, eight, or ten occur in a chain, or they may be larger and ovoid, forming a *Streptococcus maximus*, and not then tending to vary in Gram's stain, all the elements being Gram-positive.

8. *Bacilli*.—Large Gram-positive or Gram-negative rods, 2 to 3  $\mu$  in length and 0.5  $\mu$  in breadth. Smaller Gram-positive or negative bacilli, down to minute Gram-negative bacilli, morphologically resembling that of Pfeiffer: intermediate cocco-bacillary forms also occur.

The connexion between these stages is put forward diagrammatically (as shown above).

Returning now to the actual examination, and dealing first with *sputum*; in all cases in which films were made from cases of influenza a large number of the above stages were seen, the commonest being coccal clusters, hyphae, large spores, and diplostreptococci. Pfeiffer-like bacilli were not often noticed.

Dealing now with special cases, that of Case 124, which proved fatal on the sixteenth day of the disease, showed on the eighth day bright green purulent sputum. This contained groups of Gram-positive and Gram-negative large spores in great numbers, the only other organism being small Gram-negative bacilli in chains, and Gram-positive and Gram-negative minute cocci in clusters. (Fig. 1A.) The sputum of the next day showed many large Gram-negative spores, many minute Gram-negative cocci, and a few Gram-negative hyphal threads. This was cultured on to trypsinised serum-glucose agar and showed an apparently pure growth in 18 hours of minute circular, slightly raised, transparent colonies—a little iridescent by transmitted light, and about 0.5 mm. in diameter.

Examination of a film made from a single colony showed small Gram-positive cocci and a few Gram-negative bacilli, and Gram-negative large spores with Gram-positive cocci attached to their periphery. This culture was kept 3 days at 37° C. and 13 days at room temperature, and then showed a thick, uniform, diffuse, white heaped-up growth, glistening strongly by reflected light. A film showed this to be an almost pure culture of Gram-positive large spores, together with some Gram-negative large spores containing Gram-positive granules—the other elements being scanty and consisting of some small Gram-positive and negative cocci, and a Gram-negative filament with Gram-positive exospores. (Fig. 1B.) Subculture on agar for 20 hours yielded a diffuse growth of minute pin-point grey translucent colonies, becoming confluent. Single colony examinations showed many Gram-positive large spores of varying shapes, a few small Gram-positive cocci, and one or two Gram-negative bacilli.

On further subculture the large spores were obtained practically pure, and on hanging drop in 2 per cent. glucose broth grew out at 37° C. in 16 days into branching filaments, containing and shedding the small coccal forms and having a variable Gram reaction.

A further 10 cultures were made from sputum; they were planted either with or without preliminary washing in sterile saline on the following media: (1) Matthews's medium<sup>8</sup>; (2) Levinthal's medium<sup>23</sup>; (3) Löffler's serum medium; (4) tryptic serum-glucose agar; (5) agar; (6) 1/500,000 brilliant green agar.

Now, although Matthews's medium and Levinthal's medium are described as being especially suitable for the isolation of Pfeiffer's bacillus, in no case could I isolate it. I obtained single colonies which showed minute polar

staining, non-motile, Gram-negative bacilli, growing in chains and resembling Pfeiffer, but the colonies individually were never pure. They contained one or two Gram-positive coccal elements, and would grow on subculture on agar. Further, on subculture the Pfeiffer-like bacilli would often disappear—even when the subculture was made in Matthews's medium, and Gram-positive and negative coccal forms grow.

In another instance, in a case of broncho-pneumonia, with typical blood-stained sputum, the washed sputum was planted on Matthews's medium. After 24 hours' incubation at 37° C. a growth showing some minute colonies resembling those described for Pfeiffer was seen.

Examination of three of these showed in each case a mixture of Gram-positive cocci and a few Gram-negative bacilli, but no Pfeiffer's colonies were obtained. Case 90, which proved fatal on the fourteenth day of illness, showed on the eleventh day sputum thick, green, and purulent.

In films only Gram-negative, Pfeiffer-like bacilli were seen in enormous numbers, together with a few Gram-negative coccal clusters. It was planted on Matthews's medium and on tryptic serum-glucose agar. After incubation at 37° C. for 24 hours, examination of individual colonies showed no Pfeiffer or even Pfeiffer-like bacilli—thus one single colony contained Gram-positive diplostreptococci, Gram-



negative cocci, Gram-positive large spores, and minute Gram-positive cocci.

The results of the sputum examinations were therefore as follows:—

*Films* showed organisms which appeared diagnostic of influenza—namely, hyphæ, large spores, small spores, coccal clusters and mulberry masses, diplostreptococci.

*Cultures* in no case yielded Pfeiffer's bacillus. A pure culture of large spores was obtained, which grew out into hyphæ, small spores, and coccal forms. Single colonies, even on subculture, were not pure, in that they did not contain only one organism.

An endeavour was then made to determine whether these organisms, as seen in the sputum in every case of influenza, occur in other respiratory diseases. Three cases of pulmonary tuberculosis with tubercle bacilli in the sputum, when stained by Gram's method, showed none of these forms.

Two or three cases of post-anæsthetic bronchitis have been examined with negative results, but the material from a sufficient number of definitely non-influenzal cases has not been available to make a certain statement on this point, which appears to be of considerable importance.

*Examination of feces.*—Six cases of influenza that had attacks of acute enteritis during their illness were examined bacteriologically. They were passing liquid motions containing bright red blood. Specimens were collected on sterile swabs, and direct films stained by Gram's method. In all cases large spores, Gram-positive and Gram-negative, were seen. In addition there were coccal clusters of Gram-negative and Gram-positive elements, hyphal filaments,

emulsion of the agar slope culture was made and found to give no agglutination in dilutions of 1/25 to 1/250 of the patient's serum taken during convalescence on the twelfth day of illness.

The organism appears to resemble closely the pneumobacillus of Friedländer, but did not form a nail-headed growth in slab cultures in gelatin. Further, it appeared pleomorphic, for on incubating the broth culture for 20 days at 37° C. Gram-positive large spores, small Gram-positive cocci, and minute Gram-negative cocci were found.

*Urine cultures.*—It is a comparatively common occurrence to find albumin, blood cells, or even casts present for a few days in the urine during an attack of influenza, but I have not seen any publication which describes positive results in urine cultures during the disease.

In my series seven cases of influenza were examined for the presence of organisms in the urine, and of these six were positive, giving a percentage of 86 per cent. positive results.

I performed these experiments at the suggestion of Captain Fry, who had previously obtained positive results in some cases. In every case the urine was drawn off under the most rigidly aseptic conditions by catheter into a sterile test-tube. 5 c.cm. were transferred to a sterile centrifuge tube and centrifuged at high speed for 10 to 15 minutes. By means of a sterile pipette films were made from the deposit, and a broth tube and agar slope or Löffler slope were also inoculated. The urine and the cultures were then incubated at 37° C.

The results obtained may be expressed in Table VI.

TABLE VI.

No. of case.	Day of disease, temperature, and nature of case.	Urine deposit.	Duration of incubation of urine necessary before obtaining growth on subculture.	Primary subculture.	Later subcultures.
81	5th day. T. 98° to 99° F. Bronchitis.	No albumin, no cells, no casts. G. - bacilli with G. + tips; G. + cocci.	72 hours (Löffler).	G. + cocco-bacilli; G. + cocci; G. - threads.	Pfeiffer-like bacilli. G. + cocci; G. + large spores. Mucin.
83	4th day. T. 100° F. Bronchitis.	No albumin, a few epithelial cells. G. + cocco-bacilli.	Sterile.	Sterile.	Sterile.
85	5th day. T. 102° F. Bronchitis.	Trace of albumin, one or two red and white blood cells, one cast. G. - cocci; G. - bacilli.	48 hours (agar and Löffler).	G. + cocci; G. - cocci; G. - bacilli.	G. + cocci; G. + diplococci; G. + large spores. Mucin.
87	7th day. T. 99° F. Bronchitis.	No albumin, no cells or casts. G. + diplococci; few G. - diplococci.	24 hours (agar and Löffler).	G. + diplococci; G. + tetrads; G. - bacilli.	G. + cocci + small spores.
130	8th day. T. 100° to 101° F. Severe bronchitis.	Albumin present, no cells or casts. G. + small spores; G. - bacilli; G. - bacilli with G. + tips; G. - filaments.	18 hours (broth); 40 hours (agar).	G. + cocci; G. - small spores.	G. + diplostreptococci.
159	6th day. T. 100° F. Severe bronchitis.	No albumin, no cells. G. + large spores; G. - small spores.	Direct (broth).	G. + ovoid diplococcus; G. - hyphæ containing small spores; G. + filaments.	G. + ovoid diplostreptococcus.
170	10th day. T. 100° F. Bronchitis.	Much albumin, many red cells, few white cells. ? G. negative, large spores.	Direct (broth); 18 hours (agar).	G. + small spores; minute G. + diplococci; G. - large spores.	G. + diplostreptococcus. Few G. - cocci.

G. + = Gram +. G. - = Gram -.

diplostreptococci, mulberry masses, and bacilli. In one case (No. 87) a 1/500,000 brilliant green agar plate was inoculated from a saline emulsion of the feces. After 24 hours' incubation at 37° C. small raised, rounded, whitish pin-point colonies were seen.

A film made from one of these showed Gram-negative bacilli of varying lengths and Gram-negative filaments, and one of the filaments contained a Gram-positive spore in its substance. A subculture from this colony on Löffler's serum medium produced in 24 hours at 37° C. a pure culture of Gram-negative bacilli of varying lengths and a few filamentous forms, the culture being a uniform, raised glistening growth, whitish in colour, composed of minute colonies. This was subcultured in broth for 24 hours at 37° C., and produced a uniform turbidity of the medium. A film showed Gram-negative, short, rather plump bacilli, and no filamentous forms. An agar slope was inoculated; after 24 hours at 37° C. the colonies were circular, about 2 mm. in diameter, opaque, and grey.

The sugar reactions of this organism was as follows: Acid and gas were produced in lactose, glucose, mannite, and cane sugar. Milk became acid the first day, and remained acid with clot the second day. Gelatin was not liquefied. It was very slightly motile. A saline

Thus, whereas six out of seven urines gave a positive culture, not one gave a positive culture when placed direct (without previous incubation of the urine) on to a solid medium; but if the urine were incubated at 37° C. for from 18 to 72 hours subcultures were obtained in six cases. The two urines which were also put direct into broth gave a direct growth, but in these cases also the urine had to be incubated before a growth could be obtained on subculture on a solid medium. Further, it will be seen that from urines the following stages have been obtained: hyphæ, large spores, small spores, coccal clusters, tetrads, mulberry masses, diplostreptococci, and Gram-negative bacilli.

The sugar reactions of the cocci obtained from Cases 130, 159, and 170 were determined, and are shown in Table VII.

A control specimen of urine, removed with similar precautions from a healthy individual by catheter, remained sterile during incubation for a week, and would not grow on subculture.

*Blood cultures.*—These were made in 13 cases, and in one case a positive result was obtained, which is equivalent to 7.7 per cent. positive results. In each case the blood was removed by venipuncture, and received direct through a sterile needle with short rubber tube attached into the tubes containing the medium.





1 A



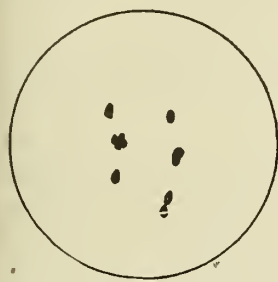
1 B



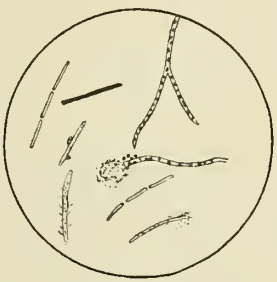
1 C



1 D



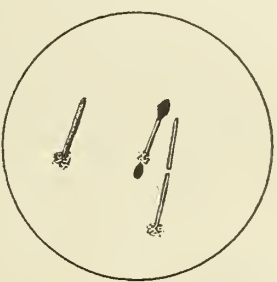
1 E



2 A



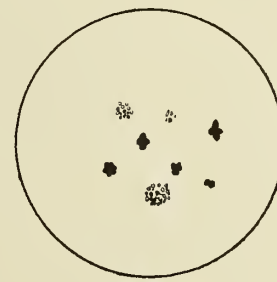
2 B



2 C



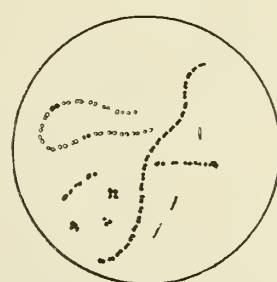
3 A



3 B



3 C



4 A



4 B



4 C



4 D



4 E



4 F

1. Large spores:—

In A, sputum film; B, sputum culture; C, blood culture; D, urine; E, faeces.

2. Hyphae:—

In A, sputum film; B, faeces; C, culture from large spores.

3. Coccal clusters and mulberry masses:—

In A, sputum film; B, faeces; C, urine.

4. Tetrads, cocci, bacilli:—

In A, sputum film; B, sputum culture; C, faeces; D, urine film; E, urine culture; F, blood culture.



TABLE VII.

No. of case.	Glucose.	Lactose.	Maltose.	Mannite.	Cane sugar.	Salicin.	Milk.	Gelatin.
130	Acid.	Acid.	Acid.	Nil.	Nil.	Nil.	Acid and clot.	Not liquefied.
159	"	"	"	Acid.	"	Acid.	"	Liquefied.
170	"	"	"	Acid (late).	"	Nil.	Alk.	Not liquefied.

The media employed were: (1) Broth; (2) 2 per cent. glucose broth; (3) 4 per cent. maltose broth; (4) citrated broth; (5) sterile urine. The tubes contained 5 c.cm. of the medium, and an equal volume of blood was added to each. In two cases the blood was in addition received direct in a sterile tube before subcultures were made, and in one of these there was a positive result, the growth being obtained on serum-glucose agar from the broth subculture which had been incubated six days. Although in the other cases subcultures from the primary culture remained sterile, yet in 11 out of the 12 cases organisms were seen in the primary cultures after incubating for periods varying from 4 to 24 hours. The results are shown in Table VIII. :—

TABLE VIII.—Blood Cultures.

No of case.	Day of disease.	Temperature (Fah.).	Primary culture.	Subculture.
82	6th	99°-100°	G. - rods with G. + tips (broth).	Nil.
83	3rd	101°-102°	G. + granular bacilli; G. - bacilli (broth).	"
83a	4th	101°	Nil (broth).	"
84	5th	99°	G. - bacilli, G. + cocci (citrated broth); G. + small spores (urine).	"
88	8th	103°-104°	G. + small spores; G. + coccobacilli and filaments; minute G. + coccal bodies (broth and glucose broth).	"
89	9th	103°	Large G. + spores and hyphae (glucose broth).	"
90	"	101°-102°	G. + cocci (glucose broth).	"
92	6th	100°-8°	G. - large spores and hyphae (glucose broth).	"
96	9th	101°	G. + diplococci; G. - bacilli; G. + small spores (glucose broth).	"
126	8th	103°	G. - cocci and bacilli; G. - large spores (glucose broth).	"
135	7th	101°-102°	G. - large spores with G. + centre (incubated blood, glucose broth).	G. + diplococci in chains. †
181	4th	103°	G. + large spores and G. + cocci.	Nil.
197	9th	105°	G. - large spores.	"

\* But grew from blood later, when patient was bled.

† Agar and serum-glucose agar.

The subcultures from Case 135 grew equally well on agar and serum-glucose agar, in minute transparent dew-drop colonies, tending to become confluent.

The sugar reactions were as follows: Glucose, acid; lactose, acid; maltose, acid; mannite, nil; cane sugar, nil; salicin, nil; milk, alkaline; gelatin, not liquefied.

It therefore resembles very closely the coccus isolated from the urine in Case 170; the only difference being the late change produced in mannite in the urine coccus.

Primary cultures of blood show the following stages: Large spores, small spores, hyphae, cocci in clusters, pairs and diplostreptococcal form, Gram-negative bacilli and Gram-negative bacilli with Gram-positive tips; and minute coccal forms which appear to be liberated from large spores, and which are approaching the limits of microscopic visibility.

There is difficulty in obtaining growth on subculture, but in one case the coccal form grew out, and had the same morphological appearance as that seen in urine and sputum, although the sugar reactions varied slightly.

#### Pleural Effusions.

Six cases were examined bacteriologically. Cells were scanty, a few small lymphocytes and polymorphonuclears being found in the deposit after centrifugalisation. Direct films showed a few Gram-negative bacilli, and in one case

a pleomorphic variably Gram-staining organism of diplostreptococcal type. In no case was growth obtained on subculture. The organisms described above are illustrated in the accompanying figures.

1. *Large spores*.—In A, sputum film; B, sputum culture; C, blood culture; D, urine; E, faeces.

2. *Hyphae*.—In A, sputum film; B, faeces; C, culture from large spores.

3. *Coccal clusters and mulberry masses*.—In A, sputum film; B, faeces; C, urine.

4. *Tetrads; cocci, bacilli*.—In A, sputum film; B, sputum culture; C, faeces; D, urine film; E, urine culture; F, blood culture.

#### Conclusions from Bacteriological Examinations.

Examination of material obtained from patients suffering from influenza has shown the presence of a mycotic organism.

It is possible that the disease is a mycosis—not necessarily in all cases a bronchomycosis, but perhaps in some an enteromycosis.

The originality of these findings belongs to Captain Fry, with whom I have performed experiments on animal inoculation and examination of material obtained post mortem in man.

Although the results obtained do not justify an assertion that influenza is a mycotic infection, they appear to demonstrate the fact that such an organism is present during the disease, and afford a means of unifying the seemingly discordant results that have been obtained by other workers.

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## SANATORIUM TREATMENT AND MILITARY SERVICE:

### AN ANALYSIS OF 47 CASES.

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The following account of the adventures of a number of patients who had served in the various services during the war, after being treated in a sanatorium, may be of interest at the present time. It must not be supposed that this is the best which might be expected if the cases had been treated at an earlier date, for many of these cases were not very favourable, and in many symptoms had existed for prolonged periods before undergoing treatment, and the stage stated does not indicate necessarily the duration of symptoms, as some cases advance rapidly in a short time, whilst others go on for long periods before much apparent destruction has taken place. Most of these cases were volunteers in the true sense, for most of them could have procured exemption by obtaining a certificate. They did not ask my advice before enlisting; in some cases I should have attempted to dissuade them, and a number ought certainly to have been rejected. I think, however, it goes to show that were cases treated at sanatoriums as soon as symptoms became recognisable and were persistent, it would become unnecessary to reject



Pr. or Ab. = Presence (+) or absence (-) of tubercle bacilli: (1) on admission; (2) on discharge.

Stage.	Year of admission.	Pr. or Ab.	Progress and particulars.
		(1) (2)	
1 1st	1907	-	Enlisted 1915; 4 years France; demob., well and working at his trade.
2 1st	1909	-	Severely wounded, left to die; almost complete recovery from wounds, working at his old trade for two years.
3 2nd	1909	+	Still in the Army, well.
4 1st	1909	-	Untraced; probably should not have been taken.
5 2nd	1909	+	Engineer, Mercantile Marine; torpedoed Feb., 1917, 350 miles from land, 15 hrs. in open boat, no worse; killed by torpedo, April, 1917.
6 1st*	1910	-	Should not have been enlisted; demob.; working at his old trade.
7 2nd	1910	+	Three years France, sergeant; demob., well, working at his old trade.
8 1st	1910	-	Served in Salonika and India; demob.; working at his old trade.
9 2nd	1910	+	Two years in Army; demob., well, returned to his old trade.
10 1st	1910	+	Enlisted at latter end of war; demob. against his will, working at his old trade.
11 2nd	1910	(a)	Served in France until very severely gassed; readmitted; well, working at his old trade.
12 1st*	1910	-	Served from 1914 in Egypt and France, wounded; demob., working at his old trade.
13 1st	1911	-	Enlisted under age; discharged, working at his old trade.
14 2nd	1911	+	(b) Another affection whilst in sanatorium, kept him in bed for weeks; served through war till severely wounded; well.
15 2nd	1911	+	Served some years in France; sergeant; readmitted; well.
16 1st	1911	-	Served in Egypt; demob., well.
17 2nd	1911	-	Served four years on home service; demob., well, and working at his old trade.
18 2nd	1911	-	Enlisted 1914. Very severe y wounded in France; well except for results of injuries.
19 1st	1912	-	Served from beginning of war, wounded twice, Egypt and France; well.
20 2nd	1912	+	Enlisted 1914. Wounded in France. Readmitted 1917; died in a few days from influenza.
21 2nd	1912	+	Enlisted 1914, served in Egypt, broke down after 2 years' service; readmitted, worked for a time; died from acute tuberculosis after short illness.
22 1st	1912	-	Still in Army, well.
23 1st	1913	+	Reservist, compelled to go to France; broke down. At present working.
24 1st	1913	+	(b) Served throughout war in Navy. Torpedoed, 1917; 4 days in open boat. Malaria whilst in Red Sea, Jan., 1919, still in Navy and quite well.
25 1st	1913	-	Enlisted 1915; 1-corporal; at present demob., well, and working at his old trade.
26 1st	1913	-	Served in Egypt, Dardanelles, and France; demob., well, working at his old trade.
27 1st	1913	-	(c) Enlisted early in war, corporal, gassed and badly wounded; demob., well but for wound trouble.
28 1st	1913	-	Served at home; demob., working at his old trade.
29 2nd	1914	-	Fought through earlier part of war in France, last heard of in military hospital.
30 2nd	1914	-	Enlisted 1916, still in France, well.
31 3rd	1914	-	Fought in France, broke down; in 1917 sent to Egypt, ship torpedoed, 4 hours in open boat; demob., well, and working at his old trade.
32 1st	1914	-	Still in Army, well.
33 3rd	1914	-	Enlisted April, 1916; blown up and buried; readmitted 1917; died from pulm. tuberculosis two days after leaving sanatorium.
34 1st	1914	-	Enlisted 1917, corporal; served in France. Demob. Jan., 1919. In excellent health.
35 2nd	1914	-	Served four years in Army; demob., well, and working at his old trade.
36 2nd	1914	-	Enlisted when not feeling well; died after two operations in military hospital. Advised to return to sanatorium instead of going into Army.
37 2nd	1914	-	Enlisted 1914; for 14 months in thickest of fighting in France; died of wounds in 1916.
38 2nd	1914	-	Enlisted 1915, corporal; after much fighting in France very severely wounded; now demob. and working at his old trade.
39 1st	1914	-	Enlisted at 18, served in Egypt and France; well.
40 2nd	1914	-	Enlisted in 1915, was five months in Army, discharged for other illness; working at his old trade ever since.
41 1st	1915	-	Remained in sanatorium a short time, returned to Army, soon after discharged; unsatisfactory case. Working when last heard of.
42 2nd	1915	+	Killed in France, 1917.
43 2nd	1915	-	Conscripted, should not have been taken; soon afterwards discharged, now labouring.
44 3rd†	1916	+	Conscripted, should not have been taken. Died in Army from influenza (?) 1918.
45 2nd	1916	-	Conscripted; keen to go, should not have been taken; served successfully for some months; broke down after influenza; readmitted.
46 2nd	1917	-	Only in Army a short time; readmitted and is now well; he could only be treated for 3 months when first in sanatorium.
47 1st	1915	-	Enlisted 1917; gassed in France; in hospital some months; quite well, working at his old trade.

\* Acute. † Laryngeal. (a) Present before admission. (b) No sputum on discharge. (c) Reacted to tuberculin under treatment.

men on the ground that they had been in a sanatorium, and it follows from this that under ordinary peace conditions such patients would return to their former manner of life and old avocations. It should, of course, be understood that if passed as medically fit the country would have to take complete responsibility for their condition if they subsequently broke down. Had all sanatoriums spent their energies from their inception in treating early cases they might easily have produced a division of excellent soldiers; as it is, the majority of the patients treated in sanatoriums are either dead or hopelessly unfit, and are requiring after-care.

#### Analysis of Cases.

Except in certain cases which should not have been enlisted, it will be seen that the expense of treating these men for tuberculosis has not been excessive. All these cases were treated in the Ayrshire Sanatorium. I have only come across one case treated in the Ayrshire hospitals for advanced cases who enlisted, and he apparently made a bet that he would be taken, and he was passed Grade I. and saw some years' service in the East; he was finally invalided out of the Army with tuberculosis, and at the present time he is in fair condition.

The occupations of the above when admitted to the sanatorium were as follows: Coal-miners, 14; labourers, 6; schoolboys, 5; engineers, shop assistants, painters, iron moulders, and railway clerks, 2 of each; groom, bleacher, cabinet maker, iron turner, brass finisher, iron-stone miner, surfaceman, gardener, blacksmith, French polisher, mason, and agricultural labourer, 1 of each. One of these patients became a professional athlete after leaving the sanatorium, and is so engaged at the present time. One held a commission, another was offered a commission, 1 won the military medal, 1 was promoted on the field for valour, 2 were sergeants, and 3 were corporals. Three lost their lives in their country's service, 8 were wounded, 3 gassed, and 1 buried alive. One was discharged from the Army because he was said to be suffering from valvular disease of the heart; he really had heart failure due to excessive fibrosis, and should not have been taken. Another had suffered from caries in the spine; this man did home service right through the war, and is at present working at a laborious occupation. One man was discharged after an anti-enteric inoculation, and he has been working ever since. One was in hospital for some months, supposed to have pneumonia, but from the account he gave of himself he had evidently been suffering from an acute attack of tubercle; this is a mistake which is constantly being made, and is the cause of not a few incorrect death certificates. This man is now at his old work after seeing a good deal more of service. It will be noted that 14 had tubercle bacilli in their sputum, one reacted to tuberculin, and of those in whom bacilli were not found 12 were in the second stage and two in the third.

In closing I may remark that 28 had been in the sanatorium in 1913 or previous years, and had been engaged in their ordinary occupations for some time before war broke out. Finally, I would remark that the sacrifices of these men will not have been made in vain if they teach us that those who have had the misfortune to contract tuberculosis may be worthy of a better fate than to be segregated, but let it be understood there can be no worse place for an uncured tuberculous patient in war time than the Army.

LONDON HOSPITAL: OLD STUDENTS' DINNER.—The old students' dinner will be held on Thursday, Oct. 2nd, at Princes' Restaurant. Sir Bertrand Dawson will preside. This will be the first reunion of old students since the outbreak of the war. Application for tickets should be made to one of the honorary secretaries, Mr. Hunter Tod, 11, Upper Wimpole-street, W. 1, or Dr. Charles H. Miller, 32, Devonshire-place, W. 1.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON).—The following elections to scholarships have been made:—Burney Yeo scholarships: J. W. Hirst, Gonville and Caius College, Cambridge; C. F. T. East, New College, Oxford. Senior Scholarship and Todd prize: E. A. L. Crichtlow, M.R.C.S., L.R.C.P. Jelf medal: H. Kamal, M.B., B.S., M.R.C.S., L.R.C.P. Tanner prize: Miss D. E. P. Jolly.



## THE INCIDENCE OF TUBERCULOSIS AMONGST ASYLUM PATIENTS.

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SINCE the commencement of the war there has been a marked increase in the prevalence of, and death-rate from, pulmonary tuberculosis. During 1917 the crude death-rate from this disease in England and Wales amongst civilians was 1250 per million population, compared with 1178 for 1916 and 1034 for 1912-14. The cause of this increase is to be attributed to the existence of conditions directly arising from the war which have impaired our resistance to attacks by the tubercle bacillus and which have favoured the spread of infection. Such conditions are to be found in prolonged mental anxiety and worry, physical exhaustion, depletion of the normal dietary, increase of the ratio of population per house, and departure generally from the normal pre-war standard of living. This increase in the incidence of pulmonary tuberculosis provides one significant lesson. It emphasises the fact that even under pre-war conditions the national reserve of resistance to attack by the tubercle bacillus was small and that any degree of security and the prospect of finally controlling tuberculosis can never be attained until the national reserve of resistance has been materially increased.

The increase in the incidence of pulmonary tuberculosis, which has been a feature of the last four years, is especially characteristic of the mentally abnormal population. Since 1914 there has been an increase of 41 per cent. in the deaths from tuberculosis in lunatic asylums. One of us has had the opportunity of studying tuberculosis amongst the insane for a period of over 30 years, and the marked increase in the death-rate from this disease since the commencement of the war amongst the inmates of a large asylum has been a cause of much thought and anxiety. It is obvious that the reserve of resistance to tuberculous infection in the insane and low-grade mentally defective person reaches a very low standard. In the following table are given the death-rates from tuberculosis during the last 20 years amongst the inmates of a large metropolitan asylum.

Death-rates from Tuberculosis during the last 20 years amongst the Inmates of a Metropolitan Asylum.

Year.	Average No. patients resident.	Deaths from all causes.	Mortality from tubercle—		Year.	Average No. patients resident.	Deaths from all causes.	Mortality from tubercle—	
			Deaths.	Rate per 1000				Deaths.	Rate per 1000
1898	1986	194	55	27.6	1909	2069	210	70	33.8
1899	1952	250	73	37.4	1910	1911	120	31	16.2
1900	1905	310	104	54.6	1911	2049	144	38	18.5
1901	1772	164	67	37.8	1912	2068	129	41	19.8
1902	1768	134	43	23.8	1913	2051	197	59	29.0
1903	1752	131	34	19.4	1914	2099	172	42	20.0
1904	1751	158	53	30.2	1915	2045	240	70	34.2
1905	1776	126	44	24.7	1916	2041	283	102	49.9
1906	1782	127	40	22.4	1917	1941	459	141	72.6
1907	1819	151	37	20.3	1918	1769	542	208	117.6
1908	1920	156	39	20.3					

Note.—From the year 1900 onwards the diagnosis has been assured by post-mortem examination in more than 90 per cent. of cases.

From this table it will be seen that the death-rate from tuberculosis in 1914 was 20 per 1000, and that the rate has risen since that year to 117.6 per 1000 for 1918. The increase in the death-rate from tuberculosis amongst the inmates of asylums since the commencement of the war is remarkable, and is referred to by the Registrar-General in his annual report for 1917. In that report it is stated that 12 out of 97 county and county borough asylums were evacuated during the war in order that they might be devoted to military purposes, and this is stated by the Board

of Control to have led to some degree of overcrowding. But, as is pointed out by the Registrar-General, this had much abated in 1917 from what it was in 1915, when the deaths from tuberculosis were far fewer. This fact is borne out by the table given above, for in 1914, when the average number of patients was 2099, the number of deaths from tuberculosis was only 42, whereas in 1918, when the average number of patients was only 1769, the number of deaths from this cause was 208.

### Clinical Features.

One of the features of pulmonary tuberculosis is the variation in type which it presents, and the disease as it is found amongst the mentally abnormal population is a type by itself. In the great majority of cases the classical symptoms of the disease are absent. In walking through a ward reserved for the tuberculous insane one is at once struck by the almost entire absence of coughing. The same applies to sputum; the tuberculous insane patient has little or no expectoration for the twofold reason that the amount of sputum actually produced is less than in normal cases, and that any sputum which may exist is swallowed. Hæmoptysis is a rare symptom. The temperature shows very considerable variation. In certain cases the temperature during the latter stages of the disease presents the usual tuberculous type, but in many cases it is subnormal, even when marked pulmonary disease exists, and it is therefore not to be relied upon as a guide to diagnosis. In the non-tuberculous demented type of patient it is quite usual to have a subnormal temperature which rises to normal when tuberculosis develops. The most significant feature of pulmonary tuberculosis as it exists amongst the insane and mentally defective is the frequency with which gross pulmonary lesions exist without any corresponding physical signs to suggest the existence of such changes. This fact seriously complicates the question of diagnosis and provides room for doubt as to the accuracy of the statistical evidence of the incidence of tuberculosis in asylums, unless such evidence is based on post-mortem findings. The figures given in the present article are, for the most part, based on post-mortem evidence and, therefore, may be accepted as accurately representing the upward trend of asylum tuberculosis since the outbreak of war. The clinical picture of asylum tuberculosis may be briefly described as loss of flesh with progressive muscular wasting and weakness, and the onset of diarrhoea due to abdominal tuberculosis in a large percentage of cases.

### Ætiological Factors.

The high attack-rate and death-rate from tuberculosis amongst the insane are due to fairly well-defined causes, some of which are preventable, others of which it is impossible to control. The first root cause is the lowered tissue resistance to attacks by the tubercle bacillus, which is characteristic of mentally abnormal persons, more especially the lower grade type such as idiots, imbeciles, and the demented. In the Leavesden Asylum the death-rate from tuberculosis has always been high, and one explanation of this high rate is the fertility of the existing soil owing to the low grade and hopeless type of patient which is admitted.

The large majority of patients admitted are in weak or very weak bodily health, and it has been rare to admit a man or woman capable of doing work. The type of case admitted may be gauged from the fact that it includes broken down senile cases, epileptics, demented general paralytics, demented drunkards, mental defectives, chiefly idiots and imbeciles and patients with advanced bodily disease or with serious physical defects. Patients of this type are unable to work or even to walk about. Their life is spent in bed or in sitting on a chair in the ward, with the result that they have shallow respiratory movements and sluggish circulation. This leads to imperfect lymphatic drainage of the lungs and predisposes to tuberculosis.

With reference to the relationship between the mental phase and tuberculosis it is apparent that certain types of mental abnormality exercise a greater influence in impairing the resistance to tuberculosis than others. A certain percentage of senile cases have become tuberculous in the asylum, although this is of rare occurrence outside. Thus of 326 senile cases which died during the five years ending Dec. 31st, 1918, 9 were found to be tuberculous. According to Clouston, general paralytics never develop tuberculosis, but this has not been the experience at the Leavesden



Asylum. It should be mentioned, however, that all the general paralytics admitted to Leavesden Asylum are abnormal and most of them are of the demented type. Of 52 general paralytics dying during the five years ending Dec. 31st, 1918, 16 were found to be suffering from tuberculosis. Clouston also taught that patients with fixed delusions of suspicion and unseen agency always died of tuberculosis, while persons with grandiose delusions never died from this cause. The experience at Leavesden Asylum shows this to be wonderfully true. This fact is of interest and importance, as it sheds a suggestive light upon the possible ætiological relationship between the mental standard and capacity for muscular movement and tuberculosis.

The second important ætiological factor in the high death-rate from tuberculosis amongst the insane is contact infection. All the available clinical evidence is in favour of contact infection. It is true that insane tuberculous patients have rarely any expectoration, and therefore the medium of infection is obviously not sputum. The frequency of intestinal disease and the extent to which the hands, clothes, bed clothes, &c., are contaminated by faecal matter point to the disease being conveyed through the medium of infected excreta. The following facts clearly indicate that many of the patients dying from tuberculosis have contracted the disease while resident in the asylum:—

	Male.	Female.	Total.
Patients found suffering from tuberculosis on admission during five years ending 1918 ...	31	12	43
Length of residence of patients dying from tuberculosis during 1918:—Under 1 year ...	18	8	26
" 5 years ...	58	11	69
" 10 " ...	45	13	58
" 20 " ...	30	6	36
Over 20 " ...	17	2	19
Deaths from tuberculosis during 1918:—			
Tuberculosis (primary) ...	150	36	186
" (secondary) ...	18	4	22
	168	40	208

Closely connected with the two primary ætiological factors is the question of the ventilation and heating of the wards. Generally speaking, the ventilation and air space provided are not sufficient to exercise any favourable influence in combating the marked predisposition on the part of mentally abnormal persons to the development of tuberculosis. While an abnormally low tissue resistance and the existence of contact infection are to be regarded as the primary causes of the high incidence of tuberculosis amongst the inmates of asylums compared with the mentally normal population, other factors have to be considered which are responsible for the marked increase which has resulted since the outbreak of war. The first and most important of these was the interference with the standard of feeding, more especially with regard to the amount of fats and sugar. Insane people require a diet rich in fats if their resistance to tuberculosis is to be maintained at a satisfactory level. Other contributory causes are the occurrence of outbreaks of influenza and pneumonia during 1917, and more especially in 1918, the weaker state of the patients admitted during the period referred to, the serious depletion of the skilled staff experienced in the management of the insane sick and the methods of prevention of disease, and the difficulty experienced in maintaining the cleanliness of the wards by painting and other means. The experience of the past four years has emphasised how extremely sensitive is the tuberculosis index of the insane to unfavourable conditions.

#### *The Diagnosis of Tuberculosis amongst the Insane.*

The control of tuberculosis depends upon early recognition of the disease. The diagnosis of pulmonary tuberculosis as it is to be found amongst insane persons is a clinical problem of peculiar difficulty. In the majority of cases the disease develops and progresses without presenting any definite symptoms or physical signs, and it is not until the condition is revealed by post-mortem examination that the diagnosis of tuberculosis can be accurately made. As has been previously stated, the figures given in the present paper are based on post-mortem findings, and they may therefore be accepted as accurately representing the increase in the death-rate from tuberculosis in the lower grade of the mentally abnormal population during the war.

The most frequent and reliable indication of tuberculosis in the insane is progressive loss of weight with progressive muscular asthenia. The downward trend will, therefore, be speedily observed if all patients in asylums are carefully and regularly weighed. The next important indication is the onset of chronic diarrhoea, more especially if this follows a period of falling weight and failing strength. Conclusive evidence will be obtained by the bacteriological examination and the finding of the tubercle bacillus. Indeed, the more frequent examination of the excreta for tubercle bacilli would be a great aid to diagnosis and would, undoubtedly, reveal the fact that amongst the tuberculous insane the presence of the bacillus in the excreta is high compared with that in the tuberculous sane. The X ray examination of the chest would be of value in clearing up the diagnosis in certain types of cases, although its application might not always be an easy matter. The extent to which the various grades of tuberculous insane patients react to tuberculin, especially the cuti-reaction, is worthy of further investigation, but without such investigation it cannot be relied upon as of any assistance in confirming the diagnosis of tuberculosis. The question of diagnosis may be summed up by the statement that the majority of low-grade insane patients who die from wasting or chronic diarrhoea will be found on post-mortem examination to have been suffering from tuberculosis.

#### *Prevention and Treatment.*

In considering the measures to be adopted to prevent the spread of tuberculosis amongst the insane consideration at the onset must be given to the fact that we are dealing with a type of individual peculiarly susceptible to the development of the disease. It is necessary, therefore, that prophylactic measures should be directed towards maintaining the resistance of the insane patients to tuberculosis at as high a level as possible, and, secondly, to securing the segregation of tuberculous cases or of suspected tuberculous cases as early as is practicable so as to prevent the spread of infection. The resistance of the insane person to tuberculosis during residence in an asylum chiefly depends upon four factors—viz., exercise, ventilation, warmth, and the quantity and character of the diet. Physical exercise, or rather the lack of it, has a direct influence on the capacity of the body to resist tuberculosis, but the physical condition of many insane patients of the low-grade type precludes the possibility of any regular form of physical exercise. The amount of air space per non-tuberculous patient is laid down by the Local Government Board or the Board of Control, but it is obvious that, in view of the striking proclivity of the insane person to develop tuberculosis under certain conditions of asylum life, the amount of air space, and especially the extent of floor space, should be increased. Efficient ventilation with uniform efficient heating, conforming to some extent to a modified open-air regime, would appear to be necessary. The insane person, especially of the lower grade, is very sensitive to changes of temperature and has generally a poor circulation, and while a frequent change of air is essential a sustained uniform temperature is also necessary. A generous dietary with a liberal allowance of fats and sugar is of primary importance in raising resistance to tuberculosis. In common with the rest of the population the inmates of asylums have suffered during 1918 from interference with the normal scale of diet, and the adverse influence of the conditions arising from war would undoubtedly show itself earlier amongst persons of a mentally abnormal type.

With regard to treatment this consists for the most part of segregation in sanatorium blocks with a view to prophylaxis. It is extremely doubtful if the onward progress of tuberculosis to a fatal termination can be definitely arrested in a hopelessly insane or mentally defective person, although the progress of the disease may be very slow. Two special types of sanatorium wards should be provided, one for early cases immediately the disease is diagnosed and for suspected cases, and the other for advanced cases, especially those cases with evidence of intestinal tuberculosis. Cod-liver oil or one of its preparations in combination with creosote should be administered as a method of routine treatment. The development of tuberculosis in an insane person presents a tragic picture, and to visit a tuberculosis ward in a large asylum is an experience not easily forgotten. The question may, no doubt, be asked if it serves any useful or even



humanitarian purpose to endeavour to prolong the life of the tuberculous insane person. If this question were truthfully answered from the point of view of the economic value of the tuberculous insane, it would be answered in the negative, but as the aim of all medical effort is to relieve suffering and prolong life the insane person who develops tuberculosis must receive his due share of care and treatment.

#### Conclusions.

The conclusions to be drawn from a study of the incidence of tuberculosis amongst asylum patients are as follows:—

1. That the mentally abnormal person is, generally speaking, more liable to develop tuberculosis than the individual who is mentally normal.
2. That this liability is primarily due to predisposition dependent upon the mental condition.
3. That the determining factor in the spread of tuberculosis amongst the asylum patients is contact infection.
4. That contact infection amongst the mentally abnormal is frequently due to infected excreta.
5. That the increase in the prevalence of tuberculosis amongst asylum patients since the commencement of the war is due to the influence of a number of well-recognised factors arising from the war.
6. That in view of the extreme susceptibility on the part of asylum patients to develop tuberculosis it is essential that increased efforts should be made to provide such conditions of asylum life as will tend to counteract such susceptibility.

## THE PRIMARY TOXIC EFFECT OF NEOSALVARSAN.

BY PROFESSOR K. PETRÉN.

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It has been difficult from clinical observations to decide the question, what toxic effects salvarsan produces. We know well that a very great number of observations have been published in which morbid symptoms have occurred after the injection of salvarsan; these symptoms have often been of a very serious character, and Matzenauer reported in 1916 that about 200 fatal cases of intoxication by salvarsan have been published. The symptoms which have been observed as a consequence of the injection of salvarsan have been very various in the different cases; one can, however, say that they all are localised to the nervous system, but otherwise they are described as very different.

#### A "Toxic Storm."

As regards the causes of the morbid symptoms from the nervous system which we can observe after injection of salvarsan, it is generally recognised that one must always take into consideration the possibility that they may be a consequence of the biological interaction between the human organism and the micro-organisms of syphilis—as the experience of the effects of salvarsan has almost exclusively been obtained from observations of patients suffering from syphilis. Many authors have accepted the suggestion that these symptoms from the nervous system, to a very great extent, are due to a "toxic storm"—that is to say, that they suppose a very great number of the micro-organisms of syphilis have been suddenly killed through the effects of salvarsan, which has resulted in a large amount of toxin suddenly becoming free in the blood.

The grounds which speak for such an interpretation of the salvarsan poisoning are, indeed, very strong. As a consequence, we can never come to very definite conclusions as to what are the real toxic effects of salvarsan itself, so long as our experience is confined to patients suffering from syphilis.

#### Neosalvarsan in Influenza-pneumonia.

During the great epidemic of influenza from which every country in the world has suffered during the last year I have had the opportunity of observing the effects of the injection of salvarsan in individuals not suffering from syphilis, as I have tried to treat the influenza-pneumonia with neosalvarsan. In this paper I shall not enter upon the question as to the effects of this treatment on the pneumonia itself. (I hope that I shall find occasion shortly in another medical paper in the English language to treat of this question among a

number of others relating to my experience of influenza-pneumonia.) Here I will only speak of the toxic effect which I have observed as a consequence of the injection of (neo) salvarsan.

In a great number of cases of influenza-pneumonia (about 140) we have given injections of neosalvarsan. In almost every case we injected 0.60 g. (in my first cases only we tried a smaller dose), but having seen no harmful effect follow these smaller doses we had at once progressed to the doses of 0.60, and thereafter regularly continued with the large doses.

In by far the greater number of cases we have not seen any toxic effect whatever. In some few cases, however, we have seen a special effect of the injection, inasmuch as the injection has been followed by vomiting. In some of these cases the vomiting occurred only once; in other cases two or three times, or perhaps sometimes even oftener. This pathological occurrence has quite regularly shown the following characters. The vomiting has appeared during the first 24 hours following the injection—only during this period and never later. The patients have not shown any other signs of dyspeptic troubles. After the lapse of 24 hours no disturbance of the stomach has occurred. Practically all the patients suffering from influenza-pneumonia—and I lay special stress upon this—have been treated with digitalis, either with drug or with digitol (a preparation which approximately corresponds to digalen). When I first saw these cases of vomiting I did not venture to give them digitalis for the next few days, but after having found that the patients to whom I had given digitalis after two or three days tolerated it with no more difficulty than other patients, I began later to give even these patients digitalis in the cases with vomiting, when the first day had passed, in other cases also during the first 24 hours after the injection.

Vomiting after the injection of salvarsan we have seen in a great number of cases of pneumonia among women. For a time I did not observe the occurrence among men, but later I saw it in four cases of men; for three of these cases the body weight was determined 53 kg. (19 years), 53.5 kg. (28 years), and 57 kg. (17 years); the fourth patient was a man of 24 years and was not a person of great weight. Otherwise we have not seen the least toxic trouble after the injection of neosalvarsan. We have never seen albuminuria when the patients had not shown it before the injection, and in those cases where they had albuminuria before the injection we have never observed that it had increased as a consequence of the injection. Also the microscopical examination of the urine has never shown an increase of the sediment as a consequence of the injection. We have never seen headache, vertigo, or other symptoms from the nervous system—with exception of the vomiting—after the injection.

#### Conclusions.

From the foregoing description we find that the toxic effect after the injection of salvarsan was quite monosymptomatic, and that the only toxic effect, when it occurred at all, followed fixed laws, as its occurrence was limited to a fixed period after the injection and was also to a certain degree dependent on the weight of the individual that had received the injection.

When we take these circumstances into consideration it seems unnecessary to discuss the question where the injected salvarsan exercises its effects, as it is quite manifest that a morbid phenomenon of this regular character and of this short duration (with no exception from the rule that the vomiting occurs *only* during the first 24 hours after the injection) cannot be the consequence of a local effect exercised on the stomach wall, but must be the effect of the poison on the centre of vomiting in the bulb.

In consequence, thanks to the circumstance that my observations on the effect of the injection of salvarsan are uncomplicated, in the sense that they are free from the disturbing influence of the biological effect exercised by salvarsan on the micro-organism of syphilis, and thanks to the fact that these observations are of sufficiently great number to lead to the deduction that the phenomena produced are governed by certain laws, we come to the conclusion that the first toxic effect of salvarsan (neosalvarsan) on man can be demonstrated with the certainty of an experiment on animals, and that this toxic effect consists in a strictly elective effect produced exclusively on the centre of vomiting in the medulla oblongata.



# FURTHER REPORT ON THE TREATMENT OF SCIATICA

BY RADIANT HEAT AND STATIC WAVES.

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SOME years ago I published<sup>1</sup> a short report on the treatment of sciatica by radiant heat and the static wave current. In the interval I have treated some 70 cases, and the results obtained are instructive.

So far as has been possible I have differentiated between sciatica and pain in the sciatic distribution due to osteoarthritis of the hip-joint, or of the sacro-iliac-joint, but this distinction is not always possible, and perhaps some of the

unrelieved cases are of this nature. Of the 70 treated, 59 were cured or relieved of the pain to such a degree that they could pursue their usual avocations in comfort. If it be taken into consideration that I do not see mild or early cases of sciatica, practically all being referred cases in which other forms of treatment have failed, I think the results shown in the table are very good. The term recovery as used in the table means complete recovery, and "no improvement" is the expression of my opinion. The other terms are taken from the patients.

The treatment is painless, except to those few people to whom all electricity is painful. One of these patients is included in the above list, and though she hated the treatment she persisted to a triumphant, though belated, conclusion. No exposure is involved, though the electrode must be applied to the bare skin, and finally no harm is done in the event of failure.

No. of Case.	Sex.	Age.	Duration.	No. of treatments.	Result.	No. of Case.	Sex.	Age.	Duration.	No. of treatments.	Result.
1	M.	19	4 m.	11	Recovery.	36	F.	58	5 d.	N.r.	Recovery.
2	M.	32	3 w.	—	"	37	M.	58	N.r.	4	Very much better.
3	M.	34	1 y.	{ 12 S.w.; 6 X-ray. }	No improvement.	38	M.	59	(see below†)	13	Not much better.
4	M.	34	6 w.	13	Recovery.	39	M.	60	1 y.	—	No improvement.
5	F.	35	4 y.	19	"	40	M.	62	4 m.	15	Very much better.
6	M.	35	11 m.	N.r.	Improvement (could play golf).	41	M.	62	2 w.	12	"
7	M.	35	3 w.	26	Almost well, a little stiff.	42	M.	70	2 w.	21	Recovery.
8	M.	36	4 w.	N.r.	Recovery.	43	F.	70	2 m.	8	Great improvement.
9	F.	36	4 m.	"	"	44	M.	71	2 d.	12	Recovery.
10	M.	36	4 w.	11	"	45	M.	75	N.r.	N.r.	Very much better.
11	M.	37	9 m.	—	No improvement.	46	M.	77	4 m.	"	Improved.
12	M.	37	2 m.	12	Much better.	47	M.	88	5 m.	4	Very much better.
13	M.	38	1 y.	16	Very much better.	48	M.	N.r.	Some w.	N.r.	Recovery.
14	M.	38	5 d.	4	Recovery.	49	M.	"	1 w.	8	Much better.
15	M.	41	6 m.	12	"	50	F.	"	5 m. on & off.	5	"
16	M.	44	4 y.	4	"	51	M.	"	Few m.	8	Almost well.
17	M.	45	1 m.	10	"	52	M.	"	3 m.	12	Recovery.
18	M.	46	5 m.	—	"	53	F.	"	5 m.	24	"
19	M.	47	6 m.	—	No improvement.	54	M.	"	3 w.	4	"
20	M.	47	2 w.	6 X-ray.	Very much better.	55	F.	"	3 m.	10	"
21	M.	48	5 m.	12	Complete recovery.	56	F.	"	4 w.	11	"
22	M.	49	1 w.	10	Recovery.	57	F.	"	6 w.	6	"
23	M.	50	14 w.	14	"	58	F.	"	2 y.	6	"
24	M.	50	(see below*)	10	"	59	F.	"	1 y.	N.r.	Practically well.
25	M.	50	1 w.	N.r.	"	60	F.	"	About 2 w.	9	Recovery.
26	M.	50	5 m.	89	"	61	F.	"	2 d.	2	"
27	M.	52	1 d.	7	"	62	M.	"	3 m.	N.r.	No improvement.
28	M.	53	10 d.	N.r.	"	63	F.	"	6 m.	12	"
29	M.	53	14 y.	10	No improvement.	64	F.	"	5 m.	9	"
30	M.	53	2 y.	25	Recovery.	65	M.	"	10 m.	S.w., n.r., 13 X-ray.	Improved, but not well.
31	M.	54	6 m.	N.r.	"	66	F.	"	10 m.	9	No improvement.
32	M.	55	2 w.	4	"	67	M.	"	11 m.	14	"
33	M.	56	N.r.	8	"	68	F.	"	1 y.	N.r.	Recovery.
34	M.	57	4 m.	18	"	69	M.	"	9 m.	10	Practically well.
35	M.	57	1 m.	N.r.	"	70	F.	"	1 y.	6	Very much better.

\* An attack every 3 years for 11 years. † 10 years' history of pain in legs; doubtful osteo-arthritis. N.r., not recorded; S.w., static wave; d., days; w., weeks; m., months; y., years.

## Remarks.

CASE 3.—Relapse during military service.

CASE 5.—Had spent 8 months in bed.

CASE 7.—This case was remarkable for its severity, and though the present attack was of short duration he had had a previous severe and prolonged attack. The usual treatment by the static wave with an electrode 6" x 4" applied over the gluteal region from behind the trochanter up towards the sacrum having failed to relieve, I examined the prostate, which was enlarged and tender. Treatment of this with a rectal electrode produced almost immediate relief of the sciatica and markedly reduced the size of the prostate.

CASE 10.—Much better after five, then relapse, and bed for a week. Then six more treatments.

CASE 13.—This man was buried by a shell explosion in 1914. When dug out his thigh was bent back so that his heel was against his back. Pain in the sciatic distribution was constant. He left much improved and free from pain after 16 treatments. The peroneal group of muscles were partially paralysed.

CASE 15.—Was blown up by a shell, and sciatica started immediately. Had had various treatments by electricity and massage before he came to me.

CASE 16.—Had been prisoner of war and had had no treatment.

CASE 18.—Present attack had lasted five months. When first seen he had marked scoliosis. He walked with great difficulty, with the aid of a stick, on the toes of his left foot. Could bear no weight at all on

the leg. Pain very severe and continuous. In six weeks the pain was slight, but the scoliosis remained. Two months later he was quite straight and could walk well.

CASE 20.—Was treated with the X ray only, as the static wave current did not appear to benefit him.

CASE 21.—This patient's sciatica was relieved after 12 treatments. Attention was then directed to lumbago, from which he had suffered for eight years. This, too, got quite well.

CASE 25.—This patient improved steadily for ten treatments; then improvement ceased. The prostate was examined and found slightly enlarged. After four treatments to this he got quite well.

CASE 29.—Patient discontinued treatment.

CASE 31.—Returned 2 years later with recurrence which got well, and again 1 year later.

CASE 37.—Had to return to trenches (very pleased).

CASE 43.—High blood pressure 210 mm. reduced to 165 by auto-condensation.

CASE 47.—Discontinued owing to gout in knee.

CASE 49.—Had to stop treatment. Was a soldier under orders.

CASES 60 and 61.—Same patient, different attacks and sides.

CASE 62.—Got practically well. Went for a long walk, relapsed, and did not again improve.

CASE 65.—Recovered after operation for piles.

CASE 67.—Sciatica followed wound of thigh.

CASE 70.—Discontinued owing to death in family.

Welbeck-street, W.



## INTRAVENOUS INJECTIONS OF ANTIMONIUM TARTARATUM (TARTAR EMETIC) IN BILHARZIASIS.

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OWING to the recent important advances in our knowledge of bilharziasis much attention has been attracted to this condition. These advances are chiefly due to the work of Leiper, Fairley, and Christopherson.

### Summary of Recent Advances.

In 1915 Leiper<sup>1</sup> worked out the complete cycle of development of the bilharzial worms, giving a connected story of their life-history. He found the non-eyed, bifid-tailed cercariæ characteristic of the genus in two genera of snails, *Bullinus contortus* and *Planorbis boissyi*. These snails were shown to harbour two different species—*Bilharzia hæmatobia*, characterised by a terminal-spined ovum, and *Bilharzia mansoni*, characterised by a lateral-spined ovum.

Fairley's<sup>2,3</sup> work demonstrated how bilharzial parasites and their ova exert a deleterious influence on the tissues of their definitive host, man, mainly by the production of toxins, and not merely mechanically. These toxins call into action cellulohumeral responses which neutralise or limit their activity. As a result immune bodies, including complement-fixing substances, are produced, and a complement-fixation test for bilharziasis has been devised by Fairley comparable to the Wassermann test for syphilis. As antigen an alcoholic extract of the infected livers of snails (*P. boissyi*) was employed. Positive complement-fixation was obtained in a high percentage of cases in man as well as in experimentally infected monkeys. The practical application of this test, Fairley considers, will facilitate the diagnosis of bilharziasis in the early stages of the disease before localising symptoms have developed, and also in estimating the effect of the intravenous administration of drugs on the adult parasites.

Christopherson<sup>4,5</sup> introduced, or independently re-introduced, the administration of intravenous injections of solutions of tartarated antimony (tartar emetic) with success, and claims that this method constitutes a specific cure for the disease. It was the satisfactory results obtained by himself and others by this method in Oriental sore, internal leishmaniasis, and naso-oral leishmaniasis (espundia) as found in the Sudan which induced Christopherson to apply it in bilharziasis, vesical and rectal. This method was commenced by him in the Khartoum Civil Hospital in May, 1917. In September, 1918, he recorded 13 cases of *Schistosomum hæmatobium* treated by this method with apparently complete cure in all the cases, but with relapses in from one to eight months in three cases. As the result of his experience he considers that there is no doubt that antimony given as intravenous injections of tartar emetic considerably interferes with the bilharzia and suspends its activities, even when it does not actually kill. His own opinion, based on the cases treated during the last year, is that antimony (antimony tartrate) is a definite cure for bilharziasis, and that intravenous injections of tartar emetic kill the *Schistosomum hæmatobium* in the blood and render it harmless.

Christopherson's method consisted in giving a course of injections on alternate days for a period of 15 to 30 days, commencing with  $\frac{1}{2}$  gr. dissolved in 6 c.cm. of distilled water and increasing by  $\frac{1}{2}$  gr. up to 2 gr. until a total of 30 gr. have been injected. This amount he considers to be the required killing dose, notwithstanding that all the symptoms of the disease often completely disappear after the first or second injection.

### Series of Cases.

The following ten cases of vesical bilharziasis have recently been treated by this method at the Bermondsey Military Hospital:—

CASE 1.—Pte. C. Admitted to the Bermondsey Military Hospital on Sept. 21st, 1918, having been transferred to England from Egypt for bilharziasis. Blood first noticed in urine in August, 1916. Much blood and many terminal-spined bilharzia ova found in urine. Had 17 injections of tartar emetic intravenously, 29½ gr. being given. Stiffness of neck and shoulder muscles after injection. Discharged well Dec. 12th, 1918.

CASE 2.—Pte. T., aged 27. Admitted Sept. 21st, 1918. Transferred to England from Egypt for bilharziasis. Complained of hæmaturia and abdominal pain in July, 1918, having been stationed in the Fayoum District for 13 months. Albumin, blood, and terminal-spined bilharzia ova found in urine. Ten intravenous injections with a total of 21½ gr. of tartar emetic. No further blood or ova in urine. Discharged well Jan. 20th, 1919.

CASE 3.—Cpl. B., aged 29. Admitted Sept. 21st, 1918, having been transferred to England from Egypt for bilharziasis. Was in the Fayoum District in 1915-16, where he developed hæmaturia with dysuria and hypogastric pain. Albumin, blood, and terminal-spined bilharzia ova found in urine. 27½ gr. tartar emetic injected intravenously. Cough and irritation of the throat after each injection, and vomiting after one injection. Blood and ova not again found in urine. Discharged well Dec. 18th, 1918.

CASE 4.—Spr. S., aged 39. Admitted Sept. 21st, 1918. Went to Egypt December, 1915. Began to pass blood and clots in urine in November, 1916. Complained of hæmaturia and burning sensation at end of micturition with general weakness, wasting, and anæmia. Weight had fallen from 14 st. to 10 st. 7 lb. Terminal-spined bilharzia ova, red blood cells, and a little albumin in urine. 27½ gr. tartar emetic given intravenously in 17 injections. Complained after various injections of irritation in the throat, with tickling cough, nausea, vomiting, diarrhoea, and stiffness of muscles of neck and shoulders. Blood and ova not again found in urine. Discharged well Dec. 4th, 1918.

CASE 5.—Pte. L., aged 22. Admitted Sept. 8th, 1918. Had been in Egypt since April, 1916. Hæmaturia commenced in January, 1917. Bilharzia ova found in urine in Egypt, but not in England, though albumin and blood were present. 22½ gr. tartar emetic injected. Rigor, pyrexia (103°), nausea, vomiting, and pain in the body after injections. Discharged fairly fit and free from bladder symptoms Dec. 19th, 1918.

CASE 6.—Pte. M., aged 21. Admitted Sept. 21st, 1918. Sent direct from Egypt, where he had been since December, 1915. Hæmaturia commenced May, 1916. Urine showed a trace of albumin and abundance of red blood cells and terminal-spined bilharzia ova. 30½ gr. tartar emetic injected. Symptoms produced were immediate cough, giddiness, vomiting, slight diarrhoea, and stiffness in shoulder muscles. Blood and ova not found again. Discharged well Dec. 19th, 1918.

CASE 7.—L cpl. D., aged 22. Admitted Sept. 9th, 1918. Went to Egypt November, 1915. Hæmaturia first observed at Fayoum October, 1916. Urine contained terminal-spined bilharzia ova, red blood cells, and a trace of albumin. Sixteen injections (29 gr.) tartar emetic. No ova after completion of injections. Weight increased from 10 st. 7 lb. to 11 st. 4½ lb. Discharged well, except for a little weakness.

CASE 8.—Pte. G., aged 25. Admitted Jan. 17th, 1919. Sent direct from Egypt for bilharziasis. Was infected in the Fayoum District 1915-16. Blood cells and terminal-spined bilharzia ova abundant in urine. 31½ gr. tartar emetic injected. Pyrexia (100°) and general pruritus occurred after two injections. No further blood or ova. Discharged well.

CASE 9.—Cpl. M., aged 30. Admitted Oct. 12th, 1918. Sent direct from Egypt for bilharziasis. Blood and terminal-spined bilharzia ova found in urine. 30 gr. tartar emetic injected. Irritative cough and headache after injections. No more blood or ova in urine. Discharged free from bladder symptoms, though still has slight dull pain in small of back, and patient considers he is weaker and more easily tired than before injections.

CASE 10.—Pte. C., aged 25. Admitted Nov. 12th, 1918. Was perfectly fit until sent to Egypt in September, 1915. Was stationed in the Fayoum Province until November, 1916, when he was sent to Palestine, where the hæmaturia commenced. Bilharzia ova found in urine. 30½ gr. tartar emetic injected. At the end of the course of injections the urine was free from ova, blood, and albumin, but patient still complained of pains in the back and over the bladder. During the following week there was a recurrence of the hæmaturia, with headache and more pain on micturition. The urine contained red blood cells and granular epithelial cells, but no ova were found. Patient was transferred to the 4th London General Hospital.

### Results.

In all these cases the solutions used were made by dissolving the tartar emetic in freshly distilled sterile water, 1 gr. in 6 c.cm., and then sterilised by autoclaving for one hour. At first the injections were administered every two days, with a maximum dose of 2 gr., whilst on the later cases I worked up to doses of 3 gr. twice a week. No serious drawback, no marked toxic manifestations, and no severe reactions followed the injections. With one exception all



the patients were troubled with irritation of the pharynx and a spasmodic outburst of coughing either during or after the injections, usually just at the end of administration. In four cases stiffness and cramp of the muscles of the neck and shoulder girdle were complained of. Gastro-intestinal symptoms were fairly frequent, comprising nausea in 3 cases, vomiting (usually once only) in 4 cases, and slight diarrhoea in 3 cases. Headache was noted in 2 cases. There was induration at the seat of injection in 2 cases. Pyrexia (to 103° F.), slight giddiness, pains in the body, general pruritus, and loss of weight were noticed in 1 case each.

#### Untoward Effects of the Injections.

Cases.	Cases.
Cough and pharyngeal irritation ... .. 9	Induration ... .. 2
Stiffness of neck and shoulder muscles ... .. 4	Pyrexia (to 103° F.) ... .. 1
Nausea ... .. 3	Giddiness (slight) ... .. 1
Vomiting (slight) ... .. 4	Pains in the body ... .. 1
Diarrhoea (slight) ... .. 3	General pruritus ... .. 1
Headache ... .. 2	Loss of weight ... .. 1
	Relapse of hæmaturia ... .. 1

The immediate results were very striking and comprised a rapid disappearance of the blood and ova from the urine, disappearance or mitigation of the hypogastric and perineal pains and pain in micturition, improvement in anæmia, gain of weight, and a quite striking improvement in general appearance and feeling of well-being. The remote results I am unable to discuss owing to the short time elapsed and to the fact that all the patients have left the hospital. As far as is known all the cases have remained free from symptoms except Case 10, who developed a smart hæmaturia within a week of completing the course of injections; no ova could be discovered on microscopic examination of his urine.

Case 3 was so pleased that he writes from the country under date Dec. 22nd, 1918:—

"The hæmorrhage has completely stopped, and bar a little pain in the affected region I am practically fit" (although he states elsewhere his duties are not of a very light character). "There are one or two fellows here who are discharged with bilharzia and have had no treatment whatever. They are naturally anxious to undergo this particular treatment. I should be greatly obliged if you could inform me as to the course they should adopt to obtain it."

That tartar emetic injected intravenously exerts a strikingly beneficial effect on vesical bilharziasis is amply demonstrated by the cases here recorded, but how this effect is produced is not so evident. That the drug kills or inhibits the activity of the parasite appears the most reasonable suggestion. At what stage in the life history of the parasite this occurs, whether ovum, miracidium, or adult worm, or all three, has not yet been demonstrated. Christopherson claims that the tartar emetic exerts a direct helminthocidal action on the adult worm. Direct experimental proof on this point is still lacking, though Archibald and Innes's case, the only one so far submitted to post-mortem examination, provides some support for this view.

#### The Toxicity of Tartar Emetic.

The high toxicity of tartar emetic has always been a matter of serious concern to those employing it in intravenous injections, especially in the intensive manner now prevailing for the treatment of bilharziasis, trypanosomiasis, and leishmaniasis. That such injections are not free from risk is shown by Knowles<sup>6</sup> and by Archibald and Innes.<sup>7</sup> The former recorded 5 deaths out of 20 cases of kala-azar treated by tartar emetic, whilst the latter record a fatal case of bilharzia so treated.

The case of Archibald and Innes was a strong Egyptian soldier suffering from hæmaturia, whose urine showed a heavy infection with terminal-spined ova of bilharzia. The solution employed for intravenous injection contained 1 gr. of the drug dissolved in 2 c.cm. of sterile water, being mixed immediately before use with an equal amount of sterile normal saline solution. The initial dose was  $\frac{1}{2}$  gr., gradually increasing to a maximum of 2 gr., until a total of 33 gr. were given, the injections being given every second day. At the end of the treatment the urine contained blood, but no ova. The patient then developed influenza, and died on the fourth day of the illness from broncho-pneumonia. At the autopsy no adult worms could be found, though the congested mucous membrane of the bladder contained large numbers of bilharzial ova. The liver and kidney cells and the tunica intima of the inferior vena cava showed fatty degeneration and fatty

infiltration, changes which were attributed to the action of tartar emetic, and were not sequels of bilharzia, influenza, or a previous malarial infection.

This opinion of Archibald and Innes appears correct, as somewhat similar changes are found in the liver in certain toxic conditions, especially in the closely allied conditions of arsenic and phosphorus poisoning, and as was found by Gregorson and Taylor<sup>8</sup> in trinitrotoluol poisoning. The toxins attributed to the ova and miracidia of bilharzia by two Japanese observers, Kiyono and Murakami,<sup>9</sup> do not appear to produce fatty changes in the liver, but lead to a cirrhotic condition of that organ.

Although in Archibald and Innes's case the cause of death appears to have been influenzal broncho-pneumonia the degenerative changes in the liver and kidneys may have been recoverable, or may have been due to undue susceptibility of the patient to antimony. That very much larger doses of tartar emetic can be given intravenously with perfect safety is evident by a case under the care of Dr. C. W. Daniels, treated by Dr. H. B. Newham, C.M.G.,<sup>10</sup> at the Seamen's Branch Hospital attached to the London School of Tropical Medicine.

This was a patient infected with *Trypanosoma rhodesiense*, who received 236 bi-weekly intravenous injections of tartar emetic in the course of two and a half years. The maximum dose was 2½ gr., and the total quantity administered amounted to the enormous total of 550 gr. The patience of the physician and the fortitude of the patient were finally rewarded by the complete recovery of the patient from the most virulent of all the forms of trypanosomiasis, and the patient remains free from symptoms both of the disease and of antimony poisoning until the present day.

#### Less Toxic Compounds of Antimony.

Since the risks of antimony poisoning as the result of intravenous injections, though apparently not very great, cannot be ignored, other forms of antimony should be sought combining equal therapeutic effects with diminished toxicity. Antimony and arsenic are so closely allied in their chemical characters that this condition would probably be brought about by the production of organic compounds of antimony. Since antimony and arsenic are so closely allied in their chemical characters and the toxicity of arsenic has been greatly reduced without diminishing its therapeutic action by introducing arsenic in organic combinations in such drugs as salvarsan and its substitutes, it would appear highly probable that similar organic compounds of antimony could be produced and that the effects of the antimony would be similarly influenced.

In view of the prevalence of trypanosomiasis, leishmaniasis, and bilharziasis in various parts of the world and the undoubted beneficial action of antimony compounds on these diseases, the production or thorough investigation of such organic compounds of antimony is one of the pressing problems of the day in tropical medicine.

Meanwhile Sir Leonard Rogers<sup>11</sup> has drawn attention to the occasional danger from the toxicity of tartar emetic intravenously, and has done the pioneer work in searching for equally efficient but less toxic forms of antimony. In 1916 he recommended sodium antimony tartrate, Plimmer's salt. More recently he has employed colloid antimony sulphide intravenously in kala-azar. He found it effective in smaller doses, being retained in the blood longer than the soluble tartrates of antimony, and concludes that colloid antimony sulphide appears a distinct advance on soluble antimony tartrates. It is evident that colloid antimony sulphide given intravenously would be well worth trying in bilharziasis.

I am indebted to Lieutenant-Colonel Maretts Tims, R.A.M.C., Officer Commanding the Bermondsey Military Hospital, for permission to publish these cases, and to Captain F. Talbot, R.A.M.C., and Drs. R. H. Townend, J. Howard Cook, A. M. Cato, and A. E. Wilson, for permission to use the cases under their care.

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(Continued at foot of next page.)



# SUPPLEMENTARY NOTE ON JAUNDICE AMONG THE BRITISH TROOPS IN NORTHERN ITALY.

THE following is an addendum to the article under the above heading by Dr. H. H. TOOTH and Dr. E. G. PRINGLE which appeared in THE LANCET of July 26th, 1919 :—

## Addendum.

Lieut.-Colonel A. E. Gates, consulting physician at the forward area at the time when our cases were recorded, has kindly allowed us to include abstracts of notes of four cases, two of which were fatal but presented no evidence of spirochætosis. But the blood of the two that recovered grew spirochætes in guinea-pigs. The cases were briefly as follows :—

1. Pte. B. Onset sudden, Sept. 2nd, 1918, with headache and general illness. On the 6th, vomiting; 7th, admitted to hospital. Marked jaundice, conjunctivæ injected. 8th, impaired resonance and moist sounds in right lung posteriorly. 10th, copious pasty motions with much blood clot. 13th, died. Low grade of fever 99°–100°, rising to 102° on day of death. Sputum, no influenza bacilli, predominant organisms pneumococci. Post-mortem: Confluent bronchopneumonia lower lobe of right lung, discrete and hæmorrhagic of left. Gall-bladder distended with thick dark bile, common duct occluded by blood clot. Punctiform submucous hæmorrhages in stomach and intestines. Microscopic examination by Professor Bonome, of Padua: Left lung multiple foci of acute hæmorrhagic broncho-pneumonia, no Gram-staining micro-organisms or spirochætes. Liver, slight grade of acute atrophy, and slight small-celled infiltration of bile passages. Spleen congested, numerous small hæmorrhages in pulp.

2. Pte. N. D. Admitted August 28th, 1918, as a case of pneumonia. Jaundice developed on sixth day of illness, fæces clay-coloured, bile and albumin in urine. Temperature for first six days about 102°, fell to subnormal on appearance of jaundice, when pulse rose to 160, with delirium, epistaxis, and hæmatemesis, and purpuric eruption on the buttocks. Died on Sept. 1st. Guinea-pig inoculated with blood 12 hours before death with no result. Post-mortem: lungs congested, many small hæmorrhages. Liver, no abnormality. Gall-bladder contained a small quantity of bile. Common duct patent. Spleen enlarged. Kidney, capsule strips with difficulty, multiple punctiform hæmorrhages. Stomach and jejunum, small submucous hæmorrhages. Microscopic examination by Professor Bonome: Liver, slight grade of acute atrophy of hepatic cells, dilatation of intrahepatic bile canaliculi, with small-celled infiltration of the connective tissue; no Gram-staining micro-organisms, no spirochætes. Kidneys, acute nephritis, chiefly glomerular and interstitial. Spleen, small disseminated hæmorrhages.

3. Qm. S. C. Sudden onset Sept. 4th, 1918, with headache and general illness. Temperature 103°6', and raised until ninth day of disease. Jaundice and herpes labialis on the fourth day. Slight purpuric rash on sixth day. Photophobia. Urine contained bile, albumin, and casts. Blood culture negative, "but inoculated guinea-pig died with a few spirochætes."

4. Driver F. Admitted Sept. 16th, 1918. Onset sudden three days before, with headache and general illness. Jaundice on the third day. Temperature 103°, falling to subnormal on the seventh day for a period of eight days, after which a daily variation from 97° to 101° or 102° for 14 days or more, when he was transferred to the base. Urine examined for spirochætes on the eleventh and thirteenth days with negative results. A guinea-pig inoculated with the blood of the sixth day died, and spirochætes were found in its liver.

The two cases of ascertained spirochætosis seem to weaken the suggestion, in the concluding remarks of the article, that another infective virus was possible, but the question whether two positives are to be accepted as invalidating so many negatives must be left to the judgment of the reader.

(Continued from preceding page.)

Medical Research, 1918, 548. 7. Archibald and Innes: Clinical and Pathological Notes of a Fatal Case of Bilharzia treated by Tartar Emetic, JI. Trop. Med. and Hyg., 1919, 53. 8. Gregorson and Taylor: On Trinitrotoluol Poisoning, with Records of Five Cases, Glasgow Medical Journal, 1918, 65. 9. Kiyono and Murakami: Über die Toxinproduktion der Schistosomus-Eier und ihre Beziehung zur Entstehung der Leberzirrhose bei der Schistosomus-Krankheit, Verhandl. der Japan. Path. Gesellsch. 10. Newham: Private communication, June, 1919. 11. Rogers: Colloid Antimony Sulphide in Kala-azar, THE LANCET, 1919, i., 505.

## Medical Societies.

### MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND : THE ANNUAL MEETING.

THE seventy-eighth annual meeting was held at York on July 22nd and 23rd, under the presidency of Lieutenant-Colonel J. KEAY and, later, that of Dr. BEDFORD PIERCE.

#### Coördination in the Asylum Services.

Dr. J. G. SOUTAR moved the following resolution :—

"That a deputation be appointed to place before the Minister of Health the opinion of the Medico-Psychological Association that all matters concerning the care of the insane in England and Wales should as soon as possible be brought within the authority of the Ministry of Health; and that the Board of Control, whose sympathetic experience and encouragement in all matters concerning the welfare of the insane has been so valuable, be maintained for the department."

Dr. Soutar said they all recognised that coördination ought to exist in what they might call the asylum services generally. They felt it was preferable that the coördinating body should be within a Government department specially constituted to deal with the health of the whole community, rather than left to some self-appointed body which was inclined to consider asylum administration from a lay point of view and to eliminate the medical element. All who had had experience had seen for a long time that the Board of Control had maintained a most sympathetic attitude towards ideas of progress and advancement in matters of the insane. That was becoming more and more a medical, and less and less a legal, matter. The experience of the members of the Board of Control was vast; it would be a disaster if that sympathetic body should be scrapped and some new body established when the administration of lunacy passed into the hands of the Ministry of Health.

Dr. SHAW BOLTON said it was not fully realised how much it was desired by some members of asylum committees to eliminate the Board of Control. The object of the National Federation was to establish mental hospitals free from the Board of Control. He was strongly in favour of Dr. Soutar's resolution.

Dr. C. F. FOTHERGILL asked if it would include borderline conditions.

Dr. SOUTAR said they would rather not include them.

The resolution was carried unanimously, and it was agreed to send a copy of it to Dr. Addison, the Minister of Health, with a request that he would receive a deputation.

#### Training of Mental Nurses.

Dr. G. M. ROBERTSON said what was required in mental cases was two different qualifications. In the first place, the person must be a skilled nurse who knew how to care for sick people and look after the mentally deranged people. In the second place, it was important that he or she should be a person of good character upon whom they could rely. He ventured to say the character of a mental nurse was more important than the technical training. He moved :—

"That in future the three years' course of training for nurses applying for a certificate shall be taken in one mental hospital in place of not more than two hospitals."

Dr. W. F. MENZIES opposed the proposal. He thought that if the superintendent could not judge in six or nine months of the character of a nurse then he was not able to give any certificate of character at all.

Dr. SHAW BOLTON said that ever since he had been a superintendent he had systematically refused to take nurses from other institutions because they had so much to unlearn. He would like to see the question of training pressed to the fore.

The PRESIDENT put the motion, and Dr. Robertson's resolution was declared carried by a majority.

#### Hypnotic Suggestion.

Dr. G. R. JEFFREY read notes on a case treated by hypnotic suggestion. He referred to the great difficulty in the treatment of mental illnesses, and brought before the meeting notes



of a case which was treated by hypnosis and suggestion. He further suggested that even in advanced mental disease this method of treatment was, in suitable cases, always worthy of consideration. Dr. Jeffrey, in a few words, referred to the value of this method of treatment during the recent war in dealing with all sorts of so-called functional diseases of the nervous system. The case which formed the basis of this paper was that of a young woman who, after several months of very indifferent mental health, became distinctly worse after a dream, in which she dreamt that the sun and the moon had come into collision, with the result that the world was submerged in blood. She awoke from her dream in a state of terror, dazed and confused, and finally sought admission to Bootham Park Mental Hospital as a voluntary boarder. Under the influence of light hypnosis her illness was explained to her, and suggestion treatment generally was employed. She awoke next morning quite well, and left the hospital completely recovered after five days' residence.

Dr. ROBERTSON said he found in all cases in which he attempted hypnosis those suffering from melancholia were most difficult to deal with, whilst those with acute mania were extremely suggestible and easily hypnotised. Dr. Jeffrey had pointed out that the symptoms did not resemble those of ordinary melancholia; it was probably a case of what was known as anxiety neurosis. He (Dr. Robertson) thought that the dream which was related showed a decided sexual element.

Dr. R. M. LADELL agreed that melancholic patients were practically impossible to hypnotise. He wondered if it would be wise to drug patients sufficiently to get them quieter and then to superimpose hypnosis.

Dr. H. M. EUSTACE congratulated Dr. Jeffrey on being able to induce hypnosis. They realised personal magnetism was needed to induce it, and all had not the power.

Dr. JEFFREY agreed that it was a case of anxiety neurosis. He entirely disagreed with the sexual explanation. He gave particular care to try to find out if there was any sexual point, and there was none. He induced hypnosis in the usual way.

#### *A Representative from Paris.*

The PRESIDENT said that at this annual meeting they were honoured by the presence of a representative of the Medico-Psychological Society of Paris, Dr. Henri Colin, its honorary secretary. To our distinguished guest they extended a warm greeting and a hearty welcome, not only on account of his eminence as an alienist, and of the fact that he represents the sister society at our meeting, to which we are united by bonds of growing esteem and affection, but, if possible, even more so because he stands for closer union in all things with our brave and glorious ally, the heroic and immortal France.

#### *Members Entertained.*

Members were entertained to luncheon at the Retreat, Mr. YEOMANS, chairman of the Committee of Management, presiding.

The PRESIDENT, in thanking the committee for their hospitality, explained that the Association was practically an Irish association, and between Irishmen and Yorkshiremen were many points of similarity. They therefore expected to receive the kind of hospitality they had, and they showed it by coming to the Retreat for their new President. They had admired the committee's splendid hospital with its historic associations and its world-wide reputation for all that was good.

The CHAIRMAN said the committee appreciated the kind words which had been said. It was not the first time the Association had visited York. He remembered that his predecessor, the then chairman, took the opportunity of urging improvements in the education and status of nurses and encouraging a higher type of woman to engage in the nursing of the insane. He believed that idea had permeated the asylum world, and though they still had a nursing question it was of a very different character. They had endeavoured to preserve the homely character and domesticity of the institution, which had always been a feature of the Retreat. It was founded by William Tuke in 1796 and was the first asylum in England established on humane lines. Members subsequently inspected the buildings, and viewed with great interest the archives and other historic treasures of the committee.

#### *The Afternoon Session.*

At the afternoon session Dr. PERCY SMITH proposed a vote of thanks to the retiring President and officers of the

Association. Colonel Keay had occupied the presidential chair for a year in addition to carrying on military duties, and they offered their hearty thanks to him. Dr. Smith added that it was a pleasure to him that Colonel Keay was to be succeeded by one of his (Dr. Smith's) old assistants at Bethlem Hospital in 1891, he meant Dr. Bedford Pierce. He went on to say that but for the work of the permanent officers the Association could not go on every year. He thought special thanks were due to Dr. R. H. Stoen, the secretary (recently succeeded by Major R. Worth); to Dr. J. Chambers, the treasurer; the editors of the journal, who had had a very difficult and arduous task during the war; and the registrar. Also to the secretaries of the various divisions, who had accomplished most useful work.

Dr. C. C. EASTERBROOK seconded the motion, which was unanimously agreed to.

The PRESIDENT returned thanks on behalf of his colleagues and himself. He had great pleasure in handing over to Dr. Bedford Pierce the direction of affairs and ornamenting him with the badge of office.

Dr. PIERCE said he was very proud to wear the blue riband of the Association. He did not know that there was anything more pleasing in this world than to win the goodwill and appreciation of one's friends and colleagues. He had always been an ardent believer in the Association, and it would be a pleasure to him to do what he could to pilot it this next year.

The PRESIDENT announced that the Gaskell prize and gold medal had been awarded to Dr. James Walker and the bronze medal to Dr. R. Eiger. There had been no divisional prizes. He believed the papers sent in had been of exceptional excellence.

#### *Presidential Address.*

The PRESIDENT then delivered his address on "Psychiatry—a Hundred Years Ago," an abstract of which appeared in THE LANCET of August 2nd. Before doing so he referred to the death of one of the late presidents, Dr. Joseph Wigglesworth, a distinguished and able man. In 1883, while superintendent at Rainhill, where he spent nearly all his professional life, Dr. Wigglesworth won the prize for an essay in which he dealt with certain states of melancholia attonita, or acute dementia, showing the inflammatory changes in motor cells.

Dr. D. G. THOMSON, in moving a vote of thanks, said he looked back historically to the problems of years ago. He brought out the fact that we were asked to-day much the same problems as those of 3000 years ago. He, with Dr. Pierce, was hopeful of the ultimate solution of many of them, and we should not sink into the feeling that the questions of insanity were unknown and unknowable.

Dr. SOUTAR, in seconding, said that the illnesses with which we had to deal were often due to social conditions over which we must exercise control if we were to stem the tide of mental disease. The next step was to deal with incipient cases.

In the afternoon, the committee of the Retreat gave a garden party to the members and their friends, a large number of guests attending.

#### *Morning Session, July 23rd.*

At this session, with Dr. BEDFORD PIERCE, the President, in the chair, Dr. G. L. BRUNTON read his

#### *Notes on the Cytology of the Cerebro-spinal Fluid,*

based on the examination of 100 cases of mental disease by Alzheimer's method. This method has the great advantage that cells in a fluid can be treated and stained similar to the methods employed in the histo-pathology of the tissues. He concluded that the cells of the greatest diagnostic importance are the plasma cell, the phagocytic endothelial cell, and the lymphocyte in excess; and that a high cell-count with an excess of lymphocytes, together with the plasma cells, is strong evidence of a parasymphilitic lesion. A number of excellent coloured diagrams were exhibited to illustrate the paper.

An interesting discussion followed, in which Dr. G. M. ROBERTSON, Captain OLIVER LATHAM (Australia), and Dr. F. H. EDWARDS took part.

Captain LATHAM said it was the custom in New South Wales to examine cases (of general paralysis) by Wassermann reaction; if no result, the cerebro-spinal fluid was examined by the method used for counting white blood corpuscles. They found this worked very well. Captain



Latham described at length cases of insanity frequent among children in Brisbane due to lead poisoning caused by scraping powder-paint from the verandahs.

The PRESIDENT contrasted the coördination in pathological work between asylums in N.S. Wales and those in this country, where every institution had to do what it could by itself.

Dr. J. E. MIDDLEMISS read a paper on

*An Analysis of 200 Cases of Mental Defect.*

The cases dealt with were analysed in tabular form from various aspects. The number of cases comprised under the four types recognised under the Mental Deficiency Act (1913) was given, as well as the number coming under the recognised clinical groups. The cases were further tabulated from the point of view of the different aetiological or associated factors. Reasons were adduced for regarding the customary division into primary and secondary groups as unsatisfactory. It was pointed out that on investigation cases of ementia presented every degree and variety of combination of the primary and secondary factors, so that it was frequently impossible to classify them on these lines. Instead, a broad division into two main types was advocated according to the presence or absence of a decided neuropathic strain as shown in the family history. Attention was drawn to two varieties of stigmata of degeneration not usually emphasised in the literature. 1. Variations in the actual as well as the relative lengths of the digits of both upper and lower extremities, but particularly the former. 2. Variations in the superficial reflexes. These were shown to be frequently modified in the direction of hyper- or hypo-acuity, there being no constant relationship in the degree of response in the reflexes examined in each individual case.

Colonel W. R. DAWSON and Dr. EDWARDS contributed to the discussion on this paper.

Dr. HENRI COLIN (Paris) contributed a paper on

*The Influence of War Fatigue on General Paralysis.*

Dr. Colin said that the influence of the war was much greater than at first supposed. He drew attention to the fact that the emotions, the result of the war, were a very strong causative factor in general paralysis. He also drew attention to the very great acceleration of symptoms and the rapidity with which general paralysis developed following the shocks and general emotional state of those who had served in the trenches. In the case of many prisoners of war who had developed syphilis it was only a few months after the infection that symptoms of general paralysis supervened and death followed within a few months.

The PRESIDENT said the paper raised many questions of serious importance. Service members could speak to the acceleration of general paralysis due to war conditions. The whole question (of general paralysis) was in a very unsatisfactory position. He was much struck by the facts Dr. Colin brought out as to the effect of emotion, accident, &c., on the course of general paralysis.

Colonel DAWSON wished to know if alcoholism played a leading part in Dr. Colin's case.

Dr. ROBERTSON confirmed the rapid course of general paralysis during the war from observations at Morningside. He agreed with the statement, "No syphilis, no general paralysis," as true.

Dr. M. ROSS related his experiences in a military hospital during the latter part of the war. There were a large number of young men there, many with recent syphilis. Of these a large number died within a short time or became moribund. Dr. Ross said that a lot of the repatriated prisoners had turned out to have general paralysis. These men had been exposed to all sorts of privation, and most had a history of brutality as well.

Captain LATHAM described the treatment of general paralysis with salvarsanised serum in temporary hospitals in Australia. He said general paralysis was very serious in Sydney and one of the most important causes of death in New South Wales.

Dr. COLIN, replying, said they were agreed that alcohol, besides syphilis, must be a factor of general paralysis. He agreed with Dr. Robertson that syphilis was the primary factor, but, though the primary cause, there were many other contributory ones. There was a general lack of recognition of paralysis both here and in France, where many paralytics had been swept into the army. The knowledge of mental diseases was backward in every country.

## Reviews and Notices of Books.

*Geriatrics: the Diseases of Old Age and their Treatment, including Physiological Old Age, Home and Institutional Care, and Medico-Legal Relations.* By I. L. NASCHER, M.D., Chief of Clinic Department of Internal Medicine, Mount Sinai Hospital Dispensary, New York, &c. With an Introduction by A. JACOBI, M.D. Second edition, revised. 50 plates, containing 81 illustrations. London: Kegan Paul, Trench, Trübner, and Co. 1919. Pp. xx. + 527. 21s.

THIS book is not a treatise on how to prolong life, but rather a text-book of diseases and morbid conditions—as they present themselves to medical practitioners in their treatment of aged patients—giving rise to what the author terms *pathological* old age. Old age in itself is not pathological, and normal old age, to which the author devotes a first portion of the book, cannot be remedied. He discusses the anatomical and functional changes connected with the physiological state of senility, and shortly reviews the theories of the causation of ageing. But the bulk of the book is given up to a methodical account of the diseases and morbid conditions of old age, in which senile diseases are considered as (1) primary, (2) secondary, (3) preferential, and (4) modified, the latter dealing with such diseases as asthma and pneumonia when complicated by senility.

Following all this a considerable portion of the book is given up to the long series of diseases which are relatively uninfluenced by old age, such as many acute infectious diseases, leukaemia, muscular rheumatism, &c. The 11 pages on Surgical Procedure in Senile Cases—a fresh chapter introduced into the second edition—are based "upon the views and experiences of surgeons who have had an extensive practice in senile cases." The author says that, in spite of a few optimistic sentiments that have been expressed on the subject, surgeons generally never operate upon a senile case if operation is avoidable. He holds that the saying, "Age is no bar to surgical operations," should be accepted "only if the infirmities and debilities, the degenerations and pathological conditions to which the aged are particularly liable, are kept in mind at every stage through the pre-operative period to complete convalescence."

Very important is the final section of the book on the Hygiene of the Aged (Home Care and Institutional Care) and the Medico-Legal Relations of Old Age, including such subjects as Sir George H. Savage recently and ably dealt with in his post-graduate lecture on "Mental Disorders Associated with Old Age." We do not believe that it is human nature in most parts of the world to give less attention to the wants of the aged members than of the infantile members of the family (and in this respect the *dutiful* sons and daughters of Hebrew families in the East End of London may especially be referred to). The reverse seems rather to be the case, and the fact that the present large work has already reached the stage of a second edition seems to support our view. We feel tempted to prophecy that there will be a growing demand for this kind of book.

In regard to treatment, as already stated, the author does not seek to remove the normal infirmities of old age—what he wishes to help in is to convert a *pathological old age* into a *physiological* one. The subject is a very complicated one on which much remains to be studied and discussed. On p. 17 the author writes: "The popular conception of old age is based upon the appearance of the individual. It is not unusual, however, to find apparently decrepit individuals regain strength, mental activity, cheerfulness and a more buoyant spirit, as well as a more youthful appearance when freed from care and the necessity to work. This is a common observation in inmates of homes for the aged shortly after their admission." But is not this partly due to a kind of reawakening of the mind by the altered, and doubtless improved, social surroundings? Freedom from care and from work may have a quite different effect, according to what is observed in the upper and middle classes, when a man retires from his profession or business, and is without sufficient interests, including "hobbies," to keep his mind



exercised *as well as his body*. Exercise for the body and occupation of some kind for the mind are as necessary in old age as at any other period of life—if not more so! Without them the body soon loses in vigour and in resistance towards disease, whilst the mind more rapidly degenerates and more readily falls a victim to morbid “growths,” which arise like tares in neglected soil—“mental growths,” which not only prey upon the mental faculties, but indirectly involve and play havoc with the functions of other organs besides the brain.

*On Longevity and Means for the Prolongation of Life.* By Sir HERMANN WEBER, M.D., F.R.C.P. London: Macmillan and Co., Ltd. Fifth edition. 1919. Pp. 292. 12s.

NOT many authors have so soundly justified the principles which they laid down for the pursuit of a certain course as did Sir Hermann Weber in this treatise on the prolongation of life, for he died in his ninety-fifth year. The edition now before us, the fifth, was in type at the time of his death, and is issued under the editorship of his son, Dr. F. Parkes Weber. The book is an expansion of a lecture delivered before the Royal College of Physicians of London in 1903, when the author had already attained the respectable age of 80 years. The book is full of sound sense, and is founded upon a belief in exercise, fresh air, moderation, cleanliness, and cheerfulness. This is a following of the old Salernitan dictum:—

Si tibi deficient medici, medici tibi fiant,  
Hæc tria, mens hilaris, requies moderata, diæta.

We are glad to see that Sir Hermann Weber speaks in praise of gardening, for it is an admirable and useful occupation for those getting on in years, though we rather demur to his description of weeding as a “light” occupation. Gardening certainly conduces to sound wholesome sleep at night and is a means for keeping a man out in the air, especially those—and they are many—to whom walking is anathema. Sir Hermann Weber’s remarks upon diet are in general thoroughly commendable, but we think that he is a little too sweeping in his condemnation of wine. Many elderly persons find that, say, a pint of really sound light claret in the 24 hours has no harmful effect, but rather the contrary, in that it aids digestion. At the time of the death of Sir Moses Montefiore, who died in his hundredth year, it was currently reported that he had drunk a bottle of port every day of his life since he grew up. His is not an example to be followed, for the ordinary man is better without alcohol except in a really moderate amount and in the shape of a wine of good quality.

*The Diagnosis and Treatment of Heart Disease.* By E. M. BROCKBANK, M.D. Vict., F.R.C.P. Fourth edition. With illustrations. London: H. K. Lewis and Co., Ltd. 1919. Pp. 158. 5s.

IN its rapid passage through three editions this little collection of practical points for students and practitioners has not had an opportunity to get out of date. Several alterations and some additions have, however, been made to the third edition, and the text is practical and reliable as ever. Students who think that they know all about the auscultation of the heart will do well to read it through before their final examination.

*Instrumental Orthopædics (De l'Orthopédie Instrumentale).* By Dr. GABRIEL BIDOU. May, 1919. Twenty plates. Imprimerie des Orphelins-Apprentis d'Auteuil, 40, rue La Fontaine, Paris. Pp. 132.

THIS little book, which deals chiefly with the instrumental treatment of paraplegia, discusses at some length the principles on which apparatus should be constructed. The author advocates celluloid in place of leather, and has adopted the principle of active control which is so well known in the American type of artificial leg. He also employs indiarubber springs, and in certain cases multiplies the range of movement by the use of pulleys and levers.

*The Great War Brings it Home.* By JOHN HARGRAVE. London: Constable and Co. 1919. Pp. 367. 10s. 6d.

THE argument of this book is an essay in sociology. The present state of civilisation is considered to result from an unhealthy, because restricted, development of the individual. We are living by purpose instead of by impulse, and so are

losing in vitality and suffering from the effects of repressed instinct. The Great War has awakened us to the fact that we are moving along a false trail. The right way is the natural way: the normal instincts if allowed freedom to develop from an early age will produce, according to the author’s view, a higher type of creature. The argument is profusely illustrated from a wide knowledge of primitive life and customs. The careful reader will find many criticisms to make, and though he may not be convinced by the argument he cannot fail to be interested by the illustrative detail.

*Induction Coils in Theory and Practice.* By Professor F. E. AUSTEN, E.E., U.S.A. London: Messrs. E. and F. N. Spon, Ltd. 1919. Pp. 64. 5s. net.

IT is difficult to conceive of any class of student to whom this book could be recommended. It is of the “potted” order, being divided into 245 numbered paragraphs, ranging from a definition of the term “equation” to an explanation of the exponential function. There are occasional excursions into the Calculus, and the amount of logic in the arrangement may be estimated from the fact that para. 110 contains a differential equation, and para. 235 deals with the theorem of Pythagoras. The subject-matter is the result, so we are told in the preface, of the author’s experience in directing courses in the American Army. We must suppose that the luckless students had to face these 245 paragraphs much as they might have to face the Chinese characters. No explanation is given of the almost uni-directional character of the secondary discharge or of the effect of the condenser. There are two graphs in the book, on one of which the coordinate units are not even indicated.

Some of the diagrammatic representations of apparatus are good, and the specifications of different types of coil are of value to those who wish to build up coils of their own, though the same information could probably be obtained from a shilling manual.

## JOURNALS.

*Mental Hygiene.* Vol. III. No. 1. January, 1919.—This number contains several articles by some of the leading psychiatrists of America, who have succeeded in writing in an entirely popular style in order that the journal may appeal to the lay mind. While this is a feat of no small merit in itself it does inevitably result in certain limitations. There is, for instance, a tendency to multiply words and examples as well as a striking absence of references. The organisation of the neurological department of the American medical service in the late war is the subject of an editorial article. Profiting by the experience gained during the earlier part of the war in the French and British Armies, the Americans attached to each division a neuropsychiatrist, who was stationed in the most advanced field hospital. This arrangement proved the value of early treatment in war neuroses. Only 1 per cent. of the cases presenting themselves at the advanced hospital were ultimately invalided to America.—Dr. Macfie Campbell has contributed an interesting paper on Nervous Children and their Training. He attributes to errors in home education at an early age many of those untoward and “irregular” symptoms which cause so much trouble in later life. A number of cases are quoted to illustrate the harmful results of indulging the caprices of sensitive children instead of helping them to adapt themselves to their environment. The physician in these cases has to treat the nervous child by educating the parents. He has, in short, to treat not a symptom but a situation.—Dr. Adolph Meyer discusses the Right to Marry. Excluding “imbeciles and many psychopaths,” and granting the possibility of a healthy environment for the future children, he believes that an individual of “tainted stock” should be allowed to marry another whose ancestry shows only normal individuals. Marriages cannot be controlled by law, nor are intentionally childless marriages to be encouraged. A propaganda of the laws of heredity, so that marriage shall not be undertaken without a clear understanding on the part of both contracting parties, is advocated as the better way. Runaway marriages should be made a legal impossibility, as they are in Switzerland.—The annual census of the insane is considered statistically by H. M. Pollock, Ph.D., and E. M. Furbush, A.B., B.S.—There are articles also of interest to the sociologist and educationalist, as well as abstracts of reviews of English and American literature.

In the *Military Surgeon* (Washington, D.C., U.S.A.) for May Professor Theodore Tuffier, consulting surgeon to the French Army, gives an account of the transport service for



wounded by aeroplane as it was extemporised in the Sahara with its wide spaces, turbulent tribes, and military posts, hardly accessible except by air. A general officer, wounded in the chest at Tafilalet in South Morocco, had to be carried 26 miles by bearers to Ksar-es-Souk. A major of the French Medical Service was sent to him by aeroplane, 200 miles over the mountains and into the desert. The patient was found to require an X ray examination, which would only be given at Bou-Denib, 60 miles away and isolated by enemy forces. There was nothing for it but to transport the patient thither by aeroplane, which was done in an hour by a Farman aeroplane, and the subsequent operation was now carried out with knowledge, and, happily, with success. Professor Tuffier goes on to say that an aero-ambulance service is in organised existence in the South of Algeria (Sahara) and in Tunis. Patients are carried about 100 miles a day, generally in Farman aeroplanes, and they should be sent in the early morning. It is, however, impossible to send them during a Scirocco wind, which shrouds the desert in a high, dense dust-cloud and prevents the pilot from finding his way and makes landing impossible.—Major M. C. Winternitz, U.S.M.C., details the damage done to the lungs of dogs by irritating poison shell gases, and shows that the ultimate effects closely resemble those of influenzal pneumonia, the pathology being similar. In each the epithelium of the air-passages is destroyed, the lung thus loses its protection and is exposed to infection from the bacilli of the mouth, which rapidly spread through the extensively oedematous pulmonary tissue. It will be recalled that in the April number of this magazine Major Dodge mentioned that a 1 in 10,000 quinine sulphate gargle seemed to protect influenza cases from pneumonia.<sup>1</sup> Mustard gas sets up a spasm of the bronchioles which keeps it out of the air vesicles, but where it does reach the lung it causes necrosis. (The worst examples of necrosis of epithelium in larynx and bronchi in the College of Surgeons War Museum are ascribed to mustard gas.) Chlorine and phosgene have similar actions, but chlorine acts more on the upper air passages, phosgene on the vesicles, in which it breaks up, forming nascent chlorine. The paper, which is the outcome of experiments on some 1500 subjects, should be read.—Lieutenant-Colonel W. B. Cannon tells of his researches on wound shock, which is, he urges, a toxæmia due to absorption of poisons from dead or dying cells. These poisons cause great outflow from the blood-vessels into lymph spaces with resultant halving of the blood pressure. Thus he accounts for the sweating and chilliness of the patient and the poor circulation with accumulation of red blood cells in the peripheral vessels, consequently poor aeration of the tissues, and in the advanced stages air hunger. He recommends, as the first treatment, warmth. If the patient is on a stretcher he should have blankets below him as well as above; rectal or intravenous saline injections or gum-salt solution injections should ring the changes with transfusion. Tourniquets are not to be lightly removed from shattered limbs; they prevent the shock-toxins becoming diffused through the body, and shock has often appeared for the first time just after a tourniquet has been removed. The only anæsthetic to be used in shock is nitrous oxide and oxygen. Thus he upholds the conclusion of Mr. Cowell in his Arris and Gale lecture.—Major J. Bayard Clark reports on what he saw of the treatment of venereal disease in England in 1918. He paid many surprise visits to military hospitals, which he always found clean and well managed, well equipped, and with a sufficient staff. He professes himself satisfied with us and notes that "the percentage of complications in all hospitals was very small."

#### THE ENHAM VILLAGE CENTRE FOR THE RE-EDUCATION OF MEN DISABLED IN THE WAR.

THE first annual meeting of the Village Centres Council was held recently at the house of the chairman, Lord Henry Cavendish Bentinck, M.P., Sir George Makins, Vice-President, in the chair, when the administrator, Major Garthwaite, reported that the Enham Village Centre, opened for ex-Service men on May 31st, had 30 men in residence receiving medical treatment and undergoing training, mainly in horticulture, agriculture, and forestry. Workshops for basket-making, electrical fitting, and carpentry had also been opened, and in other directions the re-education of men disabled in the war was being undertaken.

Dr. Fortescue Fox, the medical director, said that the interval between a man's discharge from the army and his reception at Enham varied from 1 to 43 months, with an average period of 12 months in their own homes. Nineteen out of the total of 30 had not done any work during this time, and ten had attempted to return to work and

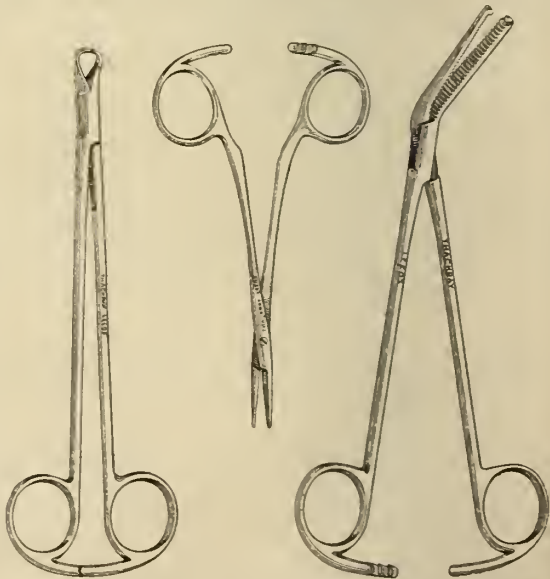
had broken down. All of them were now doing some work at Enham, under medical supervision, from two to six hours daily. Many kinds of physical and mental disability were represented. Nearly half the cases were definitely neurological, and under the care of Captain Douglas-Morris, R.A.M.C., the neurologist, who often made use of mental treatment with advantage. Several men had come with paresis, after fracture of the skull, and all of these were quite unfitted for the nervous strain and noise of town life, and had improved in the country. Cases of old wounds of the arm, with stiffness and wasting, were put to light curative work, such as thinning grapes, clipping hedges, sawing, or wood-cutting. Sensation as well as movement could be re-educated by appropriate work, such as planting seedlings or picking fruit. Games like bowls were very helpful. Whatever label was attached to the disability all the men should be regarded as neurasthenic. A large proportion—perhaps the greater number—would never be able to compete with able-bodied men in industry; therefore, looking ahead, it seemed likely that the Village Centre would become not only a centre for treatment and training, but a centre for providing special industries for permanently subnormal men, for whom there would always be needed a measure of protection. The process of re-education and the choice of their occupations required far more care than had hitherto been bestowed upon them, and should be based upon exact measurement of each man's physical and mental capabilities, with special regard to individual tastes as well as pre-war occupation, family circumstances, and the condition of the labour market. It was not sufficiently realised that the industry of the disabled, if properly guided, was capable of making a very large addition to the production of the country.

Mr. Rowntree, architect to the council, gave particulars of the housing scheme of the council. The Chairman and Sir R. Godlee expressed the hope that types of disablement would be selected for Enham which were capable of being effectually treated, so that a considerable number of cases could be passed rapidly through the centre.

## New Inventions.

### IMPROVED FORCEPS.

FOR the last four years all my artery and tissue forceps have been made with a bowed lock at the end as part of the circular finger ring. The illustration shows this lock applied to towel clips, to the Mayo-Ochsner angular forceps (open), and to mosquito forceps (closed). The advantages



of the attachment are greater resiliency and increased leverage in locking, more facile opening and closing, and—one great convenience—sutures are no longer liable to become caught up between the finger rings as with the ordinary forcep lock.

Messrs. Charles F. Thackray, Great George-street, Leeds, are the manufacturers.

Aspley Guise, Beds. BRYDEN GLENDINING, M.S., F.R.C.S.

<sup>1</sup> THE LANCET, July 26th, 1919.



# THE LANCET.

LONDON: SATURDAY, AUGUST 9, 1919.

## An Anthropometric Index of Physical Fitness.

THAT little children are more apt than adults to suffer ill-effects from remaining uncovered in a cool atmosphere is a fact that is known to every mother, and all surgeons recognise the importance of keeping children warm when prolonged exposure on the operating table is necessary. The reason for this is that the surface area of the child's body bears a higher proportion to the body volume than is present in the larger body of the adult, since increase of volume outruns increase of surface with general growth of the body. We may say that body surface represents the area of heat loss, while, in great part, body volume represents the area of heat production. Considered in this simple way we would naturally be prepared to find that the expression of internal heat production should be "a simple function of the body surface," as in another column of THE LANCET Professor GEORGES DREYER has shown it to be, rather than "a simple function of height, as HUTCHINSON claimed." But Professor DREYER's important researches have proved much more than this. They not only show that the smaller and lighter individual, with his relatively larger surface, has a greater vital capacity per unit of body weight than the larger individual, but they also seem to prove quite definitely that no anthropometrical standard of health that has so far been suggested is so true an index of fitness as is the vital capacity when this factor is considered in its proper relations. Mere measurements of height, weight, girth, or proportions become insignificant as clues to physical fitness when they are compared with the vital capacity constant of Professor DREYER.

Professor DREYER's reference to HUTCHINSON recalls, and rightly, to the memory of medical men one whose painstaking and somewhat neglected work, given to the world over 70 years ago, seems now to be coming to its full appreciation. If the most recent research has shown that he was but a poor mathematician it has increased our admiration of him as a true pioneer possessed of accurate scientific insight. On April 28th, 1846, before the Royal Medical and Chirurgical Society, JOHN HUTCHINSON read a paper with the following title, "On the Capacity of the Lungs and on the Respiratory Movements, with the view of establishing a precise and easy method of detecting the disease by the spirometer."<sup>1</sup> In this paper, after describing the movements of respiration, he divided air into (1) residual air; (2) reserve air; (3) breathing air; (4) complementary air; and (5) vital capacity. His definitions seem to have been original in many ways, but were at once accepted, and for that matter most of his communication was perfectly sound. He narrated results which he had found in 2000 cases and showed the effects upon what he termed "vital capacity"—namely, "the greatest voluntary expiration following the deepest inspiration," which were produced by height, weight, age, and sickness. At

the same time he exhibited an instrument which he called a spirometer, and which was devised to record the respiratory movements in health and disease. Mr. HUTCHINSON's audience were obviously impressed by the industry and ingenuity which he had displayed throughout laborious investigations, and they appear to have accepted as a reasonable discovery his dictum that if the height of the individual be known, the number of cubic inches of air which he is able to expire in the healthy state can be calculated with tolerable accuracy. As Professor DREYER shows, this was an unwarranted deduction, but the value of the early researches remains.

The fixing of standards of vital capacity for the different elements of the population is a work of national importance, for by this means better than by any other shall we arrive at a true index of fitness from which the individual may be judged. Those upon whom the responsibility for the national health and national welfare will devolve should note the interesting fact that the Boy Scout possesses a vital capacity about 15 per cent. greater than the boy who is not a scout. Croakers about racial degeneration would do well to compare the vital capacities of the gentleman of to-day and of JOHN HUTCHINSON's gentleman of the "forties." But the most important result which we expect from Professor DREYER's work is a definite understanding, first among medical men, and secondly among the public, as to what significance is to be attached to the phrase "good physique." What does "good physique" mean? Vaguely we all know the kind of well-set-up individual implied, but when we go to see Mr. JAMES WILDE fight do we use this phrase about him? We do not, but clearly his physical fitness is colossal, though his frame is small. It is absolutely necessary that we should not be misled in the future by vague terminology, but should arrive at standards whereby physical fitness can be determined. The Medical Research Committee, whose assistance to Professor DREYER in his researches has been openhanded, is engaged at the moment in obtaining facts along similar lines, with the assistance of the heads of certain Government Departments. The results of these researches, when added to Professor DREYER's results, will supply a really important body of evidence upon which it should become easier to evaluate the normal criterions of health; we trust therefore that there may be no long tarrying.

## The Tuberculosis Curve.

THE ominous reports on the increasing prevalence of tuberculosis in many European countries have inevitably provoked criticism of anti-tuberculosis measures which a few years ago were almost tacitly accepted as sound and satisfactory. It was hoped of the Insurance Act, for example, that, framed as it was in many respects with special reference to tuberculosis, it would soon justify its existence by an appreciable fall in the death-rate from this disease. This hope has not been realised. But is this failure traceable to factors which the Insurance Act cannot, in common fairness, be expected to control, or is the Act directly to blame for the present state of affairs? Dr. B. G. M. BASKETT, of Rayleigh, appears, in an interesting communication he has addressed to us, to take the latter view. The economic factor is, in his opinion, the only one which explains all the phenomena of the

<sup>1</sup> THE LANCET, vol. i., 1846, p. 630.



tuberculosis death-rate in this country; and he sees in the Insurance Act, or rather in the policy of which the Act is the supreme expression, the cause of the conversion of a falling to a rising tuberculosis curve. His words are so much to the point that we reproduce them exactly:—

“Briefly, from 1840-1915 we have (1) a period of *laissez-faire*, with no public arrangements for treatment of disease and medical skill at its lowest—sequel, a huge drop; (2) a period of tempered *laissez-faire*—sequel, a slightly lower but very satisfactory continuation of the fall; (3) a period of municipal and State benevolence ever growing more intense—sequel (a) a slackened drop, and (b) an actual rise, after the largest measure of paternalism in English history. How are we to explain the brilliant success of *laissez-faire*, with medical knowledge at its lowest and no public means of treatment, and the dismal failure of State collectivism with indefinitely increased medical knowledge, and ‘all the means and appliances to boot’? Why should we have maintained almost constantly for 56 years a decrease of about 200 per million in the mortality in each five years, and have made less progress in the last 20 years than in any previous five, except two very early in the period? Why should we have been able justifiably to talk in the nineties of the approaching extinction of tuberculosis, when in 1918 the Registrar’s officer of statistics gravely suggests that it may be possible to revert to old conditions? I submit that there is only one factor which explains all the phenomena, the economic.”

No doubt the economic factor plays a very important part in tuberculosis. It is, in innumerable cases, the disease to which the poor man succumbs, and from which the rich man recovers. A balance at the bank, with balance of mind, is the best preventive of tuberculosis yet discovered. And the economic policy which secures the greatest prosperity for the working classes must, other things being equal, be the policy calculated to lower the tuberculosis rate most effectively. So far we agree with Dr. BASKETT, though we are not prepared at this juncture to discuss the respective merits of a *laissez-faire* or a paternal policy. Nor do we believe that sufficient data are yet available for forming a correct estimate of the effect, good or bad, of the Insurance Acts on the incidence of tuberculosis. The war alone has obscured the issues far too effectively for such a balance of accounts to be attempted at present. In regard to the influence of the war itself on the development of tuberculosis we think that some confusion has arisen from a failure to analyse carefully the factors concerned. It is evident that the fighting man in general, while exposed to horror and hardship, was obliged to live an active out-of-door existence, with the opportunity of an abundant diet and under the close supervision of a trained sanitary personnel. Even in countries where famine threatened every nerve was strained to keep up the physique of the men at the front. Undoubtedly these men have broken down with active tuberculosis in considerable numbers, but military service has not necessarily been attended with catastrophe in ex-sanatorium patients. How many compositors, shop-assistants, and brewers’ draymen, on the other hand, were prevented from becoming frankly tuberculous by their change of environment cannot, of course, be stated. But the number is large, even as numbers go in war-time.

A group of totally different factors was concerned in bringing about increased tuberculosis in civilian circles during the war. Here all the normal predisposing factors were present and accentuated, and on them were superimposed the limitation in diet—to put it mildly—and the hindrance to free

ventilation entailed by the light-screening regulations. It is therefore demonstrably absurd to suggest that the economic factor explains all the phenomena of the tuberculosis curve in this country. This curve is criticised because its steep decline is not maintained; it flattens out and then begins to rise. Setting aside this rise, which is largely, if not wholly, due to the war, even if influenced, as Dr. F. A. ELKINS and Dr. H. H. THOMSON show in an article appearing in our columns, by such a factor as overcrowding in asylums, we get a curve such as is obtained by emptying a viscid fluid out of a vessel where the emptying becomes progressively slower. Can the stamping out of a disease, the germs of which exist in over 90 per cent. of the adult inhabitants of civilised communities, follow any but a “viscid” curve? Leprosy was, no doubt, quickly stamped out in Norway by effective isolation measures, but, in spite of the close morphological relations of the two bacilli, leprosy and tuberculosis differ so fundamentally that this comparison is apt to be misleading. Isolation of the advanced consumptive—the prevention of massive infection—may be beneficial to the rest of the community, and it was suggested by KOCH that the abrupt fall in the tuberculosis death-rate in England in the middle of last century was to be traced to the segregation of dying consumptives under the Poor-law. But this same abrupt fall has also been correlated with the conversion of this country to an industrial life, which, it is argued, affords many opportunities for frequent accidental inoculation of small quantities of the tubercle bacillus—a beneficial process. Again, in the “sixties,” far-reaching sanitary reforms in certain English towns coincided with a remarkable drop in the tuberculosis death-rate; in Newport and Leicester it fell 32 per cent., in Salisbury 49 per cent. If we are to be perfectly candid, we must confess to considerable ignorance of the factors influencing the form of the tuberculosis curve during recent years. Dr. BASKETT’S questions, which pursue a frequent line of criticism, will be valuable if they stimulate research into the general conditions.

### The Holding of Inquests in Camera.

AT two recent inquests held by Dr. F. J. WALDO the cases have been of alleged suicide by the deceased throwing themselves in front of trains, and the coincidence led the coroner to offer suggestions as to the publicity now given to the proceedings at inquests. The juries endorsed his words, disclosing thereby what appears to be public opinion. Dr. WALDO’S view, which was to some extent supported by witnesses whom he questioned during the two sets of proceedings, is that the publication of the details of an inquest upon an apparent suicide has not infrequently put the idea of self-destruction into the minds of others. These persons may possibly be weak of intellect, or broken down by distress, or racked with apprehension; but though, for this reason or that, inclined to take their lives, the fatal determination dates from the moment when they read that fellow creatures have succumbed to the impulse. Having got thus far down the path to death, it may be that the details of suicides, as reported in the papers, will advise them of simple means for ending their lives. It may be said that the opportunities for



suicide offered by a passing train, an open gas-tube, or a silent pool need no writing up to bring them to notice, but none the less the printed accounts of such cases do serve as an actual stimulus. It is impossible not to ascribe to some extent the frequent recurrence of certain methods of suicide to the suggestion afforded by example and by printed record. The fact that a man or a woman has committed suicide in a certain way is likely to be known without newspaper reports in the immediate circle of the event, but it is not here that the sinister influence of example is felt. The evil grows as the influence spreads to a wider population which includes among it a large number of susceptible subjects.

As far as neighbours are concerned nothing would be gained by suppressing the evidence at the inquest. On the other hand, rumour often makes a suicide out of an occurrence which really was an accident, and in this event it may be very desirable that not only the verdict but the evidence leading up to it should be known. The possibility that the public trial of shop-lifters and burglars, to say nothing of other criminals, may suggest a life of profitable adventure to unscrupulous persons has never caused anyone to suggest trying such rogues in camera, or dispensing with the deterrent advantages attached to punishment publicly imposed. We pride ourselves, on the contrary, upon the publicity given, whether to their conviction or their acquittal, as maintaining the national confidence in our courts of criminal justice. The medical profession is interested in the question of wide publicity, chiefly because its members appear as witnesses at practically every inquest that is held, as well as in very many trials arising out of criminal offences. Publicity tends in their case to secure the giving of full weight to their evidence by those before whom it is laid, for a vital witness can much more easily be ignored if no public opinion is there to criticise the proceedings. Publicity also means for medical men the appreciation of their testimony by all members of their profession who may chance to read it. It helps moreover to exclude from the witness-box persons who might otherwise endeavour to pass themselves off as medical witnesses. An unqualified quack would have a much better chance of escaping undetected in camera than he has in a public trial, followed by the publication of his evidence and of the name and address under which he tendered it.

We do not suggest that the publication of columns of scandalous detail not directly bearing upon the cause of death, such as has recently taken place in the case of two women, is of any value to the community. But while we admit the force of the contention that the inquest held in camera could never become an inducement to suicide, we still think that society at large is better served by the existing publicity.

WITH reference to the increased subscription to Fellows of the Royal Society of Medicine living within a mile of the Society's House, the Treasurers of the Society make the following announcement:—

By resolution of a special general meeting of the Fellows, this increase is not to apply to Fellows who have served abroad for 24 months or more, or have been unable to practise on account of war service, until Oct. 1st, 1920.

Fellows who desire to take advantage of this privilege should send necessary particulars to the secretary as soon as possible.

## Annotations.

"Ne quid nimis."

### THE ÆTIOLOGY OF INFLUENZA.

THE recent pandemic of influenza has afforded an opportunity to bacteriologists to review the ætiology of this disease and to investigate it further, an opportunity of which advantage has been largely taken, as a review of our columns in recent months will show. The result is somewhat surprising, since the outcome has been seriously to assail the position previously accorded to the Pfeiffer bacillus, isolated in 1892, as the cause of the disease, and to bring the whole question into the arena of controversy. The Pfeiffer bacillus is still regarded by some authorities as the infective agent, and it is claimed by them that with improved methods it can be found in a very large percentage of cases of the disease. Others again, while accepting its presence in many cases of influenza, assign to it a secondary rôle as contributing to the clinical manifestations or complications of the disease, much in the same way as the pneumococcus and streptococcus are believed to do; and on this view its inclusion in the triple vaccine employed as a prophylactic is justified, even though it is not regarded as the actual exciting cause. One fact seemed early to emerge from the controversy—namely, that in the minds of highly competent bacteriologists there was room for scepticism in regard to the ætiological rôle of the Pfeiffer bacillus, and that at best the critical verdict regarding it must be one of not proven. It was natural, therefore, that research should be more especially directed to two points—one the further investigation of the Pfeiffer bacillus, the other a search for other organisms. A plentiful crop of possible causative agents has resulted, varying from ultra-microscopic filter passers to pleiomorphic cocci. The result at present can be nearly described as confusion, from which, however, we may hope to see some definite results.

An interesting and suggestive contribution to the subject is afforded by a paper which we publish in another part of our present issue by Dr. G. E. Beaumont. He states that he was impressed by the comparative infrequency of the Pfeiffer bacillus and by the pleiomorphism of the organism separated by Donaldson with its possible relation to one of the filter-passing organisms described by other observers. He now records some observations suggesting that influenza is in reality a mycosis, sometimes bronchial, sometimes intestinal, due to a mycotic parasite with several stages in its life-history; and he offers the suggestion that the discordant results of other observers may find their eventual explanation in the pleiomorphic character of the parasite he describes. He is careful to disclaim priority or originality for his observations, pointing out that they are an extension of those of Captain H. J. B. Fry, who described a large spore stage and a hyphal stage in the parasite he isolated from cases of influenza. Dr. Beaumont describes eight forms in the life-history of this parasite—namely, hyphæ, large spores, coccal clusters, small spores, tetrads, mulberry masses, chains of cocci, and bacilli. These forms he has found in varying combinations in films made from the sputum in cases of influenzal bronchitis and broncho-pneumonia, and in the fæces of cases of influenzal



enteritis. The reactions to the Gram-staining method of these various forms appear to be very variable, and this peculiarity was also to be observed in the cultures made on various media from the sputum. These cultures also gave interesting and suggestive results when examined under the microscope, as they, too, showed pleomorphic characters. Although Dr. Beaumont used the various media suggested as specially adapted to the growth of the Pfeiffer bacillus, he was not able to isolate it. He sometimes obtained single colonies which showed characters resembling the Pfeiffer organism, but they were never pure and often contained Gram-positive coccal elements; moreover the Pfeiffer-like organisms would often disappear in subculture. Dr. Beaumont has in addition made a few observations on the urine and blood in cases of influenza, and in the former he has obtained all the stages of the parasite he describes. In the blood in primary cultures he has recovered several of the stages or forms, but only in one case was he able to obtain growths in subculture.

Dr. Beaumont's observations are admittedly incomplete, but they are sufficiently striking and suggestive to require further examination at the hands of other workers. If his results are confirmed and the organism is submitted to and fulfils the full tests of the Koch postulates, then the relation of the various forms of the parasite to one another and to the different organisms found in this disease by other observers will afford interesting matters for investigation and possibly serve, as Dr. Beaumont suggests, to clear up the confusion at present existing by explaining the discrepancies and coördinating the divergent views.

#### PRACTICAL ISSUES OF THE ALCOHOL QUESTION.

THE Medical Research Committee have issued a further report<sup>1</sup> on the alcohol question, in which the main results on manual work and on the coördination of fine muscular movements agree well with those reported previously by Dr. Mellanby. Dr. Mellanby's report (No. 31 of the series) was dealt with in our issue of July 19th in an annotation under the above title. The present investigation was undertaken by Dr. M. H. Vernon, who was assisted by Dr. W. C. Sullivan, Captain M. Greenwood, R.A.M.C., and N. B. Dreyer. Both reports show the important differences between the effects produced by alcohol when taken with or without food, a question which we have pointed out again and again has a practical bearing, and which, Dr. Vernon now remarks, has been curiously ignored by most previous investigators. The Medical Research Committee agrees that the relations between the consumption of food and the physiological effects of absorbed alcohol are so important (as these recent studies show) that much previous work upon the effects of alcohol is now seen to have been impaired in value by disregard of the presence or absence of food in the stomach during the experiments. The influence of alcohol on manual work and on neuro-muscular coördination was investigated in eight men and five women. In seven of the subjects observations were made on the accuracy and speed of typewriting, in three on the accuracy and speed of working an adding machine, and in six on the accuracy with

which a target could be pricked. The administration of alcohol produced some effect in all of the individuals tested by the typing and adding-machine methods, the degree of effect depending largely on whether the alcohol was taken on an empty stomach or with food. On an average it was about twice as toxic under the former conditions as under the latter. In the foodless experiments one subject made 88 per cent. more typing mistakes after she drank 11·2 c.cm. of alcohol. Another subject increased his adding machine mistakes 74 per cent. after taking claret containing 19·4 c.cm. of alcohol; another increased her typing mistakes 156 per cent. after drinking sherry containing 22 c.cm. of alcohol. In some subjects, however, a moderate dose of alcoholic liquid taken with food produced no measureable reaction. Such a non-reactive dose amounted to one glass of port in a male subject and to 4 oz. of port in a female subject. One subject who a year before had been rather a heavy drinker showed little, if any, reaction, even after drinking whisky containing 45 or 60 c.cm. of alcohol. He was tested by the target method and took the whisky three hours after food. In the target method, rows of dots, made on squared paper fixed vertically at arm's length, were pricked at three-minute intervals before and after the alcohol. The average distance of a puncture made from the centre was about 1·8 mm., but after taking 30 c.cm. of alcohol the target-pricking error increased 12 per cent.; after taking 37·5 c.cm. it increased 43 per cent., and it continued to increase in arithmetical progression with the dose of alcohol till it was 132 per cent. above the normal when 60 c.cm. were taken. To sum up, this inquiry would seem to endorse by scientific measurement what has been recognised for a long time in practice. The creature of addiction, or one who has acquired the habit of moderate alcohol consumption, shows a negligible result to moderate doses of alcohol according to the tests here applied. In other words, the body has a remarkable power of adapting itself to acquired habit. Then, again, according to these experiments, alcohol taken on an empty stomach proves to be twice as toxic as when taken with food. Alcohol consumers found this out long ago, for the munching of a biscuit with a glass of wine between meals is a very old and familiar practice. Man seems to have discovered instinctively that food tempers the action of the spirit.

#### GONOCOCCUS PNEUMONIA.

Dr. Martin Ross,<sup>1</sup> of New York, records the following case, which he regards as one of gonococcus pneumonia. The patient was a girl, aged 16, suffering from an acute exacerbation of an old gonorrhœal infection superimposed upon a dysmenorrhœa. Lobar pneumonia developed and followed an atypical course. The sputum was scanty and milky white in colour, with no trace of blood in it at any time. Pure cultures of Gram-negative, biscuit-shaped diplococci were obtained from the sputum, the blood, and the lung. Post mortem both lungs were found riddled with minute abscesses, there was consolidation of the upper left lobe; in the lower lobe of the right lung there was a large abscess cavity and a smaller abscess in the right upper lobe. The occurrence of gonococcus septicæmia in this case was probably due to the presence of

<sup>1</sup> Special Report Series, No. 34. National Health Insurance, Medical Research Committee: The Influence of Alcohol on Manual Work and Neuro-muscular Coördination. London: Published by His Majesty's Stationery Office.

<sup>1</sup> Medical Record, 1919, xcv., 950-2.



dysmenorrhœa with the damming up of the menstrual flow. In spite of the relative frequency of gonococcus septicæmia with metastases, Ross could only find one other case on record of gonococcus pneumonia, which was reported by von der Bressel in the *Münchener medizinische Wochenschrift* in 1903. The patient, a man aged 32, while under treatment for gonorrhœa developed signs of lobar pneumonia with scanty, milky white, bloodless sputum. Pure cultures of Gram-negative diplococci were obtained from the blood and sputum. In a week's time the temperature fell by lysis, and complete resolution took place on the eighteenth day.

#### THE CASE OF BUBONIC PLAGUE IN LIVERPOOL.

THE Ministry of Health make the following announcement concerning the fatal case of bubonic plague in Liverpool to which reference was made in our last week's issue. The patient, a master stevedore and bargeman, was removed to the isolation hospital on July 11th and died on July 19th, but bacteriological confirmation of the fact that he was suffering from plague was not obtained until July 26th. No further cases have occurred. Dead rats have been discovered in the patient's office and in the adjacent premises, but on examination none were ascertained to have plague. A mouse found dead has been proved by bacteriological examination to have suffered from plague. The corporation have undertaken the disinfection of the premises and the destruction and examination of rodents found in them. One of the medical officers of the Ministry is engaged on a detailed investigation of all the circumstances of the case.

#### THE NEW PUBLIC HEALTH ACT IN SOUTH AFRICA: CONSCIENCE CLAUSE ABOLISHED.

THE new Public Health Act, No. 36, 1919, of the Union of South Africa, was recently promulgated at Capetown. The Governor-General has, under the Act, appointed Sir Thomas Watt, K.C.M.G., Minister of the Interior, to hold the portfolio and administer the Department of Public Health in addition to the Department of the Interior and the Public Works Department. It is also announced that from July 1st, and until further notice, the Department of Public Health established under Section 2 of the Act administers all matters relating to (a) public health, (b) adulteration of food and drugs, (c) district surgeons, and (d) medical councils and pharmacy boards, instead of, as heretofore, the Department of the Interior. The Public Health Bill in its passage through the Senate was subjected to one radical alteration—the deletion of the antivaccination conscience clause—and this alteration was accepted by the Assembly and has become law. Sir Thomas Watt submitted to the Senate, when the conscience clause was under consideration on June 2nd, that a reasonable case had been made out for such a clause, but the Senate deleted the clause by 13 votes to 8. Eight days later the Assembly accepted the deletion of the conscience clause by 48 to 26, although it had been originally carried by the popular House by 61 votes to 19. One argument that evidently weighed with the Assembly was that under a conscience clause there would be nothing to prevent whole tribes of natives or coloured people raising objections to vaccination. Sir Thomas Watt also stated that in the six years before

the war there were only four cases of small-pox in Germany, where vaccination was compulsory "even in the case of people with a conscience." According to Dr. John Hewat's statement in the Senate, 40 per cent. of the people in the Orange Free State are unvaccinated, and the senior elected member of the Colonial Medical Council is not likely to make loose assertions on such a matter. The Act also provides for a refund by the Government of 50 per cent. of all expenditure on public health incurred by municipalities, a clause with obvious bearing upon the State treatment of tuberculosis. While the measure was in the Senate Dr. Hewat urged the Government to deal with tuberculosis sanatoria from a national point of view, instead of leaving it to the municipalities to contribute half of the cost. Sir Thomas Watt claimed that the measure went a long way towards the nationalisation of the care of public health. It had been asserted that the Government spent more money on dealing with diseases of stock than on public health, but the Minister declared, on the contrary, that the Government spent £10 on public health as compared with £1 spent on animals. Dr. Hewat said that the cost of the measure was not going to be great—only £80,000 or £100,000 per annum—and appealed to the Government to increase the refund of 50 per cent. on expenditure made by municipalities in connexion with public health. This request being declined by the Minister, Dr. Hewat said he deplored the decision of the Government, especially in reference to the need for tuberculosis sanatoria.

#### RESECTION OF ANKYLOSED FINGERS.

IN the *Journal de Médecine de Bordeaux* M. H. Lefèvre has called attention to an improved method of treating ankylosed fingers, such as follow bullet wounds, which should prove useful, especially at the present time. These wounds, if they do not lead to immediate amputation, terminate in ankylosis, usually in extension, frequently with the ankylosed finger overriding its neighbour. The overriding is due to partial loss of articular surface, whether condyle or socket. Such ankylosed fingers are useless, subject to numerous injuries, and interfere with the function of the next fingers. The usual treatment is amputation. One day, after amputation of an ankylosed finger, which he considered useless, M. Lefèvre asked himself, Can nothing better be done? On dissection he found the flexor tendons intact, the extensors adherent to the skin and the bones but without solution of continuity. They had been divided by a shell fragment, but the ends were united by fibrous tissue. Having broken down the ankylosis involving the first interphalangeal joint and freed the tendons, he could, by traction on them, flex and extend the phalanges on one another. He therefore decided to resect the next ankylosed finger that he encountered with the tendons intact. But in three cases in which he operated he could obtain no indication on this point beforehand. Only the operation gave this. Wound of finger-joint is frequently accompanied by articular fracture and suppuration, and the resulting ankylosis by peri-articular lesions. In the end the tendons and soft parts are more or less altered, if they are not initially. Whatever the degree of disability, it is the condition of the tendons that matters. Whether they are ruptured or adherent the result is the same—complete immobility of the phalanges on one another or on the metacarpal bone. Before sacrificing such a



finger M. Lefèvre thinks that the surgeon should make sure by exploratory incision of the state of the tendons and not amputate unless they are irreparable. He relates three cases in which he resected the finger with success. The following may be taken as an illustration. A man, aged 32 years, was wounded on Jan. 17th, 1915. He was admitted to hospital on the 20th with a sloughing wound of the first interphalangeal joint of the right index. At the end of February cicatrization was complete. In April he came under the care of M. Lefèvre. The joint was ankylosed in extension and the index overrode the middle finger. Radioscopy showed that this was due to loss of the internal condyle of the first phalanx. On the dorsal and internal surface of the finger there was adherent scar. The palmar surface of the second and third phalanges rested on the dorsal surface of the middle finger. The patient could not effect any movement of flexion of the phalanges on one another, or any movement of flexion or extension on the metacarpal bone. He therefore asked for amputation. On April 8th a longitudinal incision down to the bone was made on the external surface of the finger. With a rugine the soft parts were raised from the dorsal and from the palmar surface. The fibrous and osseous tissues constituting the ankylosis were divided. The cartilaginous surfaces had disappeared. In the centre of the glenoid cavity of the second phalanx was a little focus of osteitis with granulations. Curetting was performed and a new cavity was modelled. The external condyle was resected so as to level the end of the bone. With a gouge a new head was modelled. Two sutures were inserted in the fibrous tissues. Adhesions between the skin and the fibrous tissue, which surrounded the extensor tendon, were broken down. The cutaneous wound was sutured. Next day passive movements were begun. On June 26th the patient could completely extend and almost completely flex the finger. He could roll a cigarette and button his clothes. The finger was simply a little shortened. When seen again in February, 1917, he had good use of the finger.

#### SCIENCE AS MADE IN GERMANY.

EVEN in the days when it was customary to take German scientists at their own valuation doubt would at times arise as to whether or not these gentlemen were quite so altruistic and so devoted to the cult of philosophy for its own sake as they held themselves out to be. A wise commentary on their attitude is contained in an excellent series of articles on the Pan-German Internationale by Mr. Adolphe Smith, which appeared in the *Times* at the end of July. Mr. Smith, whose forcible writing on many subjects of vital importance to medicine is familiar to all readers of THE LANCET, writes as follows:—

"The danger or otherwise of consuming tuberculous meat was of very material importance to the German Agrarian Party, for a large proportion of German cattle was known to be tuberculous. This party held office when at a great international scientific congress it was my good fortune to discover and to denounce intrigues that had for their purpose the adoption of a resolution exonerating the specific germ of bovine tuberculosis. This manoeuvre had been promoted by the German delegation and the official representatives of the German Government."

The accuracy of the statement emerges from the report to THE LANCET of the International Congress on Tuberculosis held in 1908 at Washington, and it brings to light an aspect of German duplicity for

which, even after the experience of the past five years, we confess that we were unprepared. Mr. Smith's protest against German methods at this Congress was printed in very similar words in our own columns 11 years ago. Those whose memories carry them back to the year 1901 will recall the profound sensation caused by the statement made by Koch before the British Congress on Tuberculosis in reference to this same topic.

"The infection of human beings (by bovine tuberculosis) is a very rare occurrence. I should estimate the extent of infection by the milk and flesh of tuberculous cattle, and the butter made from their milk, as hardly greater than that of hereditary transmission, and I therefore do not deem it advisable to take any measures against it."

It was charitably supposed that the distinguished scientist had slipped into error. No doubt he had, but we may perhaps be forgiven for wondering if the exact nature of the error was correctly diagnosed at the time.

#### HEREDITY AND MENDELISM IN PTOSIS.

A REMARKABLE family has been discovered in America in which the inheritance of ptosis can be traced through six generations.<sup>1</sup> Living in a sparsely settled country, this family, though seldom intermarrying, have remained in the same district for a century and a quarter. The recorder, Dr. Briggs, of Asheville, North Carolina, gives statistics of 128 members of 23 families (or "sibships," to use Nettleship's term), all descended from one Martin Maney, an emigrant from Dublin and a veteran of the Revolutionary War. In each of these 23 sibships one or more members were affected with ptosis, and, taking them all together, the numbers of the affected and unaffected were exactly equal, 64 of each. The evidence in most cases rested on hearsay and family tradition, but the condition was seen and photographed in six members of the last three generations, and with regard to the others, in the case of such an obvious defect, family tradition can probably be trusted. The equality in numbers between the affected and unaffected points strongly to the inheritance being in accord with the Mendelian theory, although the precise equality in this case must be accidental, for the theory postulates equality not between the number of affected and unaffected developed individuals, but between the number of potential individuals contained in all the germs, both developed and undeveloped, originally possessed by the members of the affected sibships. Perhaps even more striking than the equality in numbers is the fact of the inheritance being continuous in every case but one—i.e., there was no affected individual with both parents normal, and in every case (but one) of both parents being normal none of the progeny were affected. We may, perhaps, suppose that in the exceptional case a slight degree of ptosis had been overlooked by the family; at any rate this is what the recorder suggests (though in that case the equality before mentioned would no longer be exact). To explain the facts on the Mendelian theory it must be assumed that the character of ptosis is a dominant one in relation to the normal character, which is recessive. The ancestor of the first generation was an impure dominant—i.e., he was affected himself with ptosis, but while one-half of his germ cells contained the ptosis factor the other half did not. The result would be that of his children roughly one-half would be affected with ptosis, while the

<sup>1</sup> American Journal of Ophthalmology, June, 1919.



other half, developed from germs completely free from the ptosis character, would be normal. Every affected member of the genealogy would be like the ancestor of the first generation, an impure dominant, and, as the result of a marriage with a normal partner, would transmit the character of ptosis to, roughly, one-half of his or her children, while unaffected members of the genealogy would transmit no taint. This is what happened in the family in question, so far as we can tell from the not very full data supplied. The record is one of extreme interest, and should be compared with the work of the late Mr. Nettleship, whose observations on the bearing of the Mendelian theory on various eye diseases are summed up in his Bowman lecture for 1909.<sup>2</sup> It is here shown that while the facts of some hereditary conditions in humans cannot be interpreted on the Mendelian theory except by the assumption of various modifying influences there are other hereditary conditions in which they can. The best example of the latter is found in hereditary forms of cataract, whether noticed first at birth or in later life. Most cases of senile cataract occur apart from heredity, but there are some families in which there is no doubt that the liability to the disease is inherited, and in these it is very rare to find an affected member one of whose parents was not also affected. In the case of congenital cataract the inheritance is practically always of the continuous type, and in affected families (sibships) a rough approach to equality between affected and non-affected members will be found on the average. The factor causing cataract, therefore, behaves as a dominant towards the normal, and we may predict with some confidence of an affected member of such a family that in the case of children being born to him or her the chance of their inheriting the disease will be an even one, while in the case of a non-affected member of the same family, provided that the second parent is normal, the chance of inheritance is practically nil. Several pedigrees of families with retinitis pigmentosa have also been put on record, and in the majority of them the inheritance is continuous, the disease factor behaving as a dominant; but in some of these pedigrees the inheritance is discontinuous—i.e., interrupted by a healthy generation, and it is possible that in these pedigrees the disease behaves as a recessive. In the case of some other diseases—e.g., Leber's hereditary optic atrophy—the interpretation of the facts is complicated by a new factor—sex limitation. It is only when there are no complicating factors that we can expect to find the Mendelian theory illustrated, but the instances where this has already been done to some extent are sufficiently numerous to encourage those interested in the subject who have the opportunity of collecting pedigrees bearing on the point to persevere.

<sup>2</sup> Trans. Ophthalmological Society, vol. xxix.

**THE POTASSIUM COMPOUNDS ORDER.**—By an Order issued by the Minister of Munitions dated July 31st, 1919, the operation of the Potassium Compounds Order, 1917, as modified by an Order (Partial Suspension) issued in 1919, is suspended on and after August 1st, 1919, until further notice. The original Order set forth that no person may offer to purchase or take delivery of certain potassium compounds except in accordance with the terms of a licence restricting the quantities permitted to be dealt with. Shorn of legal verbiage, the new Order means that the restrictions then indicated are now removed, and it is cited as the Potassium Compounds (Complete Suspension) Order, 1919.

## A CONFERENCE ON PEDIATRICS.

### I.—THE MEDICAL ASPECT.

FOR some time past the subject of pediatrics has been occupying the minds of those who have at heart the health and welfare of infants and young children. More especially have they been concerned with the question of the teaching of the normal physiology as well as the pathological conditions of childhood to medical students, for it is said that the newly qualified practitioner is turned out with some knowledge of disease as it occurs in children, none of the healthy child, and the haziest notions about the feeding of infants.

An informal conference was held last spring to consider generally the subject of pediatrics, under the chairmanship of Sir GEORGE NEWMAN, K.C.B. Advantage was taken of the presence in this country of specialists from America and the colonies to ascertain the results of their experience of maternity and child welfare in relation to the medical curriculum. The conference did not receive at the time the attention that it deserved.

Dr. W. R. RAMSEY, associate professor of diseases of children, University of Minnesota, described

#### *The Position of Pediatrics at the University of Minnesota.*

Here there is a separate department with 30 beds, a whole-time professor at the head, and an associate professor and staff of clinical assistants, most of whom are half-time men. Until four or five years ago pediatrics was a separate professorship, but was under the department of medicine. It was soon realised that the subject must be taught intensively, and that to teach a subject intensively there must be a separate department. In Minnesota there is very close coöperation between pediatrics and obstetrics. Both departments are on the same floor, and as soon as the cord is tied the child is passed over directly to the department of pediatrics. The normal infant is regarded as of vital importance in the teaching of the student, for it is realised that if he knows the normal infant thoroughly he quickly recognises the abnormal one. Dr. Ramsey mentions three fallacies which are still prevalent amongst medical men: (1) that the baby must be bathed immediately after birth; (2) that the baby's mouth must be swabbed out daily; and (3) that a dose of castor-oil should be given on the third day. Dr. Ramsey also remarked on the many and various opinions which were rife on the subjects of infant feeding and hygiene. In the United States it was found necessary to appoint a commission of representative pediatricians to formulate a scheme to which all might subscribe. As the result a pamphlet was drawn up and issued by the Government in many hundreds of thousands. The findings of these men are now accepted as the basis for a uniform propaganda for child feeding and general hygiene to be applied to children.

#### *The Teaching of Pediatrics in Canada.*

Dr. G. S. STRATHY (Lieutenant-Colonel, C.A.M.C.), assistant physician, Hospital for Sick Children, Toronto, described the condition of affairs in that city as it was when he was there four years ago. The teaching of pediatrics, he said, had changed considerably in Toronto in the last decade.

About ten years ago the teaching of this subject was put in special hands and taken up from two points of view—the teaching of medical people and the teaching of the public. The former is divided into two parts—the teaching of the medical student and the teaching of the practitioner. The student has had to undergo a five years' training, but this is now to be increased to six years. In the fifth year there are practically no lectures to attend, all the time being spent in the wards and laboratories. Each student gave three months to specialties, six weeks of which was given to pediatrics. He attended for two hours a day on three days a week. The Children's Hospital in Toronto contains 150 beds, 50 of them being devoted to children under a year. Some of the students live in the hospital and assist the house staff in their work; all attend the out-patient clinic, weighing the babies week by week and, if necessary, following them up in their own homes. At the Hospital for Sick Children the pediatrics division is responsible for the children from birth to 18 months, the



medical division from 18 months to 14 years. The education of the practitioners is largely done in association with the municipal authorities.

Dr. J. G. ADAMI, professor of pathology, McGill University, Montreal, gave an account of Canadian provisions in general, Canada, as he said, holding a half-way position through having partly British and partly United States influences acting upon it, and being sensitive to both. Ever since the McGill University was opened in 1824 the medical school has followed the British system of having the free entry of the students into the wards, bedside teaching in maternity work, as well as in medicine and surgery, being a striking characteristic. In pediatrics there is a professor, three lecturers, and two demonstrators, the size of the staff being due to the fact that there are out-patient clinics for children at both of the two main hospitals attached to the University, the Royal Victoria and the Montreal General Hospitals, as well as at the Maternity Hospital. In all these pediatrics is taught. An extra year is now being added to the curriculum, and still more work on this subject will be done. According to the McGill Calendar for the 1916-17 session—

"A didactic course on the diseases of infancy and childhood, including the feeding of infants, is given during the session to students of the fourth year. Clinical and didactic lectures are given on diseases of the new born at the Montreal Maternity Hospital. In the Montreal General and Royal Victoria Hospitals weekly clinical lectures and ward demonstrations on diseases of childhood will be given to students of the fifth year, and groups of students in rotation will be assigned work in connexion with the out-patient children's departments of both hospitals. The new Foundling and Baby Hospital, which has recently been opened, with a capacity of 100 beds, will be utilised during the session for a series of demonstrations in infant feeding."

An extraordinarily strong point is made of infant feeding. In the Maternity Hospital the children are taken away from their mothers as soon as they are born, and those infants are looked after mainly by the pediatricians, so much so that one of the leading obstetricians absolutely refuses to see the child. He adopts the "by-product" idea, and says that his whole concern is with the mother, to see that she is well through maternity, and that the child should be, from the first moment of its life, in the hands of the physician who is going to look after it during the next two or three years.

#### *A Children's Department at Guy's Hospital.*

Dr. H. C. CAMERON described the scheme for a complete children's department as accepted by the governors of Guy's Hospital and now in process of completion. It is best described in his own words:—

The children's wards, containing about 50 cots, will be in close proximity to a lying-in ward of 20 beds. The infants born in the lying-in ward will be under the care of an assistant, who will act under the joint control of the obstetric surgeons and myself. The Salomon's Centre for Infant Welfare is housed in a building adjoining the hospital, and is approaching completion. It will be conducted by assistants acting under my control. The centre will undertake the ante-natal care of the two to three thousand expectant mothers who apply each year to the hospital for assistance in childbirth. These births are attended in part by the students of Guy's Hospital, and in part by the pupil-midwives of the midwifery school attached to the hospital, in each case under the necessary supervision. The mothers all live in an area which is situated in the boroughs of Bermondsey, Southwark and Lambeth, and our arrangements have the approval of the medical officers of health concerned. In this area there are some 12 other infant centres at work, and the Salomon's centre has entered into arrangements with these centres to cover the whole area completely, so that every child is sent to the centre which is most conveniently situated to its home. The Salomon's centre, therefore, although it conducts the ante-natal work for the whole area, restricts its post-natal work to a small district in the immediate neighbourhood of the hospital.

The out-patient children's department has made arrangements to place the resources of the hospital both for diagnosis and treatment at the disposal of all these centres. In the Salomon's centre there will be a resident superintendent and six resident health visitors. They will be assisted in the work by the pupil-midwives, and ultimately, it is hoped, by students working for a diploma in infant welfare. The medical students of Guy's Hospital will have opportunities of studying the work and appreciating its methods and objects. An arrangement has just been made by which all students will spend three months in the children's department, passing into it immediately after three months spent in the special study of midwifery and the diseases of women, and I feel that with these arrangements it will be possible to make the instruction sufficiently comprehensive so that it may include the study of the newly born and of the normal child as well as the study of sick children.

#### *Pediatrics in the Medical Curriculum.*

Dr. Cameron points out that one of the difficulties which beset the teacher in his endeavour to give the student a sufficient training in pediatrics is that the subject is a voluntary one, and there is no set examination of his knowledge as part of the final examination. The training should be compulsory, and an examination must be held which will

demand that the student shows the same knowledge of infant management and hygiene as is expected of him in his answers on morbid anatomy and clinical symptoms. In order to afford time for the amount of study necessary Dr. Cameron suggested that the curriculum should be relieved on the anatomical detail side and on the surgical assistance side. Something might also be done in cutting out a good deal of bacteriological technique. He urged that the University of London should grant an M.D. degree in pediatrics, as is done now in midwifery and diseases of women.

As the CHAIRMAN said concisely, Dr. Cameron suggests (1) that a pediatric department is necessary in every medical school; (2) in this department every student shall be taught compulsorily for three months; and (3) every student shall have a special and separate examination in pediatrics.

Dr. J. S. FAIRBAIRN pointed out that any suggestions with regard to examinations, in order to be effective, must come from the General Medical Council. The examination system should be arranged to meet the new conditions of things; every medical school should have a complete centre; the student should take the midwifery course and, if possible, go straight on from midwifery into pediatrics, watch the life and health of the infant whose intra-uterine development and birth have hitherto been his care, through its breast-feeding and weaning. If the student does that he gets a complete picture of the whole thing from the preventive medicine point of view. It is the normal infant that should be taught to the student. The pediatrician should approach the subject from the standpoint of physiology rather than of pathology.

Dr. EARDLEY HOLLAND was strongly in favour of the infant being handed over to the pediatrician for the purpose of teaching and research in the hospitals and medical schools. If the obstetrician has to look after the infant and to study it intensively, he must give up gynaecology; he cannot do both. He must either be an obstetrician and pediatrician, or he must be an obstetrician and gynaecologist. But obstetrics ought not to be separated from gynaecology. It is agreed that they are inseparable subjects. Dr. Holland considers that, except in a few chosen places, the teaching of obstetrics is exceedingly badly done. As he says:—

Nearly all the lying-in beds for teaching are allocated to the teaching of the midwife, and the student is left out in the cold. It is absolutely essential that lying-in beds in the general hospitals should be established, and that it should be made obligatory upon the student to do lying-in work in a ward. I mention this because it is closely connected with pediatrics; for it means the study of the fetus, the causes of foetal death, the relation of the fetus to the infant, injuries received by the fetus, and the diseases transmitted to the fetus during pregnancy. I feel that as obstetricians we have very little more interest in the infant than is included in the foetal stage. The part that should be played by the obstetrician in infant welfare is to look after the fetus; to preserve it during pregnancy from transmitted disease, and to preserve it during labour from the injuries it may receive during its passage through the birth-canal. As soon as the establishment of pulmonary respiration has announced the fact that the metamorphosis from fetus to infant is complete, he will hand over the infant to his pediatric colleague, asking the latter to note that it has been delivered to him in good condition.

It has only been possible, so far, to consider the opinions which were brought forward by some of the members of the Conference on the teaching of the medical student. The following is an account of the discussion of the social aspect.

## II.—THE SOCIAL ASPECT.

### *The Importance of Breast Feeding.*

Dr. W. R. RAMSEY laid stress on the importance of breast feeding, and described the change which had lately taken place in American opinion, both lay and medical. A few years ago, he said, not more than 30 to 40 per cent. of American women nursed their children. The country was flooded with literature on patent foods, which was sent to women not only after the baby was born, but long before, pointing out the simplicity of artificial feeding. Doctors and nurses became imbued with the same opinion, and as a result the public thought that breast feeding was practically an impossible thing. At the present time in many communities 75 to 80 per cent. of even well-to-do women nurse their babies and are proud of it, instead of regarding it as a disgrace. As he puts it, "they discuss it at their circles and their card parties, and go home promptly to nurse their babies." In order to eradicate the heresies which have been handed down from time immemorial we must first educate the doctors and nurses, and then the public will become educated; or else we must educate the public first, and the doctors will be compelled to follow suit.



*Infant Welfare in Toronto.*

Lieutenant-Colonel STRATHY described the state of affairs in Toronto. The healthy babies are looked after at milk depôts, each serving a district, of which there are 16 in Toronto, for which the municipality is responsible. To each of these depôts a practitioner is attached, who attends twice a week. The city authorities supply the premises for the clinics, and the nurses who attend there and who follow up the children. Within 10 days of the birth of the baby, whether the family be wealthy or poor, the nurse from the City Hall calls at the house to offer help or advice to the mother. In the poorer districts she is usually welcomed and asked to call again. The mother is encouraged to go to the depôt and have the baby weighed each week, and it is found now that she can do this without hurting the feelings of the practitioner who is looking after that baby, though at first they had to be careful not to tread on the toes of local practitioners. As long as the baby is healthy and advice is needed only in the matter of feeding, it is treated at the depôt, but sick babies are sent to the children's hospital with a card. A card index is kept for all babies, and after treatment at the out-patient department of the hospital the baby is sent back to the depôt, together with its card, showing all the treatment it has had. A nurse is always present with the doctor who holds the clinic, and will always supply a report of the home conditions when required. For those who attend the out-patient clinic any home treatment, such as washing out the stomach, can be carried out by the nurse; instructions go to the City Hall to the head nurse, and a nurse is instructed to go and do it. There are about 150 nurses carrying on this work who have graduated at the children's hospital.

*Infantile Tuberculosis in Italy.*

Captain R. A. BOLT gave a brief outline of some of the findings of a Commission which was sent to look into the tuberculosis situation in Italy, and which was part of the American Red Cross in Italy. It was found that tuberculosis was very closely related to other problems, and the report which they issued, which was drawn up by Captain Knud Stonman, statistician of the Commission, is chiefly concerned with infantile mortality in Italy during the war and with the child-welfare aspect of the problem. In Italy, prior to the war, the infant mortality rate was gradually being lowered as industrial prosperity increased, especially in those places where serious efforts in child welfare had been made. The Italians had developed a system of institutions through their pediatricians which in most places met the immediate needs of sick children, had recognised the need for a good milk-supply for growing children, and, through a system of marine and mountain colonies, had provided recreation and outdoor life for those who were weak and predisposed to tuberculosis. In a number of medical centres of Italy, prior to the war, special instruction was given in pediatric clinics, but only in a few was the socio-economic side of child-welfare work emphasised and opportunity given to the students to do practical work in milk stations, consultations, and infant welfare centres. In Italy breast feeding of infants has always been in favour, and in the north from 85 to 90 per cent. of the children are breast-fed for one year at least, and in the south from 90 to 95 per cent. The midwife service is satisfactory, midwives being required to take a two years' course of training in medical centres, after which they take their diploma. In Italy the incidence of puerperal infection is comparatively small, and the amount of ophthalmia neonatorum relatively so. On the outbreak of war some of the obstetricians and pediatricians were drafted into war service and a number of children's hospitals were utilised for war purposes. The birth-rate increased up to about nine months after mobilisation, and since that time there has been a steady and, in some places, an alarming decrease, the national birth-rate falling from about 30.5 per 1000 at the outbreak of war to something like 18 or 16. With this decrease in the birth-rate there has been an increase in infant mortality, especially during the winter and summer, most marked in January, February, and March, and in June, July, and August. The death-rate of children from 1 to 5 years has increased much more rapidly, which has been attributed to the unsuitable food given to young children after weaning owing to the difficulty of procuring suitable food because of the high prices. The death-rate from

influenza was particularly high amongst babies and young children, young women between 20 and 30 years of age, and pregnant women. Abortion occurred very readily.

In the North of Italy considerable progress has been made in the organisation of infant welfare work, and although the birth-rate is lower than that of the Adriatic coast and in the south, they have managed in the large centres to reduce the infant mortality rate, so that there the actual saving in life has probably been greater. The smaller towns along the Adriatic have suffered severely from the cutting off of trade and fishing, and of the influx of the rural population into the cities. Women were drawn into the various industries, and often left their children to be looked after by those who did not know how to direct the feeding properly. There has been, in consequence, a considerable increase in deaths from gastro-intestinal diseases in the provinces along the Adriatic coast from Rimini to Lecce. During the war there has also been a considerable increase in the number of deaths from tuberculosis, and tuberculosis among children under 10 years of age is also on the increase. The increased cost has prohibited the middle classes from procuring wet nurses. The death-rate among the wet nurses' own babies has also been high. There has, apparently, been no increase in the number of foundling asylums and illegitimate babies. The mortality, however, among the illegitimate babies has been about twice that among the legitimate children, and under the best conditions in the foundling asylums the mortality has been greater. In order to meet all these problems milk-distributing stations and economic kitchens have been established in every large centre, and considerable amounts of condensed milk have been distributed by the Red Cross. Clothes and institutional care have also been provided, but there has never been in Italy any enthusiasm for health visitors, and up to the present time the people neither understand nor appreciate the importance of trained health visitors. During the war a considerable number of intelligent, well-to-do women entered the nursing service in the Army with the Italian and American Red Cross, and have had their eyes opened to the needs of the civil population, especially to the care of the babies. From this group of women it is hoped to gather nuclei here and there for instruction in public health nursing. The coördination of all the child-welfare activities in various centres must also take place, and in order to become effective a national organisation, with an executive committee representing various types of work for children, should be organised. In Italy there is growing a healthy idealism for maternity and child welfare. The men and women with children are looked upon as having real assets, economic, social, and religious. The committee has been able to supply nurses to give secretarial help and to help with regard to publicity.

*The Position in England.*

Speaking of the situation in England, Captain Bolt considered that three things would have to be done. The most important was the education of the medical student to the needs of infant-welfare work through the pediatric departments. The next was the training of health visitors along broad social, economic, and nursing lines, though not necessarily very intensive. Thirdly, there was the need of educating the growing generation of mothers to the necessity for this type of work, which could most easily be done in the upper grades of the schools. In Cleveland a scheme was introduced whereby elementary courses on infant hygiene were given, school nurses taking one course and domestic science teachers the other. Mothercraft in schools should be taught not by regular day school teachers, but by those who are specially familiar with the health side of child problems. The health visitor can teach the importance of proper feeding and the proper care of milk, can impress upon the school children why the babies are dying, and can urge the necessity for breast feeding. Teaching should be given to children between the ages of 12 and 14, and should be compulsory. The health visitor should have a thorough training in general nursing before she takes up her public health duties. In Cleveland all the nurses connected with the health department have had a general hospital training, a special training in tuberculosis dispensaries, sanatoriums, &c., or in infant welfare centres, children's hospitals, and dispensaries. From an infant-welfare point of view, social service should receive more stress than long preliminary hospital training.



*A Baby Hospital in New Zealand.*

Dr. TRUBY KING described what had been done in New Zealand. A small hospital was established solely as a baby hospital, and nurses were trained to fit them for teaching and for the care of the mother and child throughout the whole country. The Society for the Health of Women and Children was started as a purely voluntary organisation; monthly reports are issued to the Public Health Department, and the society has worked in loyal co-operation with them. There has been a growing recognition upon the part of the public authority. At first there was no grant towards the voluntary funds of the society, but now the Government contributes 24s. for every pound raised voluntarily for the salaries of mothercraft nurses, and grants generous annual subsidies towards the support of the hospitals established by the organisation. The nurses are allowed to travel free of cost over the State-owned railways, and the municipalities give them free travelling over the municipal tramways.

*Resolutions Approved.*

The following important resolutions were unanimously passed:—

- (1) That every effort should be made to impress on the whole community the supreme importance of breast feeding, for the sake of both mother and child; that at present over-feeding of the baby, especially in the first fortnight of life, is one of the commonest and most serious mistakes of nursing mothers, often upsetting the child and leading to the early abandonment of suckling.
- (2) This tendency can be best counteracted by a general recognition of the benefit of greater regularity and lessened frequency of feeding than is customary.
- (3) With very few exceptions nursing only every four hours from birth is best for mother and child, though in a few cases more frequent feeding may be desirable.
- (4) That in general there should be an interval of seven or eight hours between the last feeding at night and the first feeding in the morning.
- (5) That every medical student preparing for a registrable qualification shall receive adequate teaching in the subjects of infancy and childhood in health and disease; that attendance in a department where instruction is given in these subjects should be compulsory for a period of not less than three months and that some special part of the final examination in medicine should be devoted to these subjects.
- (6) That, as far as practicable, this study shall follow upon, and be coordinated with, a satisfactory course in obstetrics and gynaecology, and should be made available for post-graduate students; that the present training in obstetrics leaves much to be desired, especially in regard to the lack of facilities for bedside teaching in midwifery.
- (7) Great public advantage would result from a larger measure of uniformity in the advice given by public authorities and others in respect of maternity, infant, and child welfare; the only way in which we think this can be secured is by obtaining a written statement from a body of experts.
- (8) Both practical and theoretical instruction in infant hygiene should form a part of the training of midwives and of all persons engaged by public authorities in infant welfare work.
- (9) That maternity nursing should only be undertaken by competent and adequately trained persons, preferably by qualified midwives.

## URBAN VITAL STATISTICS.

(Week ended August 2nd, 1919.)

*English and Welsh Towns.*—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had been 10.1, 9.0, and 10.3 in the three preceding weeks, fell to 9.7 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual rate was 9.5, or 1.0 per 1000 below that recorded in the previous week, while among the remaining towns it ranged from 2.7 in Acton, 2.9 in Carlisle, and 4.0 in Rotherham, to 15.5 in Stockton-on-Tees, 16.3 in Southampton, and 17.2 in Exeter. The principal epidemic diseases caused 154 deaths, which corresponded to an annual rate of 0.5 per 1000, and included 69 from infantile diarrhoea, 45 from diphtheria, 20 from scarlet fever, 10 from whooping-cough, 6 from enteric fever, and 4 from scarlet fever. Measles caused a death-rate of 1.2 in Newcastle-upon-Tyne. There were 2 cases of small-pox, 1538 of scarlet fever, and 1117 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 2, 1526, and 1140 respectively at the end of the previous week. The causes of 31 deaths in the 96 towns were uncertified, of which 5 were registered in Birmingham, 4 each in Liverpool and South Shields, and 3 each in London and Manchester.

*Scotch Towns.*—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had been 11.0, 10.6, and 11.1 in the three preceding weeks, fell to 10.6 per 1000. The 227 deaths in Glasgow corresponded to an annual rate of 10.6 per 1000, and included 6 from measles, 5 from infantile diarrhoea, 2 from whooping-cough, and 1 each from enteric fever and diphtheria. The 72 deaths in Edinburgh were equal to a rate of 11.2 per 1000, and included 4 from measles and 1 each from scarlet fever, whooping-cough, and diphtheria.

*Irish Towns.*—The 92 deaths in Dublin corresponded to an annual rate of 11.8, or 0.3 per 1000 above that recorded in the previous week, and included 4 from infantile diarrhoea. The 79 deaths in Belfast were equal to a rate of 10.3 per 1000, and included 2 from infantile diarrhoea and 1 from diphtheria.

THE King has approved the retirement of Lieut.-Col. F. P. Maynard and Lieut.-Col. S. H. Henderson from the Indian Medical Service.

## ROYAL COLLEGE OF PHYSICIANS OF LONDON.

*Comitia of the College.*

AN ordinary Comitia of the College was held on July 31st, Sir NORMAN MOORE, the President, being in the chair.

On the report of the Censor's Board it was resolved—

"That Arthur Edward Gladstone be declared to be no longer a Licentiate of the College, that he forfeit all rights and privileges of a Licentiate, and that his name be removed from the List of Licentiates during the pleasure of the College."

Dr. Frederic Percival Mackie was admitted to the Fellowship of the College.

The following, having passed the required examination, were admitted as Members:—

Thomas Beaton, M.D. Lond., L.R.C.P.; Cecil Clinton Birchard, M.B. Toronto; Reginald St. George S. Bond, M.B. Elin.; Maurice Davidson, M.D. Oxf., L.R.C.P.; Alan Worsley Holmes a Court, M.B. Sydney; Arthur Edwin Horn, M.D. Lond., L.R.C.P.; Sydney Fancourt McDonald, M.D. Melb.; Douglas Murray McWhae, M.D. Melb.; Thomas Archibald Malloch, M.D. McGill; Ludlow Murecott Moody, M.B. Lond., L.R.C.P.; Julian Lionel Preston, M.B. Lond., L.R.C.P.; Archibald Cathcart Roxburgh, M.B. Camb., L.R.C.P.; Joseph Wilkie Scott, M.D. Glasg.; Frank Shuffeleotham, M.D. Camb.; Eric Clarence Sparr, M.D. Lond.; Robert Maxwell Trotter, M.D. Aberd.; William Balcombe Winton, M.D. Camb.

Licences to practise physic were granted to 78 candidates who, having conformed to the by-laws and regulations, had passed the required examinations. Diplomas in Public Health were granted, in conjunction with the Royal College of Physicians, to the following candidates who were found by the Examiners to be qualified:—

Lionel Danyers Bailey, L.R.C.P., M.R.C.S., St. George's; Malcolm Barker, L.R.C.P., M.R.C.S., King's College; Cyril Douglas Day, L.M.S.S.A. Lond., Cambridge and St. Bart.'s; Herman Falk (Major, I.M.S.), L.R.C.P., M.R.C.S., M.B., B.C. Cantab., Cambridge and St. Thomas'; Walter Henry Grace, M.B., B.S. Lond., M.R.C.P., M.R.C.S., Guy's; Mervyn John Holmes, M.B., B.S. (Melbourne, Australia), University College; Tam Legge, L.R.C.P., M.R.C.S., University College; Richard Douglas Passey, M.C., M.B., B.S. Lond., Guy's; Eva Louise Cairns Roberts, M.B., Ch.B. Manch., Manchester and King's College; William Leslie Webb, M.B., B.S. Lond., L.R.C.P., M.R.C.S., Guy's; Harold Edward Whittingham, M.B., Ch.B. Glasg., Glasgow and University College; John Pryce Williams, L.R.C.P., M.R.C.S., St. Mary's and King's College.

The following appointments were made, and the newly elected officers gave their faith to the College:—

*Censors.*—Sir Wilmot P. Herringham, Sir Humphry D. Rolleston, Dr. Raymond H. P. Crawford, Sir John Rose Bradford.

*Treasurer.*—Sir Dyce Duckworth.

*Registrar.*—Dr. Joseph Arderne Ormerod.

*Harveian Librarian.*—Dr. T. H. Arnold Chaplin.

*Members of the Library Committee.*—Dr. Hector W. G. Mackenzie, Dr. Dawson Williams, Dr. Arthur Francis Voelcker, Dr. Herbert Ritchie Spencer.

*Curators of the Museum.*—Dr. John Mitchell Bruce, Sir Seymour John Sharkey, Dr. Frederick William Andrewes, Dr. William Hunter.

*Finance Committee.*—Dr. Sidney Philip Phillips, Dr. Arthur Templer Davies, Dr. Herbert Ritchie Spencer.

*Examiners.*—Chemistry: Mr. William Holdsworth Hurlley, Mr. Henry Rondel Le Sueur. Physics: Mr. James Hancock Brinkworth, Mr. Alfred Henry Fison. Practical Pharmacy: Dr. Robert Arthur Young, Dr. David Forsyth, Dr. William Mitchell Stevens, Dr. James Andrew Gunn, Dr. Edward Mellanby. Physiology: Dr. David Henriques de Souza, Mr. John Smyth Macdonald. Anatomy: Dr. Edward Barclay-Smith. Medical Anatomy and Principles and Practice of Medicine: Dr. James Calvert, Dr. William Hunter, Dr. William Aldren Turner, Dr. Horace George Turney, Dr. John Walter Carr, Dr. John Fawcett, Dr. James Stansfield Collier, Dr. Robert Hutchison, Dr. Frederick John Poynton, Dr. Arthur John Hall. Midwifery and Diseases peculiar to Women: Dr. George Francis Blacker, Dr. Henry Russell Andrews, Dr. Hugh J. M. Playfair, Dr. William F. Victor Bonney, Mr. Harold Chapple.

*Public Health.*—Part I.: Mr. John Henry Ryffel. Part II.: Dr. Edward William Hope.

*Tropical Medicine.*—Dr. John C. Grant Ledingham, Dr. John Brian Christopherson.

*Murchison Scholarship.*—Dr. John Fawcett, Dr. Alfred Ernest Russell.

Communications were received from (1) the secretary of the Royal College of Surgeons reporting proceedings of the Council of that College upon May 8th, June 12th, and July 11th last, respectively; (2) Dr. E. A. Gates asking to be allowed to resign temporarily his Diploma of Membership—this was agreed; (3) Lady Allchin offering to the College a portrait of the late Sir William Allchin, by Sir Luke Fildes, R.A.—the thanks of the College were accorded to Lady Allchin. On the recommendation of the Council the Baly medal was awarded to Dr. Leonard Hill, F.R.S. The report of the Imperial Cancer Research Fund was received. Dr. F. W. Andrewes was re-elected a member of the Executive Committee of the Imperial Cancer Research Fund. Sir William Church and Sir Thomas Barlow were reappointed members of the Executive Committee of the Imperial Cancer Research Fund, on the recommendation of the General Committee of the Fund. The President informed the College that the Executive Committee of the Streatfield Scholarship



have awarded the scholarship to Dr. F. G. Cawston, of Durban, Natal. Reports were received from the representative of the College on the General Medical Council and from Sir George Savage on the Chelsea Physic Garden.

*Reports from the Committee of Management of the Conjoint Examining Board.*

The report of the Committee of Management, dated June 3rd last, contained the following recommendations:—

1. The Committee recommend that the following schools be added to the list of institutions recognised by the Board for instruction in Chemistry and Physics—namely, the Central Secondary School, Sheffield, and the Grammar School, Barnstaple.

2. The Committee recommend that the following school be recognised for instruction in Chemistry, Physics, and Biology—namely, St. Paul's School for Girls, West Kensington.

3. The Committee recommend that the following institution, which is already recognised for instruction in Chemistry and Physics, be also recognised for instruction in Biology—namely, Municipal College, Grimsby.

A report of the Committee of Management, dated July 8th, was also received dealing with—

1. The report of the Council of British Ophthalmologists.

2. The substitution of an examination in *Materia Medica* and Pharmacology for the present examination in Practical Pharmacy.

3. The recognition of schools for instruction in Chemistry and Physics.

4. The recognition of the course of instruction in Pharmacology at the University of Cape Town.

5. The report of the Council of the British Ophthalmologists on the teaching and examination of medical students in ophthalmology concludes with the following recommendations:—

(1) No student shall be admitted to the Final Examination qualifying to practise medicine unless he has attended an ophthalmic clinic for not less than six hours a week during a period of three months, and has attended a course of systematic instruction in ophthalmology. (2) No student shall be considered to have passed the qualifying examination unless he has shown a sound knowledge of practical ophthalmology in an examination conducted by ophthalmic surgeons.

In referring this report to the Committee the Council of the Royal College of Surgeons of England also forwarded a resolution stating that in their opinion it is not desirable to institute a special examination in ophthalmology conducted by ophthalmic surgeons. The Committee of Management agree with this resolution, and have therefore considered whether any alteration in the Regulation relating to instruction in ophthalmology is desirable. In connexion with this subject the following resolution, adopted by the General Medical Council on May 31st, 1919, was also considered:—

"That every student should be required to attend a course of practical instruction in ophthalmology of not less than ten weeks' duration, and that no student should be admitted to the Final Examination unless he presents a certificate to the effect that he has attended such a course regularly, and that his work in connexion therewith has reached a satisfactory standard."

The present Regulation of the Conjoint Board, Section II. XXI. 6, requires a certificate—

"Of having attended clinical instruction in ophthalmic surgery in the ophthalmic department of a recognised general hospital, or at an ophthalmic hospital recognised for the purpose by the Examining Board in England, during not less than three months."

The Committee of Management of the Royal College of Physicians of London are of opinion—

That the present Regulation Section II. XXI. 6 covers the resolution of the General Medical Council, and that this Regulation requires a sufficient period of special instruction in ophthalmology; that the provisions of the Regulations Section I., paragraphs VIII. and IX., enable the teachers of ophthalmology in the medical schools and hospitals to hold class examinations and to institute such conditions for attendance on the course as they consider desirable before certificates of attendance are granted by them.

For these reasons the Committee recommend that no alteration be made in the present Regulation relating to instruction and examination in ophthalmology.

2. In the year 1915 the Royal Colleges decided to substitute an "examination in *Materia Medica* and Pharmacology" for the present examination in Practical Pharmacy, but agreed that the new examination should not come into force until January, 1918, and then only if the war be ended. The Committee of Management are of opinion that the time has now arrived when this new examination should be instituted, and they have accordingly adopted the following recommendations to the Royal Colleges, viz.:—

1. That notice be given to the medical schools and by advertisement in the medical journals that an examination in *Materia Medica* and Pharmacology will be substituted for the examination in Practical Pharmacy. 2. That the examination in *Materia Medica* and Pharmacology be taken by all candidates who have not completed the First Examination, including Practical Pharmacy, by May 1st, 1920. 3. That no alteration in the fees payable on the first admission to the First and Second Examinations is necessary. 4. That the fee for re-examination in *Materia Medica* and Pharmacology be 3 guineas. 5. That the capitation fee paid to the examiners be raised from 10s. to 16s. (It is estimated that each examiner will receive at least £40 a year.) 6. That the revised Regulations, with the new synopsis already authorised by the Royal Colleges, be issued.

7. That in addition to the revision in the Regulations already authorised, paragraphs II., III., and IV. of Section III. of the Regulations relating to the conditions of admission to examination of members of English, Scottish, Colonial, Indian, and foreign Universities be modified so as to admit of such students presenting themselves for the Final Examination at the expiration of two years from the date of passing in anatomy and physiology at their Universities, provided the curriculum of professional study has been completed, notwithstanding that the corresponding examination at their Universities in pharmacology and *materia medica* may have been passed in the third or fourth year.

3. The Committee recommend that the following schools be added to the list of institutions recognised by the Board for instruction in chemistry and physics—namely: King's School, Rochester; the Grammar School, Normanton.

4. The Committee recommend that the course of instruction in pharmacology and practical pharmacology in the Medical Department of the University of Cape Town be recognised by the Board.

## The Services.

### ARMY MEDICAL SERVICE.

Major-General Sir Menus W. O'Keefe, K.C.M.G., C.B., retires on retired pay.

Major-General Sir M. P. C. Holt, K.C.B., K.C.M.G., D.S.O., is appointed Honorary Surgeon to the King, vice Major-General (temp. Lieut.-General) Sir W. Babbie, V.C., K.C.M.G., C.B., K.H.S.

### ROYAL ARMY MEDICAL CORPS.

Lieut.-Cols. L. F. F. Winslow and R. C. Lewis retire on retired pay.

Major and Bt. Lieut.-Col. C. R. Sylvester-Bradley and Capt. A. C. Hammond-Searle relinquish the acting rank of Lieutenant-Colonel on re-posting.

Major A. E. Smithson is placed on retired pay.

Captains to be Majors: A. W. Howlett, G. F. Dawson, H. S. Dickson, W. A. Spong, H. P. Hart, J. C. L. Hingston, A. Hendry, R. E. Todd, G. Petit, and W. R. O'Farrell; (acting Majors) J. A. Renshaw, D. B. McGrigor, R. F. O'T. Dickinson, A. E. B. Jones, J. R. Lloyd, J. F. Grant, and C. Kelly; (acting Lieut.-Cols.) R. G. S. Gregg and B. A. Odum; (Bt. Major) F. T. Dowling.

Temporary Captains relinquishing the acting rank of Major: R. S. Dickie (on re-posting), T. E. R. Branch.

Capt. D. Forsyth Panton, from Special Reserve, to be Lieutenant and to be Temporary Captain.

Temp. Capt. A. E. S. Pringle-Pattison to be Captain.

Capt. H. G. Trayer resigns his commission.

Officers relinquishing their commissions:—Temp. Lieut.-Col. H. L. Eason retains rank of Lieutenant-Colonel. Temporary Majors retaining the rank of Major: C. S. Read, J. Phillips, T. M. Frood, W. H. Thompson. Temporary Captains granted rank of Major: A. T. Edwards, A. C. S. Courts, W. H. Welsh, J. A. Doull, J. S. Stewart, A. C. Bryson. Temporary Captains retaining rank of Captain: G. S. Banks, J. V. Grant, J. W. N. Roberts, V. T. P. Webster, H. M. Brown, J. F. Smith, A. S. Richmond, P. A. B. Clark, S. F. Cheesman, J. H. Glover, J. M. Johnstone, W. G. Fee, R. W. T. Clappett, L. W. Batten, H. F. Brice-Smith, F. P. Hearder, G. Robinson, A. C. Profitt, T. L. Butler, M. W. Shutte, J. B. Lester, A. G. Payne, J. F. Sheppard, W. H. W. C. Carden, D. A. Farquharson. Temporary Lieutenants retaining the rank of Lieutenant: W. P. McCowan, W. A. S. Magrath, W. E. Martin, R. R. MacGregor, H. E. Thompson.

### SPECIAL RESERVE OF OFFICERS.

The undermentioned Captains to be acting Majors whilst specially employed: M. Stewart, R. D. Cameron.

### TERRITORIAL FORCE.

Lieut.-Col. Sir Willmot P. Herringham is retired on attaining the age limit, and is granted the honorary rank of Major-General.

Capt. (acting Lieut.-Col.) G. R. Rickett, relinquishes the acting rank of Lieutenant-Colonel on ceasing to be specially employed.

Cpts. (acting Majors) W. Scott, A. E. Mackenzie, and L. M. V. Mitchell relinquish the acting rank of Major on ceasing to be specially employed.

1st Eastern General Hospital: Cpts. (acting Majors) G. S. Haynes and J. C. W. Graham relinquish the acting rank of Major on ceasing to be specially employed.

3rd Northern General Hospital: Major H. R. Dean is restored to the establishment.

### TERRITORIAL FORCE RESERVE.

Capt. Sir James P. Stewart, from 4th London General Hospital, to be Colonel.

Capt. M. W. K. Bird relinquishes his commission on account of ill-health contracted on active service, and retains the rank of Captain.

### ROYAL AIR FORCE.

Medical Branch.—Major A. Fairley (Surgeon Lieut.-Comdr., R.N.) relinquishes his commission on ceasing to be employed.

The undermentioned are transferred to unemployed list: Lieut.-Col. T. Philp; Cpts. J. Freeman, C. C. O'Malley, (Hon. Major) D. Wilson, A. Sutcliffe, J. L. Whatley, H. M. Holt; Lieut. A. J. Swanton.

### DEATHS IN THE SERVICES.

Captain George Thomas Whyte, F.R.C.S. (Irel.), D.P.H., R.A.M.C., who died at the Military Hospital, Spike Island, Queenstown, on June 9th, qualified in 1892 and took the F.R.C.S. (Irel.) in 1901. He served as civil medical officer to the Field Force during the South African War, and after obtaining a public health diploma returned to his post on the West African Medical Staff in Northern Nigeria. He had served 18 months in France during the war that is past, and died after a brief illness of four days. He leaves a widow and a little girl, aged 2 years.



## Correspondence.

"Audī alteram partem."

### THE PENSIONS PROBLEM.

To the Editor of THE LANCET.

SIR,—In connexion with the assessment of the pensions to be allotted to partially disabled officers and men, the power of prognosis of the medical profession is in many cases being submitted to a test that it cannot sustain. It is possible to estimate with some measure of accuracy the degree of future disability of a man who after an injury has had a limb or portion of a limb amputated. For these and some other similar cases a partial pension can be more or less fairly assessed. It is quite impossible to forecast with any approach to certainty the future average employability and proportionate earning capacity of a man who has sustained a gunshot wound of a viscus or has suffered from tuberculous or malarial infection. For these and very many similar cases no fair individual assessment can be made. Such cases could be put in groups according to their history and present condition, and a rough calculation made as to the average incidence of future disability amongst all the members in each group; just in the manner in which impaired lives seeking life insurance are dealt with. Probably something of this sort is being done now in allotting partial pensions. But what will be the result? Those with partial pensions who do not subsequently break down will be heard of no more, but the minority who, according to the law of averages, will break down badly will find their small pensions altogether inadequate, their hardships will quite rightly come under public notice, and the profession will be blamed for not having made for them adequate provision.

It would be well, therefore, for the profession at once to make clear to the public that it is quite impossible for science to provide the data on which a fair pension can be assessed in the case of large numbers of partially disabled men. Since, however, the number of such men—some not yet demobilised, others demobilised but still on temporary pensions—is very great, some provision must be made to meet their special risk of disability. For a considerable number of cases the most suitable way of meeting the risk would be the issue of a sickness insurance policy guaranteeing in the event of a breakdown in the future the periodical payment by the Government of a sum to meet the then ascertained degree of disability so far as it is not met by any other national insurance. In some cases such a policy would take the place of a partial pension, in others it would be additional to it. The task of dealing with many cases, which now present an insoluble problem, would at once become simple. It would only be necessary at the outset to earmark certain cases as having been rendered by injury or disease resulting from war service specially liable to relapses of disability, and later on to determine the fact of disability should it occur. The Ministry of Pensions must naturally look to the medical profession for advice as to fair and proper ways of dealing with all the various types of cases amongst those whose health has suffered from war service. Those medical men who are in a position to offer such advice should lose no time in pointing out that there is a large proportion of cases whose special claim upon the nation cannot be met by the old-fashioned method of a pension assessed according to the demonstrable degree of disability, but can be quite satisfactorily dealt with by a well-considered scheme of sickness insurance. Such a scheme could be easily devised and at once put in force. Those who ought to come under it are, as things stand at present, either not having their claims met or are being dealt with in a manner which will ultimately prove unfair to them or to the State.

I am, Sir, yours faithfully,

August 4th, 1919.

LAURISTON E. SHAW.

### INCIPIENT MENTAL DISEASES.

To the Editor of THE LANCET.

SIR,—In your issue of July 26th is published a letter by Dr. L. A. Weatherly on the treatment of cases of incipient mental disease, and while fully agreeing with most of his statements I do not think too strong a protest should be made against the proposed limitation of sojourn for such

cases to six months. I quite agree with Dr. Weatherly that under such a regulation a certain number of patients may be found nearly well at the time they have to leave the institution; but I would rather this happen than have in any way retarded the facilities for early treatment that are apparently rapidly materialising.

In dealing with many thousands of cases of acute mental disorder in the early stages during the war in a military hospital I found that three months was an average period of residence. Out of 1000 cases in hospital at the end of a two years' period of admissions only 200 were found to have been resident six months or over, and 70 per cent. of these were looked upon as unlikely to make an early recovery. At the time I refer to it was the custom to keep such cases for nine months prior to certification, but from my previous experience I consider that any retention of chronic cases in a hospital intended for treatment of early cases is to be condemned in the strongest possible terms.

An atmosphere of cure is what is wanted above all things in such an institution, and for this reason I would support the limitation to six months, but would suggest that the words "provided that the patient is not making obvious improvement" be added, as a means of overcoming the difficulty referred to.—I am, Sir, yours faithfully,

RICHARD EAGER, M.D.

Devon Mental Hospital, Exminster, July 30th, 1919.

### THE COÖRDINATION OF CLINICAL RESEARCH AND PSYCHOLOGICAL MEDICINE.

To the Editor of THE LANCET.

SIR,—In THE LANCET of August 2nd there appeared an article by Dr. Bedford Pierce on "Psychiatry a Hundred Years Ago," also a letter from Dr. E. Goodall setting out what Cardiff is about to do in the present. I should like to draw attention to the fact that Birmingham already has a special hospital for the treatment of nervous diseases, the largest department of which is a "psychoneurosis clinic." The hospital was founded in 1913, but before beds could be provided in a suitable, quiet locality the war broke out. The governors, therefore, deemed it wise to postpone the opening of the in-patient department for mental cases until after the war. Immediately upon the cessation of hostilities they acquired a very suitable property with large grounds attached, and this will be ready for the reception of patients by the end of next month.

I wish to emphasise, in this connexion, two or three points which seem to me to have been passed over by the writers referred to above. The first point—mentioned in your leading article but not sufficiently stressed—is the necessity of separating early borderline and psychogenic from certifiable cases. If the public even suspect that they or their friends are being invited to attend an institution in any way associated with an asylum the early cases, in which treatment is most likely to be effectual, will not present themselves. For this reason it seems to me essential that the special clinics now springing up should be kept free from any taint of the asylum. The term "hospital for nervous diseases" or disorders seems acceptable to the general public, and I suggest that its adoption would avoid the danger under discussion. There is another advantage to be gained by working the new clinics from a special hospital for "nervous diseases"—viz., the well-recognised fact that even in cases in which the primary causal factor is indisputable of organic origin, it is nevertheless the super-added functional or psychogenic symptoms which cause most trouble, though they are also the most amenable to suitable treatment. Such cases willingly attend a hospital for nervous diseases where both elements of their trouble can be tackled, but they would merely be offended were they asked to attend a psychiatric clinic. Again, although borderline and psychogenic cases should be separated from advanced and hopeless cases of insanity, it will, from the research point of view, be a great advance if all diseases with a pronounced psychogenic element can be grouped and observed together with ordinary neurological cases instead of being dealt with by the more or less logic-tight-compartment methods hitherto in vogue.

My last point concerns the desirability, in large towns at any rate, of separating the out- from the in-patient department. The former must be in a central situation, which implies a small and noisy site, whereas the latter ought to



be in a quiet locality and have large grounds and workshops attached, so that occupation and recreation may be available for the patients. During the year 1918 the outpatient attendances at the Birmingham Nerve Hospital totalled 17,246, while the beds provided at present are for 30 patients only. It would be unwise to attempt to divert so many out-patients from a conveniently situated central institution, and impracticable to provide adequate accommodation for this special type of in-patient upon a centrally situated site. The governors, therefore, have located their new in-patient department for functional and borderline cases at some distance from the original institution, although this involves an increase in the expenses of management.

My plea, then, is that the basis of the new clinics be broadened and that at the same time everything reasonable be done to secure the confidence of those whom we are seeking to benefit.—I am, Sir, yours faithfully,

ALFRED CARVER.

Birmingham and Midland Hospital for Diseases of the Nervous System, Birmingham, August 4th, 1919.

## THE ORIGIN OF LIFE: THE WORK OF THE LATE CHARLTON BASTIAN.

To the Editor of THE LANCET.

MONSIEUR,—Je n'aurais eu, pour le moment, que peu de chose à ajouter à ma lettre parue dans vos colonnes le 28 Juin dernier, si l'intervention de M. John Butler Burke (THE LANCET, 26 Juillet) n'était venue introduire de nouvelles hypothèses dans l'interprétation des expériences du Dr. Bastian et autres essais du même genre. Je dois pleinement reconnaître le très grand intérêt des *Radiobes* de M. Burke, dont les propriétés biotiques sont saisissantes; mais Raphaël Dubois (avant M. Burke) et Martin Kuckuck (après lui), ont obtenu des résultats exactement semblables en utilisant des sels non radioactifs de baryum, strontium, &c. Comme les radiobes de M. Burke, les *microbioides* de Dubois et les *baryumaytoden* de Kuckuck grossissent, se meuvent, se reproduisent par bipartition, semblent parfois se conjuguer à la manière de certaines algues monocellulaires: ce qui ne les empêche nullement de passer, en vieillissant, à l'état de cristaux polyédriques inertes. Il semble difficile de voir dans ces corpuscules autre chose que de très petits cristaux imparfaits dont le stade précristallin se trouve considérablement prolongé par l'ambiance colloïdale; d'ailleurs, tous les cristaux en voie de formation, surtout dans des milieux très visqueux, se comportent temporairement, au point de vue structural et dynamique, comme des êtres vivants. A l'appui de ce que j'avance, je mentionnerai les *Protobies* de A. L. Herrera (cristaux imparfaits en milieux siliciques) et nos propres expériences sur la formation des cristaux.<sup>1</sup> La radioactivité me semble, en toute sincérité absolument étrangère à de telles questions. Quant au rôle de la diffusion et de la pression osmotique dans l'apparition des bactéries minérales de Bastian et Mary, il doit être inexistant. Sans doute, mon éminent ami Stéphane Lednc a produit, par osmose, et aussi par diffusion de cristalloïdes dans les gels colloïdaux, une profusion de formes et de structures artificielles de nature à nous renseigner sur l'intervention des forces capillaires dans la détermination des caractères morphologiques et physiologiques généraux des organismes. Mais les croissances osmotiques, que nous avons aussi étudiées depuis 1908, sont des vésicules, et les figures de diffusion dans les gels n'ont pas d'existence en-dehors de leur substratum colloïdal. Les corpuscules synthétiques de Bastian sont formés par les colloïdes eux-mêmes, et ne sont pas vésiculaires. Pour expliquer le mécanisme physique de leur développement, c'est exclusivement à la physico-chimie colloïdale qu'il faut faire appel, et tout l'intérêt du problème tient précisément à ce fait qu'il n'y a qu'une physico-chimie colloïdale, embrassant dans des lois communes l'organique et le minéral.—Je suis, Monsieur, très sincèrement vôtre,

ALBERT MARY.

Institut de Biophysique, Paris, 30 Juillet, 1919.

To the Editor of THE LANCET.

SIR,—Mr. S. G. Paine, writing some time ago in your columns on the "Origin of Life," in particular connexion with the work of Charlton Bastian, mentioned that the sand of the Egyptian desert, which is subjected to a considerable heat, contains living protozoa. I do not know what temperature

these organisms can withstand, but it should be remembered that under those conditions the heat will be dry. The following facts, however, show that the limits of resistance of certain organisms, even to moist heat, are greater than was suspected. M. Paul Portier, professeur à l'Institut Océanographique, in his recent work entitled "Les Symbiotes" (Masson et Cie, 1918), describes certain symbiotic micro-organisms, isolated from both vertebrates and insects, which are extraordinarily resistant to physical and chemical agents. When freshly isolated they are killed by a temperature of 100° C., but after a few subcultivations the temperature must be raised to 115° C., moist heat. In a dry atmosphere they can resist a temperature of 140° C., and are only just killed by a temperature of 150° C., maintained for half an hour. Further, these organisms may be boiled in absolute alcohol, chloroform, or acetone, and yet remain capable of cultivation. In one set of experiments, indeed, they withstood heating in acetone in sealed tubes at a temperature of 100° C. to 120° C.

In connexion with this subject it may be mentioned that certain enzymes, as, for instance, ptyalin, which begin to decompose at a temperature of 60° C. and are completely destroyed by temperatures of less than 100° C., can, when dialysed free from all traces of electrolytes, be boiled without losing all activity, which returns on the readdition of a little salt. In view of such facts, experiments similar to Dr. Bastian's must be carried out with the greatest possible precautions as to technique and sterilisation. It is true that the interesting experiments of Dr. Mary were carried out at a temperature which should kill any organisms at present known. Dr. Mary, however, admits that the bodies found in his solutions do not contain any protein and are incapable of cultivation, even on the simple solutions which are supposed to generate them—that is to say, they are not living matter in any ordinarily accepted use of that term.

Since writing the above, I have seen Commander Bastian's letter of July 26th. I gather the objections he raises to my experiments<sup>1</sup> are two. (a) That the "yellow solution" contained ammonium phosphate and phosphoric acid in addition to the proper ingredients, and (b) that the tubes were kept for too long a period, during which the "organisms," which were supposed to have developed, died. In the first place, I must thank Commander Bastian for pointing out my error. I cannot excuse such carelessness, my only explanation is that when writing up the account of the experiments during the war and several years after the solutions were made up, I foolishly referred to Dr. Bastian's "Origin of Life," instead of to my own notes, in order to ascertain the composition of the solutions, which being quite arbitrary, I had not unnaturally forgotten. Though there is no doubt as to Dr. Bastian's meaning when carefully read, anyone who will take the trouble to look up the reference (p. 30) will see that the words, "the proportion of the other ingredients remaining always the same," might be misleading in the hurry of the moment. I have now looked up my original notes, and I beg leave to correct the error by making the following quotation from my note-book:—

"On Sunday, August 10th (1913) ..... test-tubes of hard white German glass 5 in. × 3/4 in. .... were charged half full with Dr. Bastian's 'yellow solution,' consisting of 8 drops of liquor ferri penitricis and 3 drops of dilute sodium silicate (from A and H's sample reserved for Dr. Bastian) to each oz. of distilled water, ..... these proportions gave the port-wine colour recommended by Dr. Bastian with a minimum amount of sediment."

On the next page the correct formulae for both solutions are written in a tabular form above the two series of tubes. I trust that Commander Bastian will accept this evidence. With regard to his second criticism, I think Commander Bastian makes a misrepresentation. He implies that the tubes of the "white solution" were kept for 38 months before being opened, whereas the truth is that the tubes of both series were opened at varying periods from 1½ months to 38 months (at intervals of about 3 months): The period of 38 months was only the maximum duration of the experiment. I believe the longest that Dr. Bastian kept his tubes was two years. When planning the experiments I therefore considered that if I kept some of the tubes for three years I could not be accused of impatience. I must apologise for taking up so much of your valuable space, and beg to remain,

Yours faithfully,

The Biochemical Laboratory, Cambridge,  
August 2nd, 1919.

H. ONSLOW.

<sup>1</sup> Voir L'Actualité Scientifique, Paris, Mai, 1919.



# A CRITICISM OF THE MEMORANDUM ON MALARIA.

To the Editor of THE LANCET.

SIR,—I must protest against the pernicious and dangerous advice given by Dr. Gordon Ward in his criticism of the Memorandum on Malaria in your issue of July 19th. He says:—

"The most important principle in the treatment of malaria in pensioners is the improvement of the natural resistance of the body with the aid of as little quinine as possible."

It is just such treatment that is filling the wards in our hospitals with pensioners and demobilised men. They all come in with the same story. Since they left the Army they have had recurrent attacks of fever, been treated by civil practitioners with totally inadequate doses of quinine, which have had no effect on their malaria, and finally have to come into hospital. There they are put on 10-gr. doses of quinine sulphate in solution, three times a day, and they very rarely have more than one rigor after the treatment has begun. It is a great relief to the men to find they are rid of their fever in 48 hours, after recurrent attacks; in one case for five weeks on minimum doses of quinine. It may now be regarded as established beyond a doubt that the optimum dose of quinine during the attack is that stated in the Memorandum—viz., 10 gr. of sulphate or hydrochloride in solution three times a day; whilst the experience at concentration centres has proved that 10 gr. a day is a valuable anti-relapse precaution. If this be carried out regularly over a prolonged period, say, three months, and relapses prevented, the natural resistance of the body will assert itself and justify Osler's dictum, that the proper treatment of malaria is "quinine and time, both in divided doses."

The danger we have to fight against is the fear of the civil practitioner to give adequate doses for a sufficiently long period, and we are not helped by such advice as Dr. Ward gives. Dr. Ward's picture of the man with chronic tachycardia and effort syndrome is in most cases the result of inadequate doses of quinine for a short period, allowing frequent relapses and general deterioration of health. If Dr. Ward will re-read the Memorandum carefully he will find that the intramuscular method of administration is recommended only when vomiting is so persistent that quinine cannot be given by the mouth, or in pernicious attacks, when no time must be lost. It is not advocated in simple attacks without complications.

Twenty months in the malaria section of a military hospital in England have only confirmed what 20 years' experience in the tropics had already taught me, that the intramuscular giving of quinine is a most valuable method in urgent cases, and that by using quinine bi-hydrochloride, being careful about sterilising the solution, and all the apparatus, and making the injection actually into the muscle and not subcutaneously, the risk of causing abscess is small, whilst a very elementary knowledge of anatomy will enable one not to inject in the close proximity of an important nerve trunk. In about 2000 cases I have had through my hands in this country I have seen only one partially paralysed arm as the result of an injection, and in that case the needle had been inserted directly over the musculo-spiral nerve. Pernicious attacks in this country fortunately are rare, but in such cases the intramuscular route is pre-eminently the safest for the civil practitioner to follow.

I am, Sir, yours faithfully,

T. H. JAMESON, M.D., M.R.C.P. Edin.,

London, July 31st, 1919. D.T.M.H., D.P.H.

## DUPLICATION IN HUMAN SPERMATOOZOA.

To the Editor of THE LANCET.

SIR,—If Mr. S. R. Tattersall, who communicated to THE LANCET of August 2nd on the above subject, would look up Broman's "Normale und Abnorme Entwicklung des Menschen," p. 18 et seq., he will find the conditions he has described as well as excellent photographs of the specimens. He will further find an interesting discussion of the whole question of abnormal spermatozoa, by one who has done much work on the subject, but whose magnificent book seems to be little known.

I am, Sir, yours faithfully,

EDWARD FAWCETT,

August 2nd, 1919. Professor of Anatomy, University of Bristol.

## THE RESULTS OF COMPLETE COLECTOMY.

To the Editor of THE LANCET.

SIR,—Major James Taylor is quite correct in stating, in your issue of August 2nd, that there is a very general belief that many patients do not recover from the operation (of complete colectomy), and that those who do are no longer capable of leading an active life. This general impression is not likely to be changed in any way by a perusal of Major Taylor's paper. His small series of cases is of undoubted interest, but it is to be regretted that he does not give any information of the after-progress of Cases 1 and 2 and a full description of the "diseased condition of the rectum" held responsible for the imperfect recovery of Case 3. The operation of complete colectomy for intestinal stasis will remain under a cloud so long as those surgeons who perform it are content to support their views by the publication of their cases in this imperfect manner.

I am, Sir, yours faithfully,

Leeds, August 2nd, 1919.

J. F. DOBSON.

## SHELL SHOCK IN FISHES.

To the Editor of THE LANCET.

SIR,—Dr. Alfred Carver narrates in your columns last week certain experiments on fishes; these were made only on perches. Dr. Carver will be interested to hear that Dr. A. G. Mayer<sup>1</sup> found that when a half stick of dynamite was exploded within 3 ft. of a small shark (Carver's zone A with a vengeance) no apparent injury was produced; the same thing applied in a lesser degree to such teleosts as lack swim-bladders. When swim-bladder fishes were killed by the explosion their swim-bladder burst, the tissues were crushed, and the vertebral column was often broken. Mayer attributes the injurious effects of explosives in fishes, when present, to mechanical laceration of tissues, and especially the crushing inward of air-filled cavities. A full abstract of Mayer's paper appears over my signature in the *Review of Neurology and Psychiatry*, 1917, xv., p. 335.

I am, Sir, yours faithfully,

London, N.W., August 1st, 1919.

LEONARD J. KIDD.

## HOME HOSPITAL ESTABLISHMENTS AND THE WAR MEDALS.

To the Editor of THE LANCET.

SIR,—I wish to call attention to the gross unfairness of laying down a geographical qualification for the 1914-15 Star, General Service, and Victory Medals, at all events as regards the medical establishments. Elderly medical men in the R.A.M.C., whether Reserve, Special Reserve, or Territorial, were called up at the outbreak of the war in August, 1914. Often this entailed the abandonment of our private practices, our means of livelihood, and serious financial loss. We have been in charge of, or performing important services in, large general hospitals and their auxiliaries, or in the military hospitals and training camps; and we have been kept in this country because we could not be replaced. We have been overwhelmed with work which has been absolutely essential, yet we have not been considered to be entitled to the medals issued to commemorate this, the greatest of all wars, because, forsooth, we have not crossed the Channel!

This decision is contrary to precedent. It has always previously been recognised that the medical establishment had a special claim to medals issued to commemorate a campaign in view of their special work of dealing with the wounded. The hospitals in this country have equally with those in France been associated with the fighting forces. They have taken wounded practically direct from the battlefields, Americans, Belgians, Chinese, French, Serbians, besides the British and Dominion troops; yet, having performed these services to our Allies, we alone of all the Allied forces are not to have the Allies Medal! It is sought to justify this discrimination by excluding this country from the list of "war areas." But we who, by the exigencies of the service, were retained here, have been declared to be serving "on Active Service" and have drawn "Field Allowances." Hitherto the necessary corollary to such conditions has been the issue of the medal granted for the campaign.

What makes this discrimination more remarkable is that it does not apply to Dominion troops. They receive not

<sup>1</sup> Proc. National Acad. Sciences of U.S.A., 1917, iii., p. 597.



only the war medals, but also the chevrons, without the necessity of crossing the Channel. Hence, in their case, it follows that they are given, not according to the precise locality in which the war service was rendered, but merely from the place of residence before the war. Surely a "reductio ad absurdum." Another precedent for the issue of a war medal without actually entering a "war area" was the issue of the South African Medal, without clasps, to the Militia Garrisons in the Mediterranean.

It is suggested that hospital and medical services rendered in this country should be recognised by the issue of the General Service Medal, without the clasps, which will, no doubt, later be granted for service in particular battles or war areas; and that the Victory Medal should be given with late clasps. Any other distribution is most unfair to those who have formed the personnel of the hospitals and medical establishments in this country. The Royal Red Cross has been given to a small percentage of the nursing staffs, and no one has ventured to deny the justice of the award; but hospitals are not run by nurses alone. With the exception of a few commandants, the V.A.D. workers have been ignored.

Practically all of us are now returning to civil life, with absolutely nothing to indicate that our services have been appreciated, or that we have done our duty in accordance with the orders of the higher authorities; but I am confident that I speak for my medical colleagues when I say that we desire no decorations which are not shared by the whole male and female personnel who have so nobly sacrificed themselves to tend and succour the sick and wounded in the hospitals of this country, services which have been absolutely indispensable to the victory of the Allies, and which are universally recognised as reflecting the utmost credit and honour upon all concerned.

I am, Sir, yours faithfully,

August 5th, 1919.

IGNORED.

## THE MARRIAGE OF ASSISTANT MEDICAL OFFICERS AT ASYLUMS.

To the Editor of THE LANCET

SIR,—I read with great interest in THE LANCET of July 19th the article setting forth the new conditions laid down for assistant medical officers in the London County Asylums. In the issue for July 26th there is an advertisement for an assistant medical officer at a borough asylum, and it may interest you to know how the vacancy has arisen. In April, 1907, I became assistant medical officer at a borough asylum, and continued to hold that post till I joined up in July, 1917; but I still remained technically assistant medical officer, and my post was open for me when I left the Army. In February of this year I married, and shortly after was asked by my committee to resign; this I refused to do, as I had not done anything wrong. They then gave me notice of dismissal on the ground that there was no accommodation for a married A.M.O. I replied to that by saying that I did not ask for extra accommodation, and that I was willing to go back and live as a single man as I did previously, my wife living elsewhere. Their reply was simply to dismiss me because I had married.

It is surely cruel and unjust to penalise marriage so very heavily, and to dismiss a man—after ten years' service—just because he has married. The committee expressed themselves as being quite satisfied with my services, and alleged no reason for dismissing me but the fact that I have married. I have been turned out of my post, at 45 years of age, without pension or compensation of any kind, and with practically no chance, by reason of age, of getting another asylum post, the work to which I devoted all my professional life. I am still serving in the Army, so the action of the committee is at least premature. I think such action by a committee ought to be made widely known, and I shall be glad to hear the views of others.

I am, Sir, yours faithfully,

July 30th, 1919.

DISMISSED.

THE Committee of the Territorial Force Medical Officers' Association are making arrangements for a dinner on October next for Territorial medical officers. Any medical officer who wishes to be present should send his name to Lieutenant-Colonel D. L. Hamilton, R.A.M.C., T.F.R., 7, Russell-square, London, W.C., who is acting as honorary secretary for the dinner.

## Parliamentary Intelligence.

### NOTES ON CURRENT TOPICS.

#### PENSIONS REORGANISATION.

##### Changes in Medical Arrangements.—Increases in Personnel.

THE House of Commons went into Committee of Supply on Thursday, July 31st, on the Supplementary Vote of £45,855,000 for the salaries and expenses of the Ministry of Pensions.

Sir L. WORTHINGTON-EVANS (Minister of Pensions) stated that the decisions of the Government upon the recommendations made in the interim report of the Select Committee on Pensions would call for an extra expenditure for the remainder of this year of about £11,000,000, so that the estimates should be treated as £86,000,000, and not as just under £73,000,000 as presented. For a full year, as long as the number of pensioners remained at or near the maximum, the rate would be about £96,000,000. Dealing with the new scheme of decentralisation, the right honourable gentleman said that all medical boards and arrangements for medical treatment would be dealt with by the regional medical officer. Proceeding to speak of the medical services of the Ministry, the Minister said:—

"I have been fortunate in securing as Chief Medical Officer Colonel Webb. During the war he held an important position in the medical service of the War Office, and he brings a very special knowledge of the requirements of the serving man who is now a pensioner to the service of the pensioners. The work of this division is probably the most important of any of the divisions of the Ministry. It deals with that primary necessity of the disabled man—namely, the provision of medical treatment both in hospitals and clinics and convalescent centres. When the bulk of the men were in the Army, the Army did the work, but demobilisation has transferred the necessity for providing hospitals and clinics from the War Office to the Ministry of Pensions. We have already taken over from the War Office two hospitals, and arrangements are practically complete for the transfer of others. The Red Cross are assisting the Pensions Ministry as they assisted the War Office.

#### Nursing Service.

"As we take over hospitals we are bound to provide a nursing service, and I am glad to say that Queen Alexandra has graciously consented to be president of the Pensions Nursing Service. I have been fortunate to secure as matron-in-chief Miss M. E. Davies, R.R.C., who will be assisted by an advisory committee. I am also hoping to have ready very shortly certain convalescent centres at Blackpool, Epsom, and elsewhere, in which men who, while suffering from disabilities which require more or less prolonged out-patient treatment, will be able to employ their time to their own advantage by receiving preliminary training to fit them for their after-life. I have been impressed by the large number of out-patients attending hospitals for perhaps half an hour a day, upon whose hands time hangs heavily. I believe that if such men as these are admitted to convalescent centres they will, while receiving treatment, be capable of much useful training during their convalescent stage, and more rapidly benefit by the industrial training thereafter given them under the Ministry of Labour. Moreover, experience shows that many men, attracted no doubt by the high wages and the demand for labour during the latter stages of the war, who went into industrial life, are likely to break down and require more or less prolonged convalescent treatment. For these, also, the convalescent centres are likely to prove of great use.

#### Medical Boards.

"Until recently the boarding of the men applying for pensions and the re-boarding of men on renewal of pensions was performed by the Ministry of National Service, but on April 1st last the central and regional staff of the Ministry of National Service was transferred to the Ministry of Pensions, and we became directly responsible for the boarding of all men. On August 4th we are taking over from the War Office the Re-survey Boarding of Officers. To give the Committee some idea of the extent of the increase of the work of medical boards, I may inform them that 229,697 men were examined by medical boards in the six months ending June last. There has been a steady and rapid increase in the number of men boarded owing to demobilisation, and in June last 45,000 men were boarded.

#### Medical Appeal Boards.

"The Committee may be aware that under the system hitherto prevailing the medical officers at the headquarters of the Ministry reviewed the decisions of these boards and a medical officer was authorised to alter the amount of a man's assessment by a board without himself re-examining the man. Many complaints of this system have been brought to my



notice, and the Select Committee has recently called special attention to this system, and has recommended that any case of doubt should be sent for re-hearing by the same or by a second board, who in every case should examine the man in person. I entirely agree with this recommendation. Indeed, I informed the Select Committee when I gave evidence before it, that I intended to alter the system as soon as the decentralised regions were set up. While it was probably impossible to arrange for Appeal Boards before the Ministry of Pensions had its own medical personnel available to sit on boards and specialists, both surgical and medical, at its hospitals and clinics to constitute the boards, it will be possible to set up the Appeal Boards as soon as the medical personnel in the regions has been completed. Thereafter, a definite procedure will be laid down, which will be followed in all cases—namely, that if the Medical Assessor, on scrutinising the report of the board, is not satisfied that substantial justice has been done either to the pensioner or to the taxpayer, he is not to alter the assessment, but he is to refer the case either to the same board or to an Appeal Medical Board for a re-examination of the man—and similarly, if the pensioner himself is not satisfied that his degree of disability has been correctly assessed—that is to say, if he is not satisfied with the amount of his pension, he will have the right to appeal himself to a Medical Appeal Board, whose decision in the case has to be treated as final, subject to this proviso, which is in the man's interest, that if he gets seriously worse during the period for which the assessment has been made, he may go to a medical referee who may give him temporarily a higher allowance pending the reconsideration of his case by the board. This arrangement of Appeal Boards, while, I believe, absolutely necessary in the interests of justice and to give the pensioner a reasonable assurance that his case is properly considered, will entail a large increase in the medical personnel, which can only be supplied if not only the permanent medical staff of the region is available for boards, but also the specialists attached to the hospitals and clinics, and probably in some cases the medical referees.

#### *Artificial Limbs.*

"As regards the provision of artificial limbs, soon after I became Minister I wanted to be satisfied that the provision of artificial limbs for both officers and men was sufficient, and that the best limbs were being supplied. I accordingly set up a very strong Committee, upon which several Members of the House kindly served, and they have recently reported. On the whole their report shows that the position is satisfactory. They have made several recommendations which are in the course of being carried out. Perhaps the most important is that an expert Committee should be set up to review all the various forms of artificial limbs at present made with a view to standardisation, by selecting the best from each limb. It is proposed that fitting centres shall be established in connexion with orthopaedic hospitals spread throughout the country, and that in addition repair depôts shall be opened in populous centres, so that minor repairs can be made in a short time. I have also referred to the Committee the extent to which fibre pylons should be supplied and used by men with artificial limbs. I fancy that fibre pylons will take their place alongside artificial limbs much as a slipper does to a boot, and that a man with an artificial limb coming home from his daily occupation will be glad to change it for a light fibre pylon. However, that is primarily a surgical question, and I have therefore referred it to the surgeons for advice.

#### *Tuberculosis.*

"I was also not satisfied that the provision made for the pensioner suffering from tuberculosis was sufficient, and in agreement with the Minister of Health we appointed a Joint Committee for the purpose of thoroughly investigating this question. The Joint Committee has now reported, and immediate consideration will be given to the report.

#### *Independent Tribunals.*

"The Government is prepared to accept the recommendation of the Select Committee that the appeal tribunals shall be set up under an authority independent of the Ministry of Pensions, and a Bill will be introduced as soon as possible to empower the Lord Chancellor to set up appeal tribunals and to make the necessary regulations in respect to the procedure. The tribunals will consist of one legal representative, either a barrister or solicitor, who will be chairman of the tribunal, and a disabled officer in officers' cases and a disabled man in men's cases with a duly qualified medical practitioner. Any refusal on the part of the Ministry to a claim for pension on the ground that the disability is not attributable to, or aggravated by, military service, or is due to serious negligence or misconduct of the claimant, will be subject to appeal by the claimant to this independent tribunal. Similarly, a widow or a motherless child whose claim to pension is rejected on the ground that the death of the officer or man was not due to military

service will be subject to appeal. In this way there will be granted a statutory right to assert a claim to pension and a statutory court, independent entirely of the Ministry, will be the sole and final judge of whether the right exists in a particular case.

#### *Appeals on Amount of Pension.*

"It is suggested by the Select Committee that there should be a lay ex-service element on the tribunal, but as the assessment questions are mainly medical questions the medical element should have a majority, and they advise that this medical element should comprise senior surgeons and specialists in the diseases or injuries causing the disabilities under consideration. This recommendation appears to me to be entirely impracticable. During the last six months 920,439 awards have been made, or, if I deduct from this total awards to widows, children, and dependents, nearly 700,000 awards have been made either for the first time or on renewal to men. These awards are made for varying periods for from six to 12 months. The Select Committee recognises that an appeal would be of no use unless the medical men upon the appeal tribunal were more authoritative than the medical men who made the original assessment. If even 1 in 10 men appealed we should have something like 70,000 appeals in six months, and the delays would be so great that the appeals could not be heard before the pension had expired. Moreover, it would be impossible to get the authoritative consultants and specialists in sufficient numbers to form the appeal tribunals. I do not believe that a reform is possible upon these lines. I do, however, agree that it is quite wrong for any medical assessor who has not seen a man to alter an assessment made by a board who has seen the man, and as soon as the regional organisation is complete Medical Appeal Boards will be set up to which either the man or the department can appeal in the event of the assessment being challenged. I ask the Committee to believe me that this is the practical way of curing the evil which the Select Committee has pointed out. Any outside tribunal dealing with these assessments would cause so much delay as to actually deprive the man of the benefits which the Select Committee desires him to obtain."

#### *Tuberculosis Committee's Report.*

Sir MONTAGUE BARLOW (chairman of the Select Committee on Pensions and deputy chairman of the Committee on Tuberculosis), alluding to the report of the latter committee, which the Government are still considering, said that, roughly speaking, the Committee found that there were some 30,000 or 40,000 tuberculous discharged soldiers. The first point the Committee desired to make was that the tuberculous soldier was only one part of the general problem of tuberculosis throughout the country. In the early stages, at any rate, the tuberculous soldier must fit into the ordinary machinery of tuberculous treatment throughout the country. In the next place, the Committee had found that the accommodation with regard to sanatoriums and hospitals was unsatisfactory and insufficient. The requirement of additional sanatoriums had got to be dealt with as it was very urgent.

Captain LOSEBY said the Select Committee had made definite recommendations in regard to the constitution of the medical boards and the constitution of the appeal board. He urged the Minister to throw these recommendations overboard. He could find a simpler method of putting up medical boards which would enable him to give the right of appeal to which every man who had been tried for his life had a right. Perhaps he would consider the proposition that a medical board might be equally competent as now if there was only one medical man upon it and two laymen. He would thus get over his difficulty of medical personnel.

Mr. LEONARD LYLE said many of the medical boards looked upon their job in the same way as a big insurance company doctor looked at his job. The point of view of the insurance doctor was to see how little he could give the men. It was his job to try to make a total disablement into a two-thirds disablement, and a two-thirds disablement into a half disablement. Medical men were just as humane as anyone else, but they had got it into their heads that if there was a doubt the benefit of the doubt must not go to the man, but to the other side. New ideas should be put into the heads of these medical boards. Some of the questions were inquisitorial to say the least. Men had been asked by a medical board what wages they had been earning.

Sir L. WORTHINGTON-EVANS: The honourable Member knows that that question has been withdrawn. The men were always told that they need not answer it unless they liked, but now no one has any right to ask the question.

Mr. LYLE said he was glad to hear it, and it would do good that such a statement had been made. Sometimes doctors did ask this question, although they were not entitled to do so.

Dr. MURRAY: Were they not originally ordered to ask the question?



Mr. LYLE said if it was not to be asked any more he was pleased to hear it.

Dr. MURRAY said that one of the most cruel duties that could be placed on medical boards was that they should be asked to say whether a certain disease was caused by, or had been aggravated by, service in the war. It was not a question that should be put to a medical board. He quite admitted that the doctors might be wrong, and in such a case the benefit should be given to the man. The position at present was illogical and unscientific, and might without difficulty be accounted an injustice. Medical reports were certainly not perfect, but it must be remembered after all that it was a new work to medical men. The doctors on these boards did not act on their own unaided intelligence, but got their orders from above.

The vote was agreed to. —

## HOUSE OF COMMONS.

WEDNESDAY JULY 30TH.

### *Medical Treatment for Officers from India.*

Colonel YATE asked the Secretary for India whether, considering the importance of the generous arrangement made by him for the treatment of civil and military officers from India suffering from tropical diseases at the hospital of the London School of Tropical Medicine, he would take steps to have his recent announcement on the subject published in India for the information of all concerned.—Mr. MONTAGU replied: Yes, sir.

### *The Use of Opium, Morphine, and Cocaine.*

Sir JAMES AGG-GARDNER asked the Home Secretary whether Regulations 40 and 40B under the Defence of the Realm Act, restricting the use of opium, morphine, and cocaine, would cease to be operative before the projected pharmacy legislation to give effect to the provisions of the International Opium Convention, 1912, had been enacted.—Mr. SHORTT replied: I hope Parliament will agree to keeping Regulation 40B in force long enough to allow legislation to be passed to give effect to the International Convention.

### *War Gratutities for Naval Nurses.*

Major Sir BERTRAM FALLE asked the Secretary to the Admiralty if he would state if any increase of pay, gratuity, or war gratuity had been, or was to be, given to the naval nursing sisters for their work.—Dr. MACNAMARA replied: I presume that my honourable and gallant friend's question refers to nursing sisters and reserve nursing sisters of Queen Alexandra's Royal Naval Nursing Service, and not to V.A.D. nursing members or British Red Cross Association nurses employed in naval hospitals. The rates of pay of reserve nursing sisters were revised in September, 1918. The rates of pay for nursing sisters (active service) is at present under consideration. We are at present in correspondence with the War Office on this point, and that department hopes to be able to give its observations shortly. No war bonus is payable to nurses, as they are in receipt of free victualling and the larger part of their uniform is provided at public expense. It has been decided to extend the War Office scheme of war gratuities for nurses to the naval nursing staff, and it is hoped to publish full details in the press at an early date.

THURSDAY, JULY 31ST.

### *Royal Army Medical Corps Appointments.*

Mr. LEONARD LYLE asked the Secretary for War if he would say on whose recommendation senior appointments were made in the Royal Army Medical Corps, and whether an advisory committee was appointed for this purpose.—Captain GUEST (Joint Patronage Secretary to the Treasury) replied: The promotion of officers to the senior ranks of the Army Medical Service is made by the Army Council on the recommendation of a Selection Board composed of Major-Generals of the Army Medical Service.

MONDAY, AUGUST 4TH.

### *Royal Army Medical Corps in Egypt.*

Viscount WOLMER asked the Secretary for War if he would say how many units of the Royal Army Medical Corps were being retained in Egypt; and whether it was proposed to send any of these home at an early date.—Mr. CHURCHILL replied: There are 51 units of the Royal Army Medical Corps in Egypt, including field ambulances, hospitals, sanitary sections, depôts, &c. As these units become surplus to requirements they are disbanded in Egypt, and the personnel, if available for demobilisation, is sent to this country for dispersal. Those who are not eligible for demobilisation are utilised for reinforcements.

### *Ex-Service Men and Tuberculosis.*

Lieutenant-Colonel RAW asked the Minister of Health whether he had considered the Report of the Special Committee on Tuberculous ex-Service Men, and when it would be made public, as the matter was one of great urgency.—Mr. PARKER replied: My right honourable friend has only

received the Report of the Committee within the last few days. He will consider it at once and discuss the matter with the Minister of Pensions, who, jointly with himself, appointed the Committee.

TUESDAY, AUGUST 5TH.

### *Treatment of Uncertifiable Mental Cases.*

Colonel WEDGWOOD asked the Minister of Health if he would state what steps he was taking with a view to providing in all areas convalescent homes for the benefit of early uncertifiable mental cases, so as to prevent their growing worse and becoming certifiable and a burden on the State; and, in order that such homes should not be regarded as half-way houses to asylums, would he ensure that intending patients should enter voluntarily and without compulsion in the same way as they would enter a hospital, and that the homes so provided should have no connexion with lunacy administration.—Major ASTOR (Parliamentary Secretary to the Ministry of Health) replied: The proposal in the first part of the question, with which I am in full sympathy, would require legislation for it to be effectively carried out. This matter, together with the important points referred to in the rest of the question, with which I am also in sympathy, are having very careful consideration between my right honourable friend the Minister of Health and my right honourable friend the Home Secretary, and it is hoped that suitable legislation for the purpose in view may shortly be introduced.

### *State Medical Service.*

Mr. LEONARD LYLE asked the Minister of Health whether any representations had been made to him with regard to the establishment of a State Medical Service; and whether, in that case, he would indicate their nature and state whether the Ministry had considered them, and with what result.—Major ASTOR: Several different proposals have reached my right honourable friend from time to time as to new schemes for public medical services. I am sending the honourable Member a copy of the reply which my right honourable friend gave on May 28th to a question on this subject from the honourable and gallant Member for Leeds, from which he will see that the development of local medical services of various kinds is certainly contemplated by the Ministry of Health; but the opinions of the consultative councils will be sought before any substantial steps on these lines will be decided upon.

### *Cholera Outbreak in India.*

Viscount WOLMER asked the Secretary for India whether he was aware that there had recently been a serious outbreak of cholera among the troops of the 6th Indian Brigade at Ali Masjid on the North-West Frontier, and that in the brigade about 400 cases and over 100 deaths had occurred; that the medical personnel attached to the brigade was not up to the establishment strength and was quite inadequate to deal with the outbreak; that there was a breakdown in the medical arrangements; that insufficient anti-cholera vaccine was available; and that the supply of saline tablets was inadequate; and whether he would cause an inquiry to be made into the matter.—Mr. MONTAGU: An outbreak of cholera in the Khyber Pass has been reported, but the number of cases in the 6th Indian Brigade was not stated. As regards the remainder of the noble Lord's question I have telegraphed for information.

### *Health of the Troops in India.*

Replying to Colonel YATE, Mr. MONTAGU stated that he had received a telegraphic report from India to the effect that orders had been issued to all generals in command that medical officers were to ask for whatever they deemed necessary for the comfort of the sick and wounded in their charge and that their demands were to be met at once. Additional hospitals for 4000 British and 8000 Indian troops had been established in specially fitted barracks in proximity to the frontier, and electric lighting and fans where none already existed were being supplied to the former. Convalescent depôts for officers and soldiers had in addition been formed, mainly in the Murree Hills. Special arrangements had been made for the supply of fresh milk to the sick in the hospital, and cows for this purpose had been placed so far as the front as Dakka, Bannu, and Tank. Scale of equipment of Indian general hospitals had been reviewed and arrangements for providing additional equipment were in progress.

NECESSITOUS LADIES' HOLIDAY FUND.—The war has reduced the income of many superannuated governesses, hospital nurses, literary ladies, companions, painters, musicians, actresses, and, indeed, all those disqualified from engaging in other lucrative work. A letter signed by the treasurer, Miss Constance Beerbohm, appeals for support in order to make a holiday possible for ladies unable to earn in the summer months. For those to whom a holiday is out of the question relief is supplied in the form of food, medicine, and clothing. The address of the treasurer is 48, Upper Berkeley-street, London, W. 1.



## Medical News.

**MEDICAL INSTRUMENTS FOR SERBIA: AN APPEAL.**—The urgent need for every description of instrument and hospital equipment prompts this appeal to the medical profession. The Hon. Mrs. Haverfield is returning immediately to Serbia to dispense the Fund for Disabled Serbian Soldiers, and will be deeply grateful to any medical men who will send to her at 9, Ennismore Gardens, S.W., any material of the indicated description.

**ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.**—At a meeting of the Council of the Royal College of Surgeons on July 24th and of the Comitia of the Royal College of Physicians on July 31st Diplomas of M.R.C.S. and L.R.C.P. were respectively conferred upon 78 candidates (including 13 women) who have passed the Final Examination in Medicine, Surgery, and Midwifery of the Conjoint Board, and have complied with the necessary by-laws. The following are the names and medical schools of the successful candidates:—

William Stirk Adams and Robert Geoffrey Addenbrooke, Birmingham Univ.; Reginald John Allison, Manchester Univ.; James Collingwood Andrews, Cambridge Univ. and London Hosp.; Maurice Aronson, London; George Arthur Emmanuel Barnes, University College Hosp.; Cecil Bluet, L.M.S.S.A., Sydney Univ. and London Hosp.; Thomas George Doughty Bonar, Guy's; Hilda Crichton Bowser, B.Sc. Lond., and Sarah Aileen Florence Boyd-Mackay, Royal Free; William Edelstein Braceley, L.R.C.P. & S. B'n., Birmingham Univ.; Gerald Arthur Augustine Bradnack, Guy's; Ella Marianne Britten, St. George's; Anna Bridget Broman, Royal Free and St. Mary's; Harold Mallows Brown, Guy's; Nai Cheua and Benjamin Young Harper Christmas, Middlesex; Simeon Moses Cohen and Percival Charles Collins, St. Bart's; Alfred Innes Cox, L.D.S. Eng., Middlesex; Ursula Beatrice Cox, Royal Free and St. Mary's; Egbert Aubrey Lennox Crichton, King's College Hosp.; Ignatius Joseph Cruchley, London; Herbert Ernest Cumming, M.D., C.M., McGill Univ.; George Lambert Cutts, L.D.S. Eng., Guy's; Jenner Conway Davies, Cambridge Univ. and St. Bart's; Henry Dryer, Edinburgh Univ.; Clement Dunscombe, Cambridge Univ. and St. Bart's; Tyrrell George Evans, St. Bart's; Thomas Fernandez, Cambridge Univ. and Guy's Hosp.; Kathleen Field, St. Mary's; Frederic Lionel Fonseca, Ceylon Medical College and St. Mary's; Herman Meyer Gerson and Frederick John Good, London; Harold Hyman Goodman, Leeds Univ.; Dorothy Margaret Greig, Royal Free and St. Mary's; Oscar St-nley Hillman, Middlesex; Aga Mohamed Kazim, Madras and University College Hosp.; Herbert Wilfred Kerfoot, M.D., C.M., McGill, McGill Univ.; Vasant Ramji Khano'kar, B.Sc. Lond., University College Hosp.; Hyman Jacob Levy, St. Bart's; David Livingston, Durham Univ.; Eric Shaw Longton, Liverpool Univ.; Aziz Abd El Sayed Mansour, Charing Cross; Maurice Marcus, London; Alfred Marsh, Liverpool Univ.; Alfred Yaphet Massouda, Guy's; Kathleen Harding Matthews, St. Mary's; Charles Moffatt, Guy's; Vasant Ganesh Mohile, M.B., B.S. Bombay, Bombay Univ.; Frewen Moor, Cambridge Univ. and St. Thomas's; Farid Moros, St. Mary's; John Edward Blackburn Morton, Oxford Univ. and King's College Hosp.; Vernon Arthur Newton, Birmingham Univ.; John Gough Nolan, Manchester Univ.; Arthur Gordon Ord, Guy's; Edwina Ronald Ormerod, Manchester Univ.; Arthur Arnold Osman, Guy's; Sigrid Letitia Sharpe Pearson, Royal Free; Geraint Arthur Penant, Cardiff and Bristol Univ.; George Stuart Bain Philip, Charing Cross; Thomas Henry Algernon Pinning, Bristol Univ.; Hugh Reid, Liverpool Univ.; Benn Roland Reynolds, Bristol Univ. and St. Bart's; Charles Herbert St. John, Guy's; Olive Ballance Sharp, Royal Free and St. Mary's; George John Sophianopoulos, St. Bart's; Frederic Gordon Spear, Cambridge Univ. and St. Thomas's; Mary Sylvia Stocks, Royal Free and St. Mary's; James Grant Sra lau, M.B. Tr., Toronto Univ.; Sonia Strachun, St. Mary's; Stanley Roy Tattersall, St. Thomas's; Beriah Melbourne Gwynne Thomas, Cardiff and St. Bart's; Desmond Villiers Townshend, Birmingham Univ.; Alfred Basil Keith Watkins, London; Frederic Francis Wheeler, St. Mary's; Ang. s Hedley Whyte, Durham Univ.; and Gladys Mary Thurlow Williams, Birmingham Univ.

Diplomas in Public Health were also conferred upon the following 12 candidates (including one woman), viz.:—

L. D. Bailey, L.R.C.P., M.R.C.S., St. George's; M. Barker, L.R.C.P., M.R.C.S., King's College; C. D. Day, L.M.S.S.A. Lond., Cambridge Univ. and St. Bart's; H. Falk, L.R.C.P., M.R.C.S., M.B., B.C. Cantab., Cambridge Univ. and St. Thomas's; W. H. Grace, M.B., B.S. Lond., M.R.C.P., M.R.C.S., Guy's; M. J. Holmes, M.B., B.S. Melb., Melbourne Univ. and University College; T. Legge, L.R.O.P., M.R.C.S., University College; R. D. Passey, M.B., B.S. Lond., Guy's; Eva Louise Cairns Roberts, M.B., Ch.B. Manch., Manchester Univ. and King's College; W. L. Webb, M.B., B.S. Lond., L.R.C.P., M.R.C.S., Guy's; H. E. Whittingham, M.B., Ch.B. Glasg., Glasgow Univ. and University College; and J. P. Williams, L.R.C.P., M.R.C.S., St. Mary's and King's College.

**THE ROYAL SOCIETY OF MEDICINE: A WAR SECTION.**—The proposed new section for dealing with all questions affecting medicine and surgery in the Navy, the Army, and the Air Force, has been established under the name of "War Section." The officers and council elected are as follows:—

*President.*—Surg. Rear-Admiral Sir Robert Hill, K.C.M.G., J.B., C.V.O., R.N.  
*Vice-Presidents.*—Navy: Surg.-Capt. P. W. Bassett-Smith, C.B., C.M.G., R.N. Army: Major-General S. Guise Moore, C.B.,

C.M.G., A.M.S. Air: Brig.-General Fell, C.M.G., R.A.F. India: Sir Havelock Charles, G.C.V.O. Naval and Military Auxiliary Services: Col. William Pasteur, C.B., C.M.G.  
*Honorary Secretaries.*—Navy: Surg. Lieut.-Cmdr. H. B. Hill, R.N. Army: Col. Oliver Robinson, C.M.G., A.M.S. Air: Lieut.-Col. J. McIntyre, M.C., R.A.F.  
*Representative on Editorial Committee.*—Col. S. L. Cummins, C.M.G., A.M.S.

*Representative on Library Committee.*—Surg.-Capt. P. W. Bassett-Smith, C.B., C.M.G., R.N.

*Other Members of Council.*—Navy: Surg.-Cmdr. R. Bankart, C.V.O., R.N.; Surg.-Cmdr. R. A. Ross, R.N. Army (Regular): Col. E. M. Pilcher, C.B., C.M.G., A.M.S.; Col. Sir Edward Worthington, K.C.V.O., C.B., C.M.G., R.A.M.C. (Special Reserve): Capt. C. Max Page, D.S.O., R.A.M.C. (S.R.). Air Force: Lieut.-Col. Henry Cooper, D.S.O.; Major A. P. Bowdler, Naval and Military Auxiliary Services; Major E. B. Waggett, D.S.O., R.A.M.C. (C.F.). India: Lieut.-Col. C. Tilson Hudson, C.M.G., I.M.S. (ret.); Col. G. Irvine, C.B., I.M.S. (ret.). Canada: Col. H. A. Chisholm, C.A.M.C. Australia: Lieut.-Col. J. H. Anderson, A.I.F. New Zealand: Lieut.-Col. Bernard Myers, C.M.G., N.Z.E.F. South Africa: Col. P. G. Stock, S.A.M.C. Colonial Office: Dr. A. E. Horn.

These will serve until Sept. 30th, 1920. The first meeting of the section will be held on Monday, Nov. 10th, at 5.30, when a paper will be read by the President of the Section, and it is hoped that the opening meeting will be well attended. Members, of course, are at liberty to introduce friends.

## Medical Diary for the ensuing Week.

**LECTURES, ADDRESSES, DEMONSTRATIONS, &c**  
**LONDON HOSPITAL MEDICAL COLLEGE,** in the Clinical Theatre of the Hospital.

A Special Course of Instruction in the Surgical Dyspepsias will be given by Mr. A. J. Walton:—

MONDAY, August 11th.—1 P.M., Lecture III.—Dr. G. Scott: Radiological Examination of Upper Abdominal Lesions. Value of Opaque Meals.

FRIDAY.—4.30 P.M., Lecture IV.—Dr. Pantou: Test Meals. Technique for Acidity. Value of Results. Technique for Motor Power. Examination of Faeces.

A Course of Clinical Lectures for Advanced Students on Intermittent Blood Infections and their Relation to Certain Common Diseases of the Kidney, Prostate, Testicle, and other Organs will be delivered by Mr. F. Kidd:—

WEDNESDAY.—4.15 P.M., Lecture II.—Haematogenous Infections of the Prostate. Clinical Course; Diagnosis; Treatment.

## Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

COOMBS, H. M. McC., M.R.C.S., L.R.C.P. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Bedford District of the county of Bedford.

LIGHTBODY, J. H., M.D. Vict., Permanent School Medical Inspector for the Honiton District under the Devon County Council.

RAEBURN, J. A., M.D., Ch.B. Edin., D.P.H., to take charge of the Whole System of Anti-tubercular Institutions Organised for the City of Hull.

ROY, D. W., M.B., B.C. Cantab., Assistant Obstetric Physician to St. George's Hospital.

SIMMONS, A. G., M.B. Lond., L.R.C.P., Medical Registrar to Westminster Hospital.

WOODMAN, M., M.S. Lond., F.R.C.S. Eng., Honorary Aural Surgeon and Laryngologist, General Hospital, Birmingham.

Royal Free Hospital: BLAKE, Miss ALDRICH, M.S. Lond., Consulting Surgeon, with Care of Patients; DAVIS, H., M.B. Oxon., F.R.C.S., Dermatologist.

Salford Royal Hospital: JEFFERSON, G., M.S., M.B. Lond., Honorary Assistant Surgeon; WHITE, H. V., M.D., Ch.B. Manch., Honorary Ophthalmic Surgeon; SMALLEY, A. A., M.B., Ch.B. Vict., Honorary Surgeon for Diseases of the Ear, Nose, and Throat.

## Vacancies.

For further information refer to the advertisement columns.

Adelaide University.—Prof. of Path. and Bact. £900.  
Antrim County Council.—Chief Tuberc. M.O. £500.

Bath City Council.—M.O.H. and Sch. M.O. £700.  
Benenden, Kent, National Sanatorium.—Asst. Med. Supt. £175.

Birkenhead County Borough.—Asst. M.O.H. and Clin. Tuberc. O. £500.  
Birmingham City.—Municipal Bacteriologist. £700.

Birmingham General Hospital.—Two Assist. S's. £50.  
Birmingham Municipal Anti-tuberculosis Centre.—Sen. Asst. Tuberc. O. £600.

Birmingham, Rubery Hill Asylum and Annex at Hollymoor.—Med. Supt. £1250.

Bradford Royal Infirmary.—Res. Surg. O. £250.  
Brighton Education Committee.—Sen. Sch. Doctor. £600.

Brighton, Royal Sussex County Hospital.—Sen. H.S. £140.  
Cardle, Mon., Newport Royal Infirmary.—Asst. M.O. £300.



Cairo, Egyptian Government School of Medicine.—Professors and Lecturers. £E.1000 and £E.600. Also Radiologist and Lect. in Radiology, £E.500, Anaesthetist and Lect. in Anaesthetics, £E.500, and Registrar and Tutor, £E.600.

Carmarthen Mental Hospital.—Second Asst. M.O. £250.

Chartham, near Canterbury, Kent County Asylum.—Jun. Asst. M.O. £300.

Chesterfield and North Derbyshire Royal Hospital.—Res. Surg. O. £350. Also Jun. H.S. £250.

City of London Maternity Hospital, City-road, E.C.—Surg. for Venereal Diseases. Also Physician, Child Welfare Department.

Croydon County Borough.—M.O. £400.

Derby, County Borough Education Committee.—Asst. Sch. M.O. £500.

Derbyshire Royal Infirmary.—Oph. H.S. £200.

Devonport, Royal Albert Hospital.—Res. H.S. £200.

Durham County Council, Asst. Welfare M.O. £500. Also District Tuberc. M.O.'s. £600.

East Ham County Borough Education Committee.—School Dentist, £400.

East London Hospital for Children, Shadwell, E.—Cas. O. £120.

Eccles and Patricroft Hospital.—Res. H.S. £200.

Exeter City.—Asst. M.O.H. and Asst. Sch. M.O. £400.

George Town Municipality, Penang, Straits Settlements.—Asst. M.O.H. £4200.

Glamorgan County Asylum, Bridgend.—Fourth Asst. M.O. £400.

Greenwich Union Infirmary, East Greenwich, S.E.—Dep. Med. Supt. £400.

Hong Kong Government.—Bact. and Path. £600.

Huddersfield, Bradley Wood Sanatorium for Pulmonary and Surgical Tuberculosis.—Res. M.O. £500.

Khartoum, Wellcome Tropical Research Laboratories.—Asst. Bacteriologist. £E.600.

Leeds Public Dispensary, North-street.—Res. M.O. £200.

Liverpool, David Lewis Northern Hospital.—Three S.'s and Two P.'s. £150.

Liverpool Hospital for Consumption, &c.—Hon. M.O.'s.

Liverpool School of Tropical Medicine.—Tropical Research, Brazil. £300.

Liverpool, West Derby Union.—Asst. Res. M.O. £393.

London University.—William Julius Mickle Fellowship. £200.

Maldstone, West Kent General Hospital.—Jun. H.S. £125.

Manchester Royal Infirmary.—H.S.'s. £25 for first six months, £50 for second six months.

Manchester, St. Mary's Hospitals for Women and Children.—Res. Obst. S. Also Res. Surg. O. £250.

Newark Hospital and Dispensary.—Res. H.S.

Newcastle upon-Tyne, Hospital for Sick Children.—Sen. Res. M.O. £200.

Newcastle upon-Tyne, University of Durham College of Medicine.—Demonstrators of Anatomy and Physiology. £350 to £500 and £300.

Norfolk Education Committee.—Sen. Asst. Sch. M.O. £500.

Northampton County Borough Education Committee.—Female Asst. School M.O. £350.

Nottingham, Notts Education Committee.—Asst. School M.O. £425.

Peckham House, 113, Peckham-road, S.E.—Sen. Asst. M.O. £400.

Pulney Hospital, S.W.—Res. M.O. £50.

Queen Mary's Hospital for the East End, Stratford, E.—H.S.

Rochdale Infirmary and Dispensary.—Sen. H.S. £200.

Royal Chest Hospital, City-road, E.C.—Res. M.O. £200.

Royal College of Surgeons in Ireland.—Sen. Asst. (Anatomy).

St. Bartholomew's Hospital.—Phy., Surg., Asst. Surg., and Asst. Phy.-Accoucheur.

St. George's Hospital, S.W.—Two Cas. Officers. £100.

St. Mary's Hospital for Women and Children, Plaistow, E.—Dent. S. £50.

Salford Royal Hospital.—Hon. P. and Hon. Asst. P.

Sheffield Royal Infirmary.—H.S. £150.

Swansea General and Eye Hospital.—Res. M.O. £200.

Taunton and Somerset Hospital.—Res. Asst. H.S. £80.

Torquay Education Authority.—Asst. Sch. M.O. and Dept. M.O.H. £350.

University College Hospital, Gower-street, W.C.—Asst. S.

West African Medical Staff.—Number of appointments. £400.

Willesden Urban District Council.—Asst. M.O.'s. £550 to £650.

Wolverhampton and Staffordshire General Hospital.—M.O. for Venereal Clinic. £800.

Yorks, West Riding County Council.—District Tuberc. O.'s. £560.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for Certifying Surgeons under the Factory and Workshop Acts at Thorne.

## Births, Marriages, and Deaths.

### BIRTHS.

CARLISLE.—On August 1st, at "Ardlair," Heswall, Cheshire, the wife of Captain H. G. Carlisle, R.A.M.C., of a daughter.

MACCALLAN.—On July 30th, at Mandeville-place, W., the wife of Arthur Ferguson MacCallan, F.R.C.S., of a daughter.

### MARRIAGES.

ELLIOT-GREENE.—On July 31st, at St. Margaret's, Westminster, Lieutenant Colonel Henry Charles S. Elliot, O.B.E., C.A.M.C., to Margaret Kathleen Mary, daughter of the late Charles Temple Greene.

GREENISH-WRIGHT.—On July 29th, at All Saints Church, Warrington, Surrey, F. Harold S. Greenish, M.A., M.R.C.S., L.R.C.P., to Edith Marjorie, only daughter of Mr. and Mrs. Duncan Wright, of "Sibbury," Warrington.

### DEATHS.

BURRELL.—On July 30th, at Kew Gardens-road, Kew, Lionel Burrell, M.D., aged 80.

MATHEWS.—On August 1st, at College Court, Shrewsbury, Paul Mathews, M.D., aged 39.

WEEKES.—On July 31st, at Malvern, Francis Henry Weekes, F.R.C.S. Eng., M.D. Durh., aged 65.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

## Notes, Short Comments, and Answers to Correspondents.

### AN EMERGENCY CASES HOSPITAL IN THE MEUSE.<sup>1</sup>

By J. A. CAIRNS FORSYTH, M.Sc., M.B., F.R.C.S.,  
SURGEON TO THE FRENCH HOSPITAL.

OFFERED to, and accepted by the French Army, in December, 1914, our unit did not leave England until the following March, for the hospital was independent of any Red Cross organisation as regards funds, and it took some time before the means necessary to equip and maintain the formation for any length of time were obtained.

We went out with the intention of doing urgent surgery, but when we arrived at Bar-le-Duc, our destination, we found that for that class of work we were both unnecessary and unsuitable. We were a little disappointed at first, but we talked things over among ourselves, and decided that we could still do good work in the treatment of fractures, a department of surgery that was then making rapid progress.

#### Early Days in Bar-le-Duc.

At Bar-le-Duc we were given a wing of a caserne for our hospital, and it was easily adapted to our needs. The concrete barrack rooms made excellent wards, and I am afraid we scandalised the French by the open-air treatment that we gave our wounded.

We were fortunate in having for our surgeon-general the Médecin Inspecteur Mignon, a former director of the Val-de-Grâce. When the hospital was offered to the French Army as a whole General Mignon asked for it to be attached to his command, as he had a profound respect for English nursing. He was a man of deep human feeling, a great organiser, and, at the same time, a fine clinician. He quickly arranged that we should receive our wounded direct from the front, and advised the médecins chefs of the field hospitals to reserve the fracture cases for us. The system worked well. Whenever there was fighting in the Argonne we were informed at once, and our cars went up and brought down the wounded straight away.

We soon made friends with the staffs of the field ambulances, and they took great interest in our hospital, visiting it whenever they came to Bar-le-Duc. They were naturally rather envious of our fine equipment, for the French Medical Service is the Cinderella of all the Army Services. In order to be a successful médecin chef, you must have the gift of being able to make bricks without straw. Many of these men possessed that gift, and I have often been astounded at the ingenuity they displayed in making something out of nothing.

#### Visits to the Argonne Front.

One road along which we often travelled led us to Clermont. Clermont is built on a bluff in the Argonne, and must have been a very beautiful spot once, before it was burned out by the Germans. Its staircase street is rather quaint, winding up the side of the bluff to the church, which has been quite destroyed.

The local hospital fortunately was saved from destruction by the energies of a very brave nun, the Sister Gabrielle. She drove out the Germans when they entered the building to set it on fire, and rumour had it that she even had a few words of wisdom for the Crown Prince.

From Clermont, the Paris-Metz road ran west to east, and along this road were the towns and villages of Dombsale, Les Islettes, Ste. Menehould, and Braux Ste. Cohiere. In each of these were field hospitals, and at Braux there was one of the first motor hospitals, or "auto-chirs," as they were called, costly formations, but very mobile. Beyond this line were the smaller advanced hospitals, scattered throughout the Argonne, for at this time the French were doing a deal of urgent surgery close to the lines, as the Argonne roads were very bad. In one village, which was only 800 yards from the lines, they had an advanced operating centre installed in two houses. Here I saw head cases, chest cases, and abdominal cases that had been operated on, lying on the straw and doing well.

The great majority of the wounds from the Argonne were produced by bombs. It was the era of the jam-tin bomb, the "tourterelle," the "crapouillot," the "minenwerfer," and such barbarous engines of trench warfare. Gas gangrene, on the whole, was not common, but we saw enough of it to be always on guard.

<sup>1</sup> An address given at the last Social Evening of the Royal Society of Medicine and here published in an abridged form.



*The Real Frenchman.*

By this time we had got to know our soldier patients very well, and had acquired the greatest respect for them. Most of us had gone to France with only the conception of French character such as one sees on the stage, and we were agreeably surprised to find that the French soldier was a totally different being, a really very great man. At heart a child, he resembled a child in that he could find his own amusement and required no entertaining. The poilus were very skilled in handicrafts, and excelled in metal work and woodwork, and as soon as they were strong enough and able to use their hands they took to fashioning things out of bits of aluminium and shell cases. With a few simple tools they turned out beautiful rings and automatic lighters. Later on, when we moved to Faux Miroir, they specialised in the making of walking-sticks.

At Colonel Hunter's lecture I referred to their personal cleanliness, and certainly it was remarkable how they managed to keep their bodies free from lice. My own opinion, if I may give it again, is that it was largely due to the fact that the French soldier is provided with a uniform that will wash and which he is made to wash, and, in addition, he wears cotton shirts and underclothing instead of woollen. He washes his body daily—there is no false modesty among the French soldiers on that point—and he does not require a bath for his ablutions. Whatever the reasons were, we found that parasitic diseases were conspicuous by their absence, and trench fever was unknown.

*The Hospital at Faux Miroir.*

In August, 1915, we were asked to move to Faux Miroir, a château near Revigny, nine miles to the west of Bar-le-Duc. Now this château of Faux Miroir, which, by the way, was more like a Swiss hotel than a château, proved to be an interesting place, for it had been a German ambulance for two days during the battle of the Marne. The verandah had served as the operating theatre, and limbs, as they were amputated, were simply thrown over the parapet into the little plantation adjoining. The château was frequently visited by the Crown Prince during the battle, as there was a staff headquarters in the laundry. In a flower bed in front of the verandah was the grave of Hauptmann von G—, one of the Crown Prince's intimate friends, who was mortally wounded at the gate of the château and died in the salon.

All round Faux Miroir were signs of the fighting at the Marne. Three parallel rows of trenches crossed the park immediately in front of the château. In the fields, woods, and by the roadsides were many graves. Revigny itself, 3 kilometres away, on the railway from Paris to Nancy, had been much destroyed, partly by shells, partly by paraffin, for the Germans, before they retreated, set the town on fire. The Crown Prince is said to have viewed the bombardment and burning of Revigny from a dug-out at Villers-aux-Vents. It was a very palatial dug-out, for it was lined with fine old oak doors taken from the neighbouring cottages.

Close to the château, in the lee of a small wood, we built our hospital. It was hard work, as we were on 60 feet of clay, but by putting down over 200 tons of stones, slag, and gravel we made the surface sufficiently porous and dry to withstand the damp of the Meuse winters. The wards were the usual Bessanot huts, double walled, with swinging side partitions that opened outwards, so that there was abundance of air in warm weather. Each of the six wards accommodated 20 patients. The private chapel made an excellent operating theatre, as it was well lit and easily cleaned. The sacristy adjoining was converted into a preparation and sterilising room. We soon got the local ironmonger quite enthusiastic in the making of Blake splints, and we were able to employ them during that autumn and winter and find out their many advantages.

Life at Faux Miroir was much more pleasant than at Bar-le-Duc, and the change from town to country was greatly appreciated by both patients and staff. We had 600 acres of wood and park where the convalescents could roam about, and we gave them plenty of liberty, which I am proud to say they never abused. The winters were very severe, and for weeks the whole country lay deep in snow. Transport of the wounded to and from the station was then very difficult, as a high and steep hill lay between us and Revigny. In our off times during the winter we hunted the mighty hoar that came down in bands from the Argonne. The larger ones we shot and ate with great relish, the little ones we tried to catch alive with the dogs, as they made most lovable pets.

(To be concluded.)

## THE PNEUMAMETER.

DESCRIBED as a new portable spirometer, this apparatus is simple enough in detail, and after a little practice the results obtained appear concordant and relatively instructive. The principle is that of the diving bell with a small escape at the top, the bell being kept poised by the expired air of the operator, and releasing a scale which descends

uniformly by its own weight and registers the duration of expiration and therewith its actual volume on an empirical scale. To use the apparatus water is placed in the outer cylinder, the inner cylinder being removed for that purpose. The inner cylinder is then replaced, the scale which passes through an aperture at the top being brought upwards to the zero mark. A pair of levers each side of the scale keeps it in position and these are released as soon as the pressure of expired air raises the cylinder. When the operator can no longer maintain the expiratory pressure the inner cylinder falls and the descending scale is caught by the pointers or levers and held there when the reading can be taken. The breath enters by a pipe in the outer cylinder bent upwards and projecting into the inner cylinder. A rubber tube is attached with a glass mouth-piece, so designed as to prevent condensed water from the expired air reaching the mouth again. The glass mouth-piece, of course, can be sterilised.

The instrument was submitted to us by the Oliver-Pell Electric and Manufacturing Co., Ltd., of Granville House, Arundel-street, London, W.C.2.

## SMALL HOLDINGS AND THE RETURNED SOLDIER.

A NEW addition to the excellent series of guide books for ex-Service men and others, some of which we noticed in THE LANCET of May 24th, p. 922, has just been made by the Board of Agriculture and Fisheries—namely, "Dairy Farming Under Small Holding Conditions." In it the choice and management of a holding, the relative advantages of milk-selling, cheese-making, and butter-making are discussed, together with methods of production. The pamphlet can be obtained for 2d., post free, by the general public, and by ex-Service men free of charge and post free, from 3, St. James's-square, S.W.1. The Board of Agriculture and Fisheries have also issued a pamphlet, which can be obtained post free from the same address, on "Apple Aphides." This is an abridgment of an article which recently appeared in the *Journal of the Board of Agriculture* from the pen of Mr. F. V. Theobald and deals with the life histories and the methods of destruction of some of the aphides which infest apple trees.

## AN IMPROVEMENT IN THE GALVANOSSET APPARATUS.

AN improvement of some importance in the rheostat, known as the Galvanoset, is announced by the Medical Supply Association of 167-185, Gray's Inn-road, London, W.C.1. The four conducting elements were formerly made of carbon, but the positive element of this material tended to crumble and discolour the water, which necessitated frequent changing of the water and replacing the carbon. This disadvantage is entirely removed by adopting a positive element of platinum. The improvement is an obvious one, and those who have been using the Galvanoset apparatus may be glad to know that this change can readily be made, and what was a source of inconvenience can be avoided by this simple adjustment.

## Communications, Letters, &amp;c., to the Editor have been received from—

- |   |   |
|---|---|
| A.—Agricultural Costings Committee; Mrs. V. B. Alvarez, New York; Sir R. Armstrong-Jones, Lond.   | Lediard, Carlisle; Dr. E. G. Little, Lond.; Mr. J. H. Lloyd, Leighton.  |
| B.—Dr. E. A. Barton, Lond.; Mr. J. S. Buckle, Lond.; Dr. J. Blomfield, O.B.E.; Mr. W. G. Ball, Lond.; Board of Agriculture and Fisheries, Lond.; Dr. G. Bousfield, Lond.; Dr. N. Bradley, Crowborough; Mr. W. E. Brown, Uxbridge; Mr. J. B. Burke, Kingston Hill. | M.—Ministry of Health, Lond.; Capt. H. C. Martin, R.A.M.C.; Mr. W. V. McNae, Lond.; Dr. A. Mary, Paris; Dr. B. Moore, Lond.; Mr. J. Y. W. MacAlister, Lond.; Dr. C. S. Myers, Cambridge; Mr. E. Mulligan, Swinford; Messrs. Masson et Cie, Paris. |
| C.—Colonial Office, Lond.; Dr. A. Carver, Birmingham; Dr. T. F. Cotton, Lond.   | N.—National Council for the Unmarried Mother and her Child, Lond.   |
| D.—Mr. J. D. Driberg, Lond.; Capt. R. Datta, I.M.S.   | P.—Dr. S. Porterfield, Widnes; Major J. Porter, R.A.M.C.  |
| E.—Dr. R. Bager, Exminster.   | R.—Dr. W. C. Rivers, Alton; Royal Society of Medicine, Lond.; Royal Sanitary Institute, Lond.   |
| F.—Dr. W. G. Forde, Cloyne; Dr. R. F. Fox, Enham; Pte. W. Foss, R.A.M.C.; Factories, Chief Inspector of, Lond.  | S.—Dr. A. G. Shera, Eastbourne; Salford Royal Hospital, General Supt. and Sec. of; Prof. W. Stirling, Manchester; Mr. E. S. Seretopoulos, Cairo; Mr. F. B. Shawe.   |
| G.—Dr. H. L. Gordon, Lond.; Dr. W. E. Gye, Lond.  | T.—Dr. H. H. Tooth, C.B., C.M.G., Lond.; Territorial Force Medical Officers Association, Lond., Hon. Sec. of.   |
| H.—Capt. J. K. Haworth, R.A.M.C. (S.R.)   | W.—Dr. C. Walker, Birmingham; Dr. F. J. Wethered, Falmouth; Dr. L. A. Weatherly, Bourne-mouth; Mr. M. Woodman, Birmingham.  |
| J.—Dr. T. H. Jamieson, Lond.; Prof. F. Wood Jones, Lond.  |   |
| K.—Dr. L. J. Kidd, Lond.; King's College Hospital Medical School, Lond., Sec. of; Lieut.-Col. J. W. Kynaston, R.A.M.C.  |   |
| L.—Dr. R. B. Low, Lond.; Dr. A. Langmead, Lond.; Dr. H. O.  |   |

Communications relating to editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C.2.



## Clinical Observations

IN

## INDIA DURING THE WAR.

By A. W. SHEEN, C.B.E., M.S., M.D., F.R.C.S.,

COLONEL, A.M.S. (T.F.); FORMERLY O.C. No. 34 (WELSH) GENERAL HOSPITAL, INDIA, AND CONSULTING SURGEON, WAR HOSPITALS, INDIA; CONSULTING SURGEON, KING EDWARD VII. HOSPITAL, CARDIFF.

THE following are brief observations which seem of interest, made during nearly three years in India. They are not meant to be exhaustive and I have confined myself to conditions peculiar to the tropics and mainly to India.

**War wounds.**—The gunshot wounds coming back from Mesopotamia did not suppurate either so often or so freely as those sustained in France. Many presented the clean "in and out" character of the South African war wounds. This is probably because the soil of Mesopotamia is not so infective as the highly manured soil of densely populated and elaborately cultivated countries like Belgium and Northern France. Tetanus and gas gangrene were infrequent, almost the only cases that I saw in India being in wounded Turkish prisoners, who had, before coming into British hands, been—perhaps unavoidably—inadequately treated.

**Anæsthetics.**—I am convinced that ether can be given in India. In 1916, on arrival, I was fortunate in having under me officers who could give "open ether," and it became the routine anæsthetic. Later the details of an "open ether" series of cases were carefully recorded at one of the Bombay war hospitals. The operations were in May and June, the hottest time of the year, with the temperature between 90° and 100° F. Scopolomorphine sometimes, but not always, preceded. The majority of the operations were abdominal. No difficulties were experienced in any case; the amount of ether given was not excessive. In India with ordinary precautions there is no difficulty in keeping ether. It could be manufactured there with a little enterprise.

**Operating and operation theatres in hot climates.**—To prevent sweat dropping on to the wound area special assistants dab the faces of those concerned in the operation with the ends of rolled towels or with mops on handles. A small mouth mask should be worn. Through a large-type face mask one perspires and cannot be mopped. Bacteriological investigation of the sweat on several occasions universally gave a pure culture of *Staphylococcus albus*. The following is probably a case of sweat wound infection.

On a hot day the femur was plated with two heavy plates in a simple fracture; skin was carefully excluded. There was a slight evening rise of temperature, usually 99.2°. Except for this all went apparently well until between five to six weeks after the operation, when a point of sero-purulent oozing appeared in the wound line; this gave a pure cultivation of *Staphylococcus albus*. Later, after bone union, the plates were removed and every one of the screw-holes tested gave a similar cultivation. Cases such as bone-plating should be removed to a cool place for operation.

A fan in the theatre is unobjectionable; the air near it showed no more organisms than in other parts of the theatre. A case of neck suppuration led me to advise that the long-haired, full-bearded Sikhs should wear sterile linen fitted covers for head and beard during operations on them. A roof light is not usually found in Indian theatres. Sterile tops for all concerned would be a ludicrous addition to the equipment! There is no objection, however, to a sloping north roof light of the long and narrow type continuous with a narrow north window. Too big a north window is to be avoided. I know of one "war" theatre where practically the whole north wall is glass, making it a veritable hot house. The room where the sterilisers are should not be continuous with the theatre, but cut off by an open corridor—i.e., one with a roof but no sides.

**Orthopædics.**—The principles of military orthopædics have been so often and so well enunciated that I will not give more than the briefest summary of my views. They are embodied at length in the *Indian Medical Gazette*.<sup>1</sup> The treatment of these cases should be preventive from the

beginning; it is necessary that there should be quick return from the active war areas and segregation in a few large special hospitals where all the necessary specialists and the special treatment materials are assembled. I had to combat the idea that British "orthopædics" could wait until they got to England to be treated. Many could be cured and sent back to duty. For those—a minority—who had to go home I recommended "orthopædic" equipment on the hospital ships.

The cases in Indians presented some special features. A number were largely functional, and amongst some of these patients—as those who know the country will realise—a disability is regarded as an asset. Particularly it was found that special physical drill was very valuable in curing functional deformities, and on the parade ground the motionless arms or legs would gradually be seen to move more and more in concert with the limbs of the others exercising. In this connexion it is interesting to call attention to the great use the Germans have made of this form of treatment.

**Head cases.**—A number of cases of head wounds which had gone to England and, being apparently well, had been sent back to Mesopotamia came under my notice in that, having been a very short time in Mesopotamia, they were invalided to India with headache or other symptoms. My conclusion was that head wounds should not be returned to a hot climate. I saw my colleague Major L. B. Rawling's cases of decompression for epileptiform attacks following heat-stroke, and can testify to the benefits of the operation.

**Oriental sore.**—This cutaneous or subcutaneous malady, due to the infection of the tissues with *Leishmania tropica*, is of great interest. Its names are protean: Delhi boil, Bagdad boil, Aleppo boil are some of many. The cases which I saw all came from Mesopotamia. Sand-flies have been suggested as a possible source of infection. In typical cases the diagnosis is easy—a more or less scabbed, sloughy, often circular ulcer, usually on exposed parts of the body. Diagnosis is confirmed by finding the typical parasite in scrapings or, better, by puncture of the edge. The subcutaneous form is often most puzzling. In a case shown by Lieutenant-Colonel R. Row, I.M.S., to the Bombay War Hospitals Medical Society there was a group of keloidal swellings, each about the size of an almond, over the left scapula; in a nursing sister, whom I saw with Captain H. Weir, R.A.M.C., there was a bluntly pedunculated sphere on the lower lip the size of a large marble, pale, shiny, cedematous-looking, of six months' duration. Diagnosis in these two cases would have been impossible without the aid of puncture. I saw many cases in British soldiers and several in nurses.

As with many diseases which spontaneously tend to get well, numerous forms of treatment have been credited with success. Colonel Row gave a vaccine prepared from the parasite and dressed the sores with salol in oil. I have seen good results from salvarsan and from X rays. Other measures, such as scraping, ionisation, and the application of antiseptics or caustics, sometimes apparently cure but are followed by recurrence. Intravenous injection of antimony tartrate is usually successful. A good treatment for small sores suitably situated is complete excision. Microscopical examination of the excised sore shows down-growing columns of cells with cell-nests indistinguishable from epithelioma. This has an interesting bearing on the ætiology of cancer, and it is to be remembered that the South American nasopharyngeal form of the disease is known as "Leishman cancer."

Regarding infection, Colonel Row called my attention to a flagellate found in the latex of plant juice (*Euphorbia*) which strongly resembles, morphologically and culturally, the flagellate form of the Leishman body. As the incubation period of oriental sore may be prolonged to five or six months, and as apparently healed cases may recur, the disease should be borne in mind in the home country.

**Kangri canoer.**—A visit to Srinagar in Kashmir gave me an opportunity, through the kindness of Dr. Ernest Neve, of visiting the excellent mission hospital there and learning something about this disease. The Kashmiri keep themselves warm during their very cold winters by hugging to the abdomen under the clothing a kangri, which is an earthenware receptacle about 4 inches across enclosed in basket work, this being continued into a curved-over handle. In it is kept glowing wood ash. Minor skin irritation, staining, or

<sup>1</sup> "The Principles of Military Orthopædics, with Notes on the Constitution of an Orthopædic Hospital," *Indian Medical Gazette*, vol. III., No. 9, September, 1918.



ulceration are common results and sometimes cutaneous cancer develops. I saw Dr. Neve operate on one case. The patient, a man, aged 60, had a large circular median growth below and including the umbilicus; it was removed with muscle and a portion of peritoneum. In this case the growth was recurrent, the original operation having been done six months previously. For the following facts I am indebted to Dr. Neve. The cancer occurs in skin irritated or actually burnt from kangris. As well as the abdomen, the fronts of the thighs are affected from squatting. Though this growth is below the umbilicus the glands in the axillæ must be examined, as they may be affected. It is best to remove the groin glands when operating, even if these are not obviously affected. The disease is more frequent in people who have warts or moles about them. The man whom I saw operated on had a pigmented mole on his forehead. Dr. Neve had never seen a case under 30.

*Guinea worm.*—It would puzzle anyone unacquainted with this infection to know the meaning of an earthenware receptacle of water suspended some feet above the leg of a patient, while from a small hole in its bottom water drips on to an opening in the patient's leg, from which a whitish thread protrudes. This is a method of coaxing out the worm. The worm—always a female—lies under the epidermis. It tends to emerge, and this may be hastened by injection of various antiseptics. When, as occasionally, closely coiled the worm can be excised in toto; rarely it protrudes as a loop. The native method of abstracting it is by twisting the protruding portion round a stick, giving a turn or two daily. Castellani suggests that the worm is the fiery serpent of Moses; if this is so, the badge of the R.A.M.C. shows this method of abstraction! The worm should never be pulled upon, for if it breaks in the tissues it sets up an intense gangrenous cellulitis, often fatal; I saw two cases of this kind which died. The worm is mostly uterus, and the uterine contents appear to be intensely irritating to the tissues. The method of treatment is, of course, alluded to in some text-books.

*Inguinal bubo.*—I saw quite a series of cases in which no source of infection was demonstrable, the majority being in Colaba War Hospital under the care of Captain G. W. Bury, R.A.M.C. The patients were British, the greater number being sailors. The glands enlarge and soften and excision shows broken down gland tissue and sero-purulent material. Cultivations were invariably reported sterile. The wounds often broke down aseptically and were slow in healing. I understand that cases of "Oriental bubo" are common amongst natives in the Madras district. The occurrence in sailors suggests infection through the bare feet, but no evidence was found in support of this.

*Leprosy.*—Of very great interest was a visit which I, in common with a number of other medical officers, paid to the leper asylum at Matunga, Bombay, on the kind invitation of Dr. Arthur Powell. The patients were mostly Hindoos, and the majority had lived near the sea. Dr. Powell pointed out the roughened, wrinkled, reddened skin like an orange; frequent enlargement of the nipples, constrictions round the fingers like ainhum, depressed nose bridges, hoarse voices from nodules on the laryngeal cartilages, mixed cases—i.e., both nodular and anæsthetic, the light-coloured anæsthetic areas, cases showing ulnar griffe; others, weakness of the anterior tibial muscles. "Nastin" and other remedies had been tried without success. The bacillus is not pyogenic. It can be got from the liver and spleen. The patients die of tuberculosis or other intercurrent disease.

In the visitors' book we saw the signature of Jonathan Hutchinson in 1903 and his written expression of opinion that no harm would come from selling flowers gathered by the lepers in their gardens, but that other people should not eat food prepared by lepers' hands.

*Cholera.*—Nothing struck me more about cholera than the urgency necessary for its treatment. To get cases early and to treat them early is to save their lives. The cholera outfit should be as ready and as handy as the tracheotomy box. The copious hypertonic saline intravenous infusions and the free oral administration of permanganate of potash are—as discovered and so ably advocated by Sir Leonard Rogers—truly life-saving procedures. I was glad to hear the presidential address of Sir Leonard Rogers to the Indian Science Congress at Bombay in January of this year, when he told us that his latest results showed a mortality of only 14.9 per cent.

*Plague.*—It is difficult to believe that this—perhaps the greatest scourge of India—only last invaded the country in 1896. Besides the rat, a little squirrel, known as the tree-rat, almost universal in India, can become infected. It seems to me that what is wanted in India is not so much laboratory research in plague as sending out amongst the people "missionaries" of their own race and class to teach them what to do to avoid plague and how to act if it occurs.

*Malaria.*—Of the numerous malaria patients a certain proportion came under surgical attention for this or that reason. I saw three cases of musculo-spiral paralysis following intramuscular quinine injections into the upper arm; in two of these the nerve had been freed from fibrous tissue and they were recovering. My experience is that aseptic operations do not set up an attack of malaria in patients who have parasites in their blood but no active symptoms. The patients were usually taking quinine at the times of the operations. I saw arthritis attributed to malaria.

I saw also sufferers from dysentery, scurvy, the typhoid group, influenza, and tuberculosis.

*Dysentery.*—I saw thickened transverse colon, cases of general tumidity of the abdomen, arthritis of knees and of ankles, and rectal ulcer which had been diagnosed as cancer. With regard to carriers, my colleague, Captain W. MacAdam, R.A.M.C., found proportionately more amongst the general hospital population than amongst the cases labelled dysentery.

*Scurvy.*—There were at one time many cases in Indians, and I am afraid the lime juice issued was not always a prophylactic. A series of leg sores, many apparently resulting from slight injuries, yielded readily to antiscorbutic treatment, Dakin's fluid proving the best dressing for the ulcers. The hæmatoma in the calf or elsewhere resulting from scurvy is puzzling to diagnose if one is not on the look out for the disease.

*Typhoid group.*—Amongst the complications I saw phlebitis with leg ulcer; osteitis of tibia, humerus, and metacarpals; paralysis of deltoid with pectoralis major; a case under Lieutenant-Colonel T. S. Novis, I.M.S., where the muco-pus from the gall-bladder gave a pure cultivation of paratyphoid A; another case, on which I operated, a long-standing carrier, in which the gall-bladder contents were sterile. I wish that the surgeon had been called upon to drain the gall-bladder and the bacteriologist to investigate its contents in more of these carrier cases. A curious case of bilateral swellings in the posterior knee region following typhoid showed nothing but muscle on incision. A *B. coli* infection of the urine occurred occasionally after typhoid; the patients had puffy, pasty faces. An autogenous vaccine usually, but not always, cured.

*Influenza.*—Amongst the surgical complications I noted two cases of suppurative parotitis, one bilateral. From the pus of the latter pneumococcus was obtained in pure culture.

*Tuberculosis.*—There seemed an unusual incidence of surgical tuberculosis of bones, joints, glands, and abdomen in Indians who had been in France. Special institutions are badly needed for the treatment of these cases.

*Snakes.*—Cobras and kraits were a *bête noir* in my hospital area, and one walked about at night with a lantern. The antivenine and other necessary equipment for treating snake-bite were always kept ready in the emergency receiving room. Antivenine is useless for krait-bite. It was interesting at the Bombay Bacteriological Laboratory to see the snakes handled. They bit into material stretched tightly over the top of a wineglass, the venom being milked out of their glands into the glass. Then they were fed with a milk preparation through a funnel. The Russell's viper was the fiercest of all. The man who handled the snakes was rumoured to get the munificent sum of 10-15 rupees a month!

*Ulcers.*—Bites of mosquitoes and other insects sometimes develop into ulcers which were slow in healing. At Secunderabad I saw a case of ulcer of the ankle which had given a pure cultivation of a diphtheroid bacillus, and I was told that there had been a regular epidemic of similar cases elsewhere.

*Madura foot.*—I saw one case of this in an Indian. It had started three months previously at Samara, and was attributed to the kick of a mule. There was a large puffy swelling over the inner ankle in which were several sinusses from which pus could be squeezed showing the characteristic yellow granules.



*Bilharziasis.*—This I saw successfully treated by Captain T. B. Heaton, R.A.M.C., with intravenous injections of antimony tartrate.

*Bugs.*—These are the plague of Indian barracks and most difficult to get rid of. To deprive them of their proper nutriment by emptying the barrack of its human inhabitants is not much good, as one realises by recalling Shipley's statement that a bug can live for a year without nourishment, although at the end of that time it is so thin that you can read print through it. We had most success by generating HCN and letting it into the barrack, emptied except for its furniture and bedding. The louvred roofs of the barracks are, however, difficult to seal. The HCN machines are used by railway companies in India for their carriages. The smell of prussic acid wafted over the barracks of a 3000-bedded hospital is most impressive.

For bedsteads total immersion in a special tank of boiling water is, of course, effective. This method I saw in use at Secunderabad. Wooden bedsteads and wooden mosquito poles are to be avoided; the bugs get into all the cracks. Apart from the above, painstaking cleaning of bedsteads and furniture and sterilisation of bedding and clothing are the best remedies.

#### Conclusion.

In conclusion, let me say how fresh and varied in medical experience is India to the newcomer, and I hope that these random notes will do something to convey this interest to others. I trust that the Medical Service of India, remodelled as it should be, with its manifold opportunities for interesting practice and its general attractiveness, will never cease to command the best trained members of the profession.

## MATERNAL MORTALITY IN CHILD-BED.

By SIR JOHN PHILLIPS, M.A., M.D. CANTAB., F.R.C.P.,

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CAN maternal mortality in childbirth be further reduced?

At the present time, when most medical men interested in obstetrics are studying eugenics and antenatal pathology, it behoves one to produce all possible evidence in the hope of arriving at improved results and diminished maternal mortality. I have thought it might be of interest, and possibly helpful, to give an abstract of 35 years of midwifery in private practice. No record of a large number of cases under these circumstances has recently been published, and a comparison between the results obtained in private practice and in public institutions may lead to useful conclusions. I have looked up the notes of all the cases of pregnancy and labour for which I have been personally responsible during 35 years and I find that in round numbers the total is 2100. I met, unfortunately, with seven maternal deaths, of which I give abstract notes below, taken from full records made at the time.

#### *Reduction of Septic Mortality and Morbidity in Special Hospitals.*

The great risk of labour in the "seventies," and previously, was puerperal fever. The records of special hospitals and lying-in wards at that time make dismal reading, for they speak only of repeated outbursts of what is now known as streptococcal infection and the usual heavy toll of deaths, with consequent closing down of the wards.

The introduction of antiseptics in the late "seventies" gradually changed all this, and although the first attempts at grappling with the germ were not very successful, still, by continued effort, such an improvement resulted that for some years now streptococcal infection may be said to have been practically banished from lying-in hospitals and the obstetric wards of general hospitals, although occasional outbursts are from time to time reported in outlying districts.

As an obstetric clerk I remember officiating at several labours under the carbolic spray; nothing could be more disagreeable for patient and attendant, and the absorption of the carbolic acid occasionally produced carboloria and pneumonia. Anyone interested in the subject has only to refer to the late Dr. Robert Boxall's interesting and

exhaustive paper on "Fever in Child-bed,"<sup>1</sup> read before the Obstetrical Society, in which he showed from the statistics of the General Lying-in Hospital how by gradual experiments in various antiseptics, beginning with permanganate of potash, followed by carbolic acid, and, lastly, by mercury, septic mortality and morbidity was steadily reduced.

During the last few years asepsis has somewhat replaced antiseptics; by that I mean sterilised dressings and gloves being used in place of strong antiseptic solutions. I must confess, however, that I know of nothing safer than the spirit solution of 1 in 1000 hydrarg. biniodide.

#### *Care of Mother in Pregnancy and Puerperium.*

Although streptococcal infection may be said to be a preventable accident, another formidable infection exists in *Bacterium coli*, the ravages of which are not yet fully grasped. The frequently depreciated health in pregnancy, especially among the poorer and ill-fed classes, is a fertile cause of this bacillus over-riding its natural barriers and infecting outside organs, especially the bladder, liver, and kidneys. In a recent paper I have endeavoured to show that very grave and even fatal results may occur from infection of the bile ducts by this organism.<sup>2</sup> The gonococcus, it need hardly be stated, is a formidable complication of the pregnant condition and may lead to a permanent disablement from infection of the tubes.

Pregnancy and labour are still looked upon by a large number of the laity as perfectly normal processes, but my experience, and I think that of hundreds of others, is that with our present conditions of life such is not the case.

I have always advocated the regular pelvic examination of women during the whole of pregnancy and the puerperium, in addition to a careful pathological examination of the excreta. When a patient misses a period and presumes herself pregnant a pelvic examination will reveal the possible presence of an ovarian dermoid cyst or uterine fibroid or other pathological condition which could be satisfactorily treated at the time. Examination at intervals should show a steady increase in the size of the uterus and an absence of any pathological products from the urine or faeces. Pelvic measurements are of great importance, and should there be the slightest suspicion of diminution or disproportion in any of the diameters of the pelvis the patient should be examined at fortnightly intervals, from the thirtieth week onward to term. Any deposit in the urine not clearing up by boiling should arouse a strong suspicion of bacilluria, and the practitioner should not be content with an ordinary test-tube examination.

It has also been my custom during the lying-in period to measure the level of the uterus daily for the first week, and to examine the pelvis internally at the end of a fortnight, and again at the end of three weeks, when the patient rises from her bed; subinvolution and retroversion of the uterus and unhealed lacerations are in this way detected.

#### *Abstract of Fatal Cases.*

I now append a short abstract of each of the seven fatal cases.

##### *Acute Peritonitis.*

CASE 1.—Aged 35, a 5-para, all at term. Pains began a month prematurely, vertex presentation, the labour lasted nine hours and delivery was natural and easy, a male being born alive. At the last labour, two years before, she had an acute attack of pain in the right iliac fossa, with temperature; this subsided and she remained quite well until a few days before the onset of the present labour; she then had several severe attacks of pain in the right iliac fossa, with temperature; labour came on prematurely during one of these attacks and continued after the labour. The patient died of acute peritonitis after 36 hours' illness; she was very weak and ill during the labour, with a rapid pulse and a hot, dry skin. A post-mortem was obtained, which showed general peritonitis over the lower abdomen, its focus being a gangrenous appendix lying in a cavity of putrid pus, the size of an orange.

It must be noted that this case occurred in 1883, at which period the pathology and treatment by operation of disease of the appendix was not sufficiently recognised; had I seen this case at the present time no doubt the proper course would have been to open the abdomen before labour commenced, and a satisfactory issue might have resulted.

<sup>1</sup> Obstetrical Transactions of London, 1889, xxxii., 215, 275.

<sup>2</sup> Hepatic Toxæmia, Royal Society of Medicine, Obstetrical and Gynecological Section, 1916, 115.



I have contributed a short paper on this subject entitled "Acute Peritonitis (without Discovered Cause) Complicating Pregnancy and Labour."<sup>3</sup>

In this is related the case of a woman, nearly seven months pregnant and in good health, who fell over a chair-back on her left side. Much pain and persistent vomiting followed. She was found in a very serious condition, her abdomen distended, pulse 120, temperature 103° F., and respirations 48. Though no proper pains could be distinguished, labour came on and terminated very quickly. Her condition became rapidly worse, her abdomen was opened and general peritonitis found, but no apparent cause. Free drainage was carried out, but the patient died in the course of a few hours.

Cases of a similar nature described by Simpson and Gow are too sparse in their details to draw any satisfactory conclusion from.

#### "Russian" Influenza.

I believe this to have been one of the earliest cases of what was then called "Russian" influenza. I was attacked with the same malady within 24 hours.

CASE 2.—Aged 27, seven children. When 8½ months pregnant she was seized with a sharp rigor and all the symptoms of the disease we now call epidemic influenza. Bronchial catarrh rapidly ensued, with distressing dyspnoea and blueness of the face. There was a large amount of liquor amnii present, and, as the cervix was thin and soft and admitted three fingers, in order to relieve her distress the membranes were punctured. Temporary relief to the dyspnoea was given, labour came on rapidly, and a living child was born, followed by a short amelioration of the symptoms, but the bronchial affection rapidly increased and she died in great dyspnoea within 24 hours of the labour starting.

This case fully bears out the experience of the epidemic of 1918, where advanced pregnancy complicated by this disease was in a large proportion of cases fatal in a few days from septic pneumonia, no remedy appearing to have any power to check its progress.

#### Hæmorrhage.

CASE 3.—The patient, a 2-para, whom I had attended three years before with a somewhat difficult labour, was again 38 weeks pregnant. She was then in the country, and without any warning she was seized with severe hæmorrhage. As soon as she had sufficiently recovered from this she was driven up to London, and, unfortunately, during the journey she passed over a level railway crossing at somewhat high speed. She was badly jolted, and a return of the hæmorrhage took place before reaching her journey's end. When I reached her I found her almost pulseless, with the cervix two-thirds dilated and the edge of the placenta presenting posteriorly. I therefore ruptured the membranes and proceeded to endeavour to restore her by venesection and saline injections. She did not respond very well to this treatment. In the meantime the hæmorrhage all ceased, labour pains came on, and the head descended into the pelvis. Immediately on full dilatation of the cervix I applied the forceps without an anæsthetic and lifted the child out quite easily; it was stillborn. For an hour she tended to improve under the action of the usual restoratives, but after that she rapidly sank without any further hæmorrhage.

Had I seen this case during the first hæmorrhage the obvious treatment would have been a Cæsarean section, but her condition after the second hæmorrhage was so grave that no possible attempt at operation could be made.

#### Concealed Accidental Hæmorrhage.

CASE 4.—This patient, a 2-para, was at full term and was suffering from cardiac trouble, namely, pericarditis with aortic stenosis. She remained fairly well until the day of the labour. I had previously ascertained that the presentation was a vertex and the pelvic condition normal. Her pulse, however, was small and quick, much accelerated by any exertion; there was no albumin or swelling of the feet. She was suddenly seized with abdominal pain while at lunch on the day of her labour. On seeing her about an hour afterwards I found her in a collapsed condition, the uterus being hard and tender. Labour pains were slight, but the cervix was slowly dilating. All attention was therefore directed to her general condition, oxygen was given to inhale, salines were injected with strychnine and musk subcutaneously, but none of these remedies appeared to produce any improvement in her pulse. When the os uteri was fully dilated I applied the forceps and delivered easily without an anæsthetic; the child was stillborn. Immediately on delivery two measured pints of recent blood clot escaped. She slowly sank, and died in about an hour.

This is quite a characteristic case of concealed accidental hæmorrhage. The cardiac complication was most unfortunate. I treated her on the lines generally laid down in my article on "Pregnancy and Cardiac Disease."<sup>4</sup> It is difficult to decide to what exactly to ascribe the patient's death. In two similar cases of concealed accidental hæmorrhage which I have encountered, a larger amount of blood was lost without producing more than an ordinary amount of temporary shock, and in both cases the child was alive, though in each case resuscitation was difficult. She had been warned against pregnancy by more than one authority on heart disease, so that apparently the extra strain of pregnancy and then the hæmorrhage were sufficient to produce what must be termed "shock." Quite possibly had the drug pituitrin been in existence it might have done something towards saving her life. If the cardiac condition had been more sound, I think Cæsarean section would have been indicated.

#### "Hepatic Toxæmia."

CASE 5.—This case is described under "Hepatic Toxæmia," (Case 1).<sup>5</sup> The patient was a primigravida, with well-marked pelvic contraction, for which induction of labour was carried out. For some weeks before labour sickness and prostration had been observed. Labour was quite easy and delivery natural, and there was no apparent reason for the child's stillbirth. The progress of the case immediately after labour was most unsatisfactory, the vomiting continued and shortly afterwards contained altered blood. Jaundice supervened and the patient died in 48 hours, with a temperature of 110°. A post mortem was obtained and a difference of opinion occurred as to the exact cause of death, one of the pathologists considering it a case of acute yellow atrophy of the liver, and another, hepatic toxæmia.

Assuming that this was a case of acute yellow atrophy of the liver, it is the only one of the kind that I have ever encountered. I believe that such cases are uniformly, rapidly, and progressively fatal, no remedy having, so far, been discovered.

#### Pregnancy following Abdominal Uterine Fixation.

CASE 6.—This patient, a 6-para, had not been pregnant for seven years. She had had uterine fixation for prolapsus, which had improved her health very much. I did not see her until the thirty-eighth week, when a very serious condition of things was present. The fœtus was lying transversely in the abdomen in a hi-lobed swelling, the narrow portion of which was produced by adhesions from the old operation. The head lay in one dilatation, the buttocks in another. At a consultation the question of Cæsarean section or immediate induction was discussed, and the latter decided on. The labour proceeded quite quietly until dilatation of the cervix was sufficient to bring down a leg. I carefully turned and was surprised how easily it was brought about. Labour terminated rapidly, a living child being born; the placenta was expressed in the ordinary course and the patient appeared quite well for an hour. She then became faint, and, although there was no hæmorrhage and I had explored the uterine cavity to eliminate any question of rupture of the uterus, she died in spite of all attempts to restore her.

It appeared that on two other occasions at her labours she had nearly succumbed from heart failure without any apparent reason, and it is quite probable that the stretching of the adhesions between the uterus and the abdominal wall during labour produced reflex inhibition of the cardiac apparatus. This case was an instance of the risk that attends pregnancy following an abdominal uterine fixation. In the old operation the sutures were passed through the fundus uteri, which prevented dilatation as the pregnancy advanced. In the more modern operation the sutures are passed low down, thus allowing dilatation of the fundus without producing either a miscarriage or difficulty at labour.

#### Secondary Post-partum Hæmorrhage.

CASE 7.—This patient, a primigravida, was at full term. The labour was a long and lingering one owing to slow dilatation of the cervix and an occipito-posterior presentation. The cervix was finally manually dilated, the head was rotated with the forceps, and delivery carried out. No complications followed, the placenta being easily expressed, and no hæmorrhage occurred. Forty-eight hours after labour her child had a slight convulsion, and an unwise relative walked hurriedly into the room and told her of it. I had seen both mother and child about two hours before and both were doing well. Almost immediately on receiving the news she had a violent secondary post-partum hæmorrhage and

<sup>4</sup> Practitioner, June, 1895, "The Management of the Pregnant, Parturient and Lying-in Woman Suffering from Cardiac Disease."

<sup>5</sup> Royal Society of Medicine, Obstetrical and Gynaecological Section, 1916, p. 115.



died within an hour, despite uterine plugging and the usual restoratives. I might add, however, that she was one of the most nervous and apprehensive patients I have ever attended.

#### *Statistical Data.*

The question to consider is, Can the present percentage of maternal mortality in child-bed be further reduced? This mortality may vary very much according to whether the labour takes place in a special ward, in private practice, or in outdoor maternity practice.

For instance, in 1916, in the outdoor department of the Ladies Lying-in Charity, Liverpool, 1086 cases were attended by midwives, with 2 deaths (0.18 per cent.).

At the General Lying-in Hospital in 1917, 870 cases were attended, with 5 deaths (0.5 per cent.), and in 1918, 914 cases, with 6 deaths (0.6 per cent.).

My own experience in special practice amounts to 2100 cases, with 7 deaths (0.3 per cent.). At a home for officers' wives, where labours are carried out under the best possible conditions and where all the patients are examined and reported on beforehand by myself, 240 were attended in 20 months, with 1 death (0.4 per cent.). This death occurred a few days after a normal labour owing to a severe abdominal operation for old-standing intestinal obstruction, a condition which had arisen independently of the pregnancy.

The mortality of every variety of practice thus varies from 0.18 per cent. to 0.6 per cent. These divergencies of results may be accounted for in many ways. At a lying-in hospital all the serious cases are admitted, some of them in a state of acute sepsis, others moribund from delay in delivery; and, I think, the statistics of the General Lying-in Hospital may be considered a very fair indication of the results obtained in the class of cases admitted to such an institution. There is also the element of what can be called "chance"—for instance, my first two cases occurred in a short run of 40 labours; then followed an unbroken series of 636 cases without a death.

In private practice the patients are generally well-to-do, in healthy surroundings, and under the care of the family doctor. This class should be more likely to produce a low percentage of mortality than a lying-in hospital, where the patients have often been ill-fed, have lived in filthy surroundings, and may be admitted in an already infected condition.

#### *Prospect of Reduced Mortality.*

In studying the cases of death in my practice we have to consider whether any different treatment would possibly have saved any of the seven cases. The chief advance resulting from the antiseptic system is, no doubt, the perfection of Cæsarean section. This operation is now applied with the greatest success in a much extended class of case, more especially in placenta prævia occurring in primigravida; and in selected cases in multipara; in concealed accidental hæmorrhage, and in most cases of puerperal convulsions in first labours. Thus it is quite possible that Cases 3 and 4 might have been saved by a prompt Cæsarean section. Case 1, under modern treatment, would also in all probability have been saved. Were I to meet a case similar to No. 6 again I should be inclined strongly to advise Cæsarean section in place of induction. If Case 5 was acute yellow atrophy, then it was practically hopeless from the onset of the disease, as I know of no case of recovery under those conditions. Finally, the last case, No. 7, was one of those accidents outside the control of the medical practitioner, but it serves as a warning to those who think that excitement is not harmful to the lying-in woman. Although Cæsarean section can be properly applied more extensively, I feel that the tendency is for the pendulum to swing in a somewhat extreme direction, and that in many cases of slight pelvic contraction, in which Cæsarean section is resorted to, an equally good result might be obtained by induction of labour.

From these statistics it is clear that maternal mortality in child-bed is certainly in process of being reduced, and the question now is whether we have at our disposal any means to reduce this mortality further.

Another important complication of pregnancy—namely, what is called "pregnancy kidney"—may, I trust, ultimately be treated successfully when the physiological chemist has discovered its cause. Vaccine treatment may also be expected to be much in evidence, especially against toxins and *Bacterium coli*.

With regard to the use of scopolamine morphine (twilight sleep), my own experience is that, although in some cases it acts like a charm, its results are not sufficiently reliable, and it certainly is not free from risk to both mother and child.

## THE CONDUCT OF LABOUR AND PUERPERAL SEPSIS.

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FROM that large majority of general practitioners who accept midwifery as part of their usual work, the dread of puerperal sepsis is never absent. When looking back nearly 40 years one contrasts the methods of that day with the present technique the enormous improvement is borne in upon one. To gauge results by hard figures is to admit, however, the comparatively small reduction in the mortality rate from puerperal sepsis. Indeed, the returns for the last 70 years prove that, for some of the earlier years, the death-rate was almost identical with some quite recent ones. Dr. Victor Bonney,<sup>1</sup> in his admirable address on the Continued High Maternal Mortality of Childbearing, the Reason and the Remedy, deplores that, while in every other domain of surgery death from sepsis has almost been abolished, in midwifery it has hardly diminished.

Some points bearing on the question have not, in my opinion, been sufficiently brought into the light of day, or made to bear the responsibility rightly belonging to them. I believe the reason for the high death-rate from puerperal sepsis resides in these facts; and not until their proper importance in the conduct of labour is accorded to them can we hope to attain asepsis.

#### *A Vindication of Nature.*

I take it that Dr. Bonney is inclined to attribute a part of the blame to a faulty surgical technique on the part of doctors and midwives, and partly to the difficulty of sterilising the "area of operation," owing to the position of the vagina. He considers this to have been a blunder of Nature. If so, she has persisted in repeating it in a very wilful way almost throughout the mammalia. And, as if to emphasise her cynical disregard for the end of the genital canal, she has gone out of her way further to outrage surgical propriety by causing the sexually mature woman to produce an abundant growth of coarse hair almost completely encircling the vulva, and practically incapable of sterilisation. Now, the first duty of Nature is to preserve the race, and to do so she would scarcely be furthering her ends by introducing two death-traps in close proximity to the vagina.

I have no doubt that, in determining the plan of the human body, Nature thought of healthy bodies; a physiological process for delivery; and the practice of sexual intercourse merely for the propagation of the species, and not as a pastime. As a determining factor in sepsis at the time of labour, provided there has been no interference and no examination on the part of the medical man or midwife, I am of opinion that the "external" area of operation—viz., vulva and perineum—plays an insignificant part. For some excellent observations on this point I would refer readers to Dr. Routh's remarks at the reading of Dr. Bonney's paper.<sup>2</sup>

I do not wish it to be understood that I minimise the importance of sterilising this area as far as possible. But I believe that the real danger zone begins inside the vulva and increases in danger the nearer we approach the placental site. If the presenting part could reach the perineum through a sterile canal I do not think the external area of operation would be a serious menace to the patient. It is precisely on this external area that most of the surgical care has been lavished with such disappointing results; while the sterility or otherwise of the far more dangerous zone from within the vulva to the placental site—the real operation area—has been passed over in silence and that area assumed to be surgically clean. I am of opinion that the reason why there is such a large amount of sepsis still rampant in parturition is that the woman begins her labour with the vaginal canal, and sometimes the uterine canal, surgically unclean.

#### *Some Personal Reminiscences.*

Before I adduce the reasons which lead me to hold this view and put forward the well-known clinical fact that proves it conclusively, I will recall the conditions under

<sup>1</sup> THE LANCET, 1919, i., 775.

<sup>2</sup> THE LANCET, 1919, i., 796.



which midwifery was practised when I was a student, so as to show that, in spite of the uncleanness of the patients and the appalling conditions under which the majority of them lived, our results, though not quite so good as at the present day, were not so many points behind. It will help to show that, in spite of the vast improvements in housing and external cleanliness of the patient, and the scrupulous care that the doctor now takes to make himself and keep himself surgically clean during the conduct of labour, we have not succeeded in abolishing sepsis, but only in reducing it moderately. Such improvements apparently do not give the complete key to the conquest of puerperal sepsis.

Just 36 years ago I attended my first case of labour, in a mews off Gower-street. Students carried a midwifery bag, and in it were about half a dozen bottles, containing ergot, opium, chloral, sp. am. aromat., pure liquid carbolic acid, and perchloride of iron. A pot of carbolised vaseline, a Higginson's syringe, a perineum needle, and silver wire completed the equipment. Our district included some of the worst slums in London, and only those who lived and worked in them at that time can form any idea of what they were like.

The patient was prepared for the labour by having her clothes removed above the waist and her nightdress slipped on and tied up below the arms. Below the waist she very often retained her dress and petticoat. The bedspread consisted of an old blanket folded on brown paper, and the baby was usually wrapped in a petticoat when it arrived. Before examining the patient we removed our coats, washed our hands, and then rinsed them in 1 in 40 carbolic. The finger was anointed either with carbolised vaseline or with carbolic oil. The perineum and vulva were never cleansed before examination. The patient, as a rule, perambulated the room until the head came on to the perineum. Dress and petticoat were then loosened from the waist, and she got on to the bed. The dress and petticoat were drawn out of the way and the delivery took place. After the placenta had been expressed the nurse washed up the patient, and the soiled garments were pulled off. Those were the days of douches; and usually an antiseptic douche was given before we left. As a rule, the patient had douches for the first few days after labour.

#### *A Puzzling Result.*

Worse conditions for the patient can hardly be imagined; and the medical attendant was certainly neither aseptic nor rigorously antiseptic in his methods. In spite of this, no case of puerperal septicaemia occurred amongst the cases of the six men "on the list" for the month; nor did any case occur during my tenure of office as obstetric assistant. Of what we used to call sapraemia we had an abundance. The majority got well with vaginal douches, while a few required intra-uterine irrigation. Of deaths from puerperal sepsis, I am certain there were none, either while I was on the student midwifery list, or when I was in charge of the extern midwifery department. Of ophthalmia, we had plenty of examples; for we did not, at that time, wash out the eyes immediately after birth nor instil anything into them.

This is a puzzling result, if puerperal sepsis is invariably carried to the patient either by doctor or midwife, through carelessness in asepsis or antiseptics, or contracted through an uncleanly environment. These women ought to have died like flies, but they did not! They all made excellent recoveries. Far be it from me to underrate the urgent importance of surgical cleanliness for the successful conduct of labour and the safety of the patient. I only wish to throw up into relief the fact that it is precisely these conditions which have undergone such steady and vast improvement during the last 30 years with such disappointing results. They quite patently do not give the complete answer to the question that we are trying to solve; and we must therefore look around for some other clue. Dr. Bonney himself refers to the disappointment of the high hopes that were raised upon the introduction of trained midwives into obstetric practice. Some slight reduction of the mortality rate from sepsis followed; but once more the old experience reasserted itself, and the decline has not continued.

#### *Condition of Maternal Passages.*

Why has it come to a standstill? Why does sepsis continue to claim its yearly toll of victims amongst parturient women? The reason, I believe, is that the

maternal passage—the "internal area of operation"—nearly always contains the germs of sepsis within itself, at the time of labour. The route along which the fetus will have to travel, before it reaches the world, is practically never sterile.

On what do I base this assumption? *Simply on the notorious clinical fact of the prevalence of ophthalmia and conjunctivitis among children, within the first week of birth.*

We have succeeded to a large extent in suppressing the evidence of the existence of the infection by immediately washing out the baby's eyes with an antiseptic; but that does not alter the fact that the infection is there all the same in the maternal passage, and would have claimed its victim if we had not promptly intervened and destroyed it. Only let the nurse be careless in performing this duty and we shall not long be left in doubt about the reality of its existence.

Some dissentient may say: "What proof is there that this also is not an extraneous infection carried into the mother?" The proof consists in the fact that it may, and does, occur when there has been no interference in labour; and also, that the organism which produces the most virulent type of infection is the gonococcus. Most medical men would repudiate the suggestion that they possessed such a frequent and intimate association with this unpleasant invader as this hypothesis demands.

Now, what are the organisms that produce puerperal sepsis? They are varieties of streptococci, staphylococci, gonococci, and, as Dr. Bonney claims, also *Bacillus coli*.

What organisms cause ophthalmia? We know that the most virulent infection is due to the gonococcus, in which the conjunctival sacs become converted into bags of pus and sight is imperilled, unless the infection is promptly and vigorously dealt with. But not all cases of conjunctival infection after birth are due to this destructive organism. Everybody knows that there are all gradations of conjunctival inflammation after birth, varying from slight redness of the conjunctiva or inflammation with a minute drop of pus at the inner canthus occasionally during the day; or congestion, with thin muco-purulent discharge from the lids; or cases with a very small amount of discharge that dries on the ciliary margins and forms a powdery deposit. These cases are not ophthalmia neonatorum, but they are evidences of conjunctival infection by organisms in the vagina. Streptococci, staphylococci, and *Bacillus coli* may all produce conjunctivitis.

#### *How the Infection is Carried.*

Now, supposing that all these organisms do cause conjunctival infection of varying degree—and they most certainly can—what evidence is there that they are present in the vagina before labour? The evidence only requires that I shall produce proof either that they can be carried into the vagina by someone already infected, and acting as a carrier, or that they are transported either by the penis itself or from the area immediately adjacent to the vulva as it enters the genital canal for intercourse.

Of all venereal diseases gonorrhoea is the most prevalent, and it is one that in the majority of cases is incompletely cured. It is often associated with a secondary streptococcal infection; and it is now known that these organisms may persist for very long periods, either in the urethra or in the prostate or vesiculae, long after all external evidence of the disease has ceased and the patient believes himself cured. He is not well, and may infect his wife and child with the organisms of which he is a carrier. I do not know what proportion of the male population, at some period or other of their lives, suffer from gonorrhoea; but, judging from medical histories gleaned in the course of ordinary clinical examinations, it must be pretty heavy.

The transportation of streptococci, staphylococci, and *Bacillus coli* into the vagina is very easy. The skin of the penis and that of the vulva and female perineum are probably the most heavily infected cutaneous surfaces in the body. The penis is grasped with unwashed and soiled hands, and must receive many and various organisms, including streptococci, staphylococci, and *B. coli*. The organ is within trousers of varying age, which in most men have a flora of their own. When we turn to the lady conditions are present for supplying the organisms, as the average vulva and perineum must be suitable culture beds.



Should any be still doubtful as to the possibility of *Bacillus coli* and streptococci being introduced into the vagina from without they will do well to ponder also the question of their invasion of the vagina from within the body. With intestinal stasis and oral sepsis of common occurrence amongst women, the invasion of the bowel wall by these organisms is frequent, whence excursions to other and various parts of the body result. We know that both these organisms attack the kidney and bladder from the bowel, whence they are excreted in the urine and pass through the meatus urinarius. Once at the meatus, are they not within the portals of the vagina? What these organisms can accomplish via the urine they can also probably accomplish by direct attack on uterus and vagina in conditions of intestinal sepsis. In fact, I think the day may come when some portion of the cases of puerperal septicæmia may be traced either to intestinal stasis or oral sepsis.

#### *Evidence of Sepsis of the Vagina.*

There is no gainsaying the fact that sexual intercourse is practised by most people without the smallest attention to the cleanliness of the organs concerned. It is quite clear that in this way organisms must be introduced into the vagina, and as *Bacillus coli*, streptococci, and staphylococci abound in the organs they must be introduced into the vagina during intercourse. Add to this the frequency of latent gonorrhoeal and streptococcal infection of the male urethra, and the evidence of sepsis of the vagina becomes complete.

All this would be bad enough if it only occurred once during gestation. From inquiries made I am positive that the nauseous habit of sexual intercourse during pregnancy is the rule and not the exception, and that it is continued sometimes far on in gestation—at times, in fact, as long as mechanical conditions will allow. What would any surgeon say if he were asked to operate in an area that received the amount of soiling that is but the too common fate of the vagina? Yet this is what falls to the lot of the medical attendant at a confinement! I contend that, with our present methods of conducting labour, it is small wonder that disaster sometimes follows. The marvel is that accidents are not more frequent.

Some years ago I had a very conclusive proof of the capability of the uncleansed, but otherwise healthy, penis of causing puerperal sepsis. I attended a patient who had a perfectly normal labour. Until the morning of the eighth day recovery was uneventful and the temperature normal. On that day I was surprised to find the temperature between 100° and 101°. The vagina was washed out; on the ninth day the temperature was normal. On the tenth day it had again risen, and again the vagina was washed out. The temperature came down to normal, and remained so for two days, when it rose again. I was completely at a loss for an explanation of these fitful rises of temperature coming on after a period when the risk of puerperal sepsis was usually at an end. While debating these facts in my mind in the patient's bedroom I became aware that I was looking fixedly at a second pillow in line with her own. Without more ado I asked her if her husband had been occupying her bed since the end of the first week. I extorted a confession not only of that fact, but also that sexual intercourse had taken place on the nights preceding the morning rise of temperature. I had my little say and with it the trouble vanished.

#### *The Conduct of Labour.*

The problem, therefore, that the medical attendant has to solve is to deliver the child through a septic maternal passage, with a vulva and perineum also heavily infected. A portion of the problem has been already solved and has resulted in wiping off some part of the death-rate from sepsis, but part remains to answer still.

Concerning the surgical preparation of patient and attendant Dr. Bonney has dealt completely. One point as regards the toilet of the patient might be added—that the vulva should be shaved as for any other surgical operation. No doubt it would be a good deal opposed by patients, but I think it very important, in view of the impossibility of sterilising hair and the great danger of introducing septic organisms into the vagina, should interference be imperative. Should interference not be necessary this could be dispensed with.

What should be our attitude towards the vagina during the conduct of labour? Most certainly by every possible means we should avoid the necessity for internal examina-

tions. Parturition is a physiological process, and in quite 95 per cent. of cases the patient is capable of delivering herself. No doubt when Nature placed the vagina in front of the anus and surrounded the vulva with hair she hoped that this fact would be recognised, and that no unnecessary interference with the genital passage would become the fashion during the performance of this physiological act. Labour is a reflex act, and can be successfully conducted, not only without medical assistance, but also independently of the volition of the patient. Several cases are on record where pregnant women with complete transverse lesions of the cord have successfully accomplished it. Dr. Amand Routh reported such a case some years ago, and quite recently Dr. Drummond Robinson reported another.

#### *Avoidance of Internal Examinations.*

It is well known that women who have delivered themselves before the arrival of the medical attendant very rarely come to any harm. This was in my mind when making the assertion above that—provided there had been no interference—the perineum and vulva play but a small part in the causation of sepsis. The rule in the conduct of labour ought to be to avoid interfering with the genital passage wherever possible. It matters not whether the perineum and vulva be made as far as possible aseptic, and the medical attendant's technique be also rigorously aseptic, if he is going to conduct the labour by frequent examinations carried up as far as the cervix, through a vagina which, in the majority of cases, is contaminated with a variety of organisms. The perfectly aseptic gloved finger, if the vagina is septic, is capable of carrying up organisms from its walls, and smearing them on the inside of the cervix, and thus bringing them within reach of the most dangerous zone of the operation area—the placental site. If my contention is correct that conjunctival infection of the child is proof of sepsis of the maternal passage, then it becomes evident that to introduce even an aseptic finger into the vagina and carry it up to the inside of the cervix is fraught with considerable risk and should only be done if unavoidable.

The anxiety in the minds of medical men as to the state of the os is deep-rooted and genuine; and no wonder, since from hospital days they have always been exhorted to pay attention to it, and examine its size, consistence, dilatibility, &c., when called to a case of labour. I have known this anxiety spread even to a patient, who informed me on entering the room that I should find "the boss rigid"! After looking at the anus and perineum, I was able to assure her that this time the "'oss was a'doin' is best," and she need not worry. I know nothing of the routine now followed by lying-in hospitals during the course of labour; but I suspect that no inconsiderable part of their success in reducing sepsis is due, not merely to rigorous asepsis of patient and attendant, but also to the avoidance of internal examinations.

As far back as 1885, when I was a resident student at the Rotunda Hospital, Dublin, no patient was allowed to be examined more than once during the course of labour; and then only after thorough preparation of hands and forearms with soap and water and nailbrush, followed by soaking the hands in perchloride of mercury solution for three minutes. I have no doubt our patients on the midwifery list, when we were students, escaped septicæmia because they usually summoned us late in the course of labour, when the head or presenting part was in the middle or lower part of the cavity of the pelvis and fairly through the os; when danger of inoculating the cervix by examination was over; or, frequently, the child was born before our arrival. It was also the time of douches; and usually the vagina was washed out after labour.

#### *Nature's Method of Sterilising the Vagina.*

I have tried to show the undesirability of vaginal examinations during labour, on account of the undeniable fact of sepsis in the maternal passage: as evidenced by conjunctival infection in the newly-born child. It can be shown also that, in making such examinations, we are reversing and largely annulling the methods that nature brings into play to sterilise the vagina and wash out intruding organisms.

One of the earliest changes in the uterus, on conception, is oedema of the cervix, which steadily progresses throughout gestation. I do not think this phenomenon is the result of pressure, because it starts almost with impregnation. What-



ever its cause, my opinion is that it subserves a purpose over and above that of increasing the dilatibility of the cervix. With the progress of the presenting part the cervix becomes gradually dilated and subjected to an increasing pressure. As a result vessels are ruptured, and tears small or large occur. The torn vessels are sealed, and from them exudes a copious flow of serum mixed with extravasated blood. The purpose of this serous exudation is, doubtless, physiological, and it is in all probability bactericidal, resembling the flow of lymph after wounds in other parts. Its rôle is probably partly to cleanse the vagina and partly bactericidal to retained organisms. It is tempting to suggest that, when impregnation occurs, there is a local retention of salt in the tissues of the cervix, which attracts fluid to itself and stores up a lymphagogue, to be put to practical use during labour.

While all this is a physiological process and wholly beneficial to the patient, it becomes far otherwise if vaginal examinations are made the rule in labour. Instead of a protection, it may be a menace to life. Granting that the vagina must, in most cases, be a canal harbouring noxious organisms at the time of labour, the danger of introducing a finger and carrying it up to a wounded cervix is apparent. If the finger is also introduced inside the cervix and swept round between the bag of membranes and the uterine wall, we may be simply implanting colonies of organisms on the uterine wall, and with nothing between them and the uterine sinuses. Now, the organisms which we have shown reason to believe most likely to gain entrance to the vaginal canal are gonococci, streptococci, staphylococci, and *Bacillus coli*. Of these four the one with the power of causing a specific effect is the gonococcus; but it shares with the others the ability of producing non-specific inflammations in other parts of the body. All of them may enter the blood stream, and, by causing bacteriæmia, set up inflammatory foci in various tissues. How careful, then, ought we to be to avoid bringing them into contact with wounded surfaces. Of all possible channels for the entry of organisms vascular lymphatics are easily the first.

#### *Some Guiding Rules.*

If the facts that I have endeavoured to make plain are true, what should be our method in the conduct of a case of pregnancy and labour? In my opinion it should be as follows:—

1. The patient should have a general physical examination, and the state of her health should be accurately gauged.

2. At the time of examination the urine should be examined, and the examination should be repeated at intervals of two months.

3. The external diameters and circumference of the pelvis should be taken; also indications of marked lateral curvature, old angular curvature, and past rickets should be looked for.

4. A careful abdominal examination should be made between the seventh and eighth months, or later if the pelvic measurements are normal, to ascertain the position of uterus and contained fetus. By training this method yields accurate results, and the presentation can be determined with practical certainty. The position of the foetal heart sounds in this connexion is of great importance and should be always noted.

5. If the patient is a multipara the history of previous confinements should be obtained.

Armed with this knowledge it will be possible to conduct the vast majority of labour cases without vaginal examination.

Up to the present it has been too much the fashion to recognise only external sources of infection and the methods by which they may gain entrance to the maternal passages during labour. The equally important fact that vaginal sepsis is already present when labour starts, as proved by conjunctival infection in the newly-born child, has been waived as absurd and this important clinical fact not rated at its proper significance and gravity. A few will grudgingly admit that on rare occasions autoinfection may occur. Not on rare occasions, I submit, but on every occasion, should the possibility be held in mind, and a septic canal be as seldom interfered with as the safety of the patient will allow.

Dr. William Ewart Gye announces that he has formally relinquished the surname of Bullock and assumed the name of Gye. His address remains as in the Medical Register, 1919.

## KINEPLASTIC AMPUTATIONS.

BY M. FITZMAURICE-KELLY, F.R.C.S. ENG.,

ACTING MAJOR, R.A.M.C.

THE object of this paper, which is a preliminary communication, is to present briefly the methods employed, and the results obtained, in a series of kineplastic amputations recently performed at the Pavilion Hospital, Brighton. The subject has, so far as I am aware, found a very small place hitherto in British—or French—surgical literature and practice; but the pitiable plight of men who have lost an arm seems to call for a very thorough trial of any method which holds out the hope of better things, while the results so far obtained justify the expectation that the method may be found of great value.

#### *Selected Cases.*

The cases selected for trial were, in the first instance, those with amputation stumps which were unsuitable for the fitting of an artificial limb; short forearm stumps—two to three inches below the elbow, measured from the tip of the olecranon process—or stumps a little longer, with partial and incurable limitation of movement in the elbow-joint. Later, in longer forearm stumps, tunnelisation of the muscles was tried, and finally amputations through the elbow- and wrist-joints were operated upon by a method arising out of previous experience. It is not my present intention to lay down definite indications for kineplastic amputation; I think it may fairly be claimed that the cases so far selected had nothing to lose by the operation and much to gain in the event of success. And there now seems ground for hope that the advantages will be great enough to justify the sacrifice in length in stumps hitherto rated as useful.

#### *Literature.*

In starting this series, which at the time of writing includes 13 cases operated on in the last eight weeks, I found considerable difficulty in getting much light and leading from the literature at my command. By far the most valuable paper was Vanghetti's<sup>1</sup> on General Principles; Pellegrini's<sup>2</sup> contribution contained useful suggestions on the technique of tunnelisation, while critical abstracts from German surgical literature in the *Medical Supplements* issued by the Medical Research Committee gave valuable hints, chiefly on methods which it seemed desirable to avoid. For the rest—and I imagine it will be the case with most surgeons—I had to devise my own technique and modify it as the particular cases demanded.

#### *Plastic Motors: Technique.*

The forms of plastic motors attempted have been two: club-shaped motors, built up of muscles with their bony insertion, or an adventitious bony attachment, and loop motors, made by constructing a canal or tunnel lined with skin and surrounded with muscle or tendons. Of the 13 cases operated on, in 4 club-shaped motors alone have been made (two each in 3 cases and three in the fourth); in 3 cases skin tunnels only have been constructed (one in each case), while in the remaining 6 cases, two club-shaped motors and one tunnel have been made in each case. In describing the technique, it will be simplest to deal first with the tunnelisation method, and then to give the various methods used to make the club motors.

*Loop motors.*—In making the skin canals, the double-pedicle method suggested by Pellegrini has, in the main, been followed. The length of the canal required will vary according as muscle or tendon is to be used for the loop; but there is an advantage in making it short and wide, as the blood- and nerve-supply is better, and the tendency to excoriation less. Two incisions are made of the length required, parallel with one another, and 2 inches apart. From the ends of each cut oblique diverging incisions are made in a proximal direction. The lower end of the area so marked out is dissected up, with the subcutaneous tissue down to the deep fascia, and the upper edge is freed until the skin can be rolled up to form a canal by union of the edges of the two original incisions. These edges are then united with a subcuticular suture of fine silkworm gut and reinforced with a few points of catgut in the subcutaneous tissue. The subcuticular suture gives accurate apposition and is easily removed. The canal being thus formed, the deep fascia is opened

<sup>1</sup> Archives Médicales Belges, June, 1913, p. 653.

<sup>2</sup> Ibid., p. 675.



above and below, the muscle or tendons which it is proposed to place superficial to it selected, brought over, and sutured to the deeper parts on the distal side of the canal. It is important that both the superficial and deep tendons or muscles should be liberated from attachments or adhesions below and the canal itself freed from attachment to the deep fascia, in order to obtain the greatest possible freedom of movement and the widest excursion. The motor so formed is then covered in by a plastic operation, gliding flaps from above and below, and a piece of gauze packing passed through the canal.

*Club motors.*—The making of the club motors is more difficult, and can perhaps be most easily described as done at the elbow, where powerful muscles with their bony insertions are available. In a typical case, where it is intended to use the triceps and the brachialis anticus, the operation is best performed from behind forwards, as this mode of access keeps the structures it is intended to preserve out of harm's way until the latest possible moment. A tourniquet is applied, and a posterior flap is first marked out with its base equal to half the diameter of the limb opposite the condyles, and including all the available skin on the back of the stump. The incisions will probably need to be prolonged upwards at a later stage. This flap is dissected back to the base of the olecranon process; the latter is sawn through and the joint so opened from behind. The lateral attachments of the olecranon are severed, the posterior capsule divided, and the triceps dissected up from the back of the humerus to a distance of about  $3\frac{1}{2}$  inches above the condyles. The skin covering the superficial aspect of the muscle is left undisturbed. The muscle and its attachment, thus isolated, are wrapped in gauze. The coronoid process is then detached by a saw-cut carried downwards and forwards from the interior of the joint, and the brachialis anticus carefully isolated from the structures on either side. The biceps tendon, if it has not already been utilised to build another motor, is then divided, and the remaining structures—supinator longus and the muscles arising from the condyles—dissected away, all the skin on the anterior surface of the stump being preserved. The brachialis anticus is then separated from the humerus to the same level as the triceps and the humerus then sawn across. The tourniquet is removed, all bleeding vessels tied, and all nerves shortened. The biceps, if available, is stitched to the brachialis anticus, and the two motors thus formed are clothed with skin. In doing this two points need careful attention: one is to place the skin stitches very accurately round the neck of the motor, where pressure will ultimately be taken, and the other is to fix the bony insertion firmly to the skin to prevent retraction. The best method of doing this is by an anchor stitch of stout silkworm gut, which transfixes the tendon close to its insertion and the connective tissue on either side of the bone; the two ends issue through the skin close to the apex of the motor, about three-quarters of an inch apart, and are tied on a piece of drainage-tube threaded on to one end. These should not be tied tightly and should be retained, if possible, for 10 or 12 days.

A certain amount of oozing is inevitable from the large wound involved in this operation; the method of drainage employed is by strands of silkworm gut. About six strands are knotted together, and three or four of these are passed in various directions, one from base to apex of each motor. These are removed after 48 hours, and the wound is not dressed again until the tenth day, when the stitches are removed.

#### *The Two Methods Combined.*

The methods above described—tunnelisation and club motors—have been combined in six of my cases.

First, a skin tunnel was made in front of the arm, just above the bend of the elbow. The biceps tendon was split after being divided low in the wound, and the superficial half brought in front of the tunnel and sutured to the deep part. Then motors of the club type were made of the triceps and brachialis anticus, the plastic operation to cover the canal being left to the end, when it was made easy by taking up the slack skin from the end of the stump. The object is to use the biceps as a supinator of the artificial hand, but none of the cases are sufficiently advanced yet for a definite opinion to be expressed as to whether the motor will develop sufficient power or independence of action to be effective, and in my most recent case I made a third club motor by turning up a U-shaped flap from the front of the elbow, detaching the tubercle of the radius and shortening the biceps tendon by folding it in a Z upon itself.

#### *Another Modification in Technique.*

Yet another modification in the technique, which seems full of promise and of very wide application.

In two cases, amputations through the elbow and wrist-joints respectively, the adventitious adhesions of the muscles were used to make club motors. In the first, pieces of the lower end of the humerus, with the cut ends of the

brachialis anticus and triceps still adherent to them, were bisected off the anterior and posterior surfaces of the end of the bone; the muscles were then dissected up as before, and the shaft sawn through at a higher level. In the latter, pieces of the lower end of the radius were similarly preserved with the flexors and extensors of the fingers attached, and the overlying skin undisturbed. Both healed well and show movement, but are not yet sound enough to take a load.

#### *Review of the Methods Adopted.*

Reviewing the cases, as far as I have gone, I am not favourably impressed with the possibilities of the skin tunnels. Others who have used the method—notably Sauerbruch, Drüner, and other German surgeons, using a technique similar to Rochet's urethroplasty—have had trouble from excoriation of the canals, and though this risk is diminished by making short wide tunnels with a good blood- and nerve-supply, it still exists. More important is their limited range and limited power, as compared with the club motors, and I am inclined to doubt whether they will take a permanent place in kineplastic surgery.

On the other hand, there seems good reason to hope much from the club motors, especially when multiple, and including a pair of antagonistic action. The motor being wholly exteriorised, the covering remains healthy and able to bear pressure, and about the power developed there is, happily, no doubt. That is, after all, as one would have guessed, as the preservation of the bony insertion of a muscle means the concentration of the force it exerts in one available point. And, as far as I have tested them, they bear pressure well, even within a few weeks of the operation. One of my early cases is now on a temporary training apparatus made out of a Thomas arm-splint, working the muscles against an elastic resistance, and, tested with a steelyard inserted in place of the indiarubber tubing, he registered 15 lb. with one motor and 21 lb. with the other at the first attempt. The arm still appears quite wasted, and is, I am sure, capable of much greater development. And several of the later cases are much more promising—the motors have been made longer, and I propose, in one or two of the early cases, to remove an inch more of the humerus to increase the range of the motors.

The apparatus used to attach the motors is a metal collar with hinge and screw adjustment, similar to Putti's. They are made for me in the temporary limb department of the Pavilion Hospital, and coated with vulcanite by a dental mechanic. I have found that it is best that they should not fit accurately, as if they do marked congestion of the motor is caused, and I am now having them made circular for motors which are oval in section, and vice versa. The motor then keeps its colour perfectly, and the patient is more comfortable.

All the cases in the present series are arm amputations, but though the much more satisfactory prostheses available make the problem less urgent in the lower limb, I think there are certain cases in which it is worth while. I refer to the group of short and unsatisfactory stumps below the knee. Some of these, owing to deficient movement, cannot be fitted with a limb; others with very short stumps, after trying a kneeling leg and finding it unsatisfactory, return for re-amputation above the knee. In some of these cases, which I now have under my care, I propose to build motors of the quadriceps and hamstrings, so as to give the patient voluntary control of the knee-joint. It should be easier to do, and easier to fit, than the operations in the region of the elbow.

I regret, and apologise for, the incomplete state in which this work is presented, but judging from the difficulty in coming at any records in English surgical literature, the number of cases on which these observations are based constitutes an exceptional experience. And already I feel very strongly that the club-motor method—and especially its extension by the use of adventitious bony attachments—is that which holds out hope for the future, and it is in the hope that English surgeons will give the method a more extended trial that I present my conclusions in their present form. I hope, later in the year, to bring forward a more complete record, and to show cases.

I have to acknowledge my deep indebtedness to Mr. Muirhead Little, on whose representations this work was undertaken, and whose advice and help in the selection of cases, and in unearthing literature, have been invaluable. Also, to my colleagues at the Pavilion Hospital, Brighton, for much encouragement and help.



OBSERVATIONS ON  
LENGTHENING OF AMPUTATION STUMPS.By W. E. GALLIE, M.B., F.R.C.S.,  
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AMPUTATIONS in which the femur is sectioned less than three inches below the lesser trochanter are most unsatisfactory for fitting with artificial legs. The various suggestions made for overcoming the difficulties have not been very successful. As far as I know, no surgeon has hitherto attempted to lengthen the stump. The following case shows that such a procedure is possible.

*Account of Case.*

Pte. B. was admitted to the Granville Canadian Special Hospital, Buxton, on April 15th, 1918, with amputation of thigh at about junction of upper and middle thirds. The amputation had been performed with equal anterior and posterior flaps; wound had healed, except in centre, where a discharging sinus led to dead bone. On May 3rd, 1918, operation for the osteomyelitis; the terminal inch of the femur was necrotic and had to be removed, thus the bone extended only two and a quarter inches below lesser trochanter. The flaps were sutured back in position; wound healed in two months. Patient was then fitted with a temporary artificial limb, but the femur was so short that when he flexed the hip the end of the bone slipped forward over the top of the socket. We were confronted with the necessity of fitting him with the tilting-table leg or of lengthening the femur.

On Feb. 27th, 1919, he was operated upon again. The flaps were reflected as before and the incision continued up the outer side of the thigh as far as the great trochanter and deepened until the bone was exposed. The muscles were then reflected until the outer half of the femur was laid bare. With an osteotome applied in the sagittal plane a half of the terminal three and a half inches of the shaft of the bone was cut free. This piece of bone was slid downwards so as to lengthen the femur by two and a half inches, and was then fastened by two long screws of beef-bone.<sup>1</sup> The flaps were then dissected up sufficiently far to allow them to be drawn down and closed over the end of the bone. The wound healed by primary union, except for a hematoma, which opened spontaneously and disappeared without infection, otherwise recovery uneventful.

Two months later the fragments were solidly united and the patient commenced active exercise of the stump to increase the density of the bone. He is now wearing the ordinary artificial limb and has a very satisfactory stump.

*Remarks.*

This case resulted in several observations. Owing to osteoporosis the fixation was none too good. As solid fixation of the fragments is imperative, it would be wise to convert the screws into bolts by small nuts made of beef-bone. Heavy silver wire, or the brass ribbon used by Putti, or even metal bolts would serve, but the beef-bone has the advantage<sup>2</sup> of uniting rapidly to the living bone and of undergoing absorption and replacement, as does an ordinary autogenous graft.

The extensive splitting of the bone led to rather profuse hemorrhage. This could be avoided by substituting for the method described an ordinary inlay bone-graft or a graft driven into the medullary cavity. We have one case of amputation of the leg in which the fibula will be used after splitting it into two halves to allow the endosteal osteoblasts to be bathed in lymph, either as an inlay or as a medullary graft, lengthening the stump an inch and a quarter. In this case the flaps are sufficiently long and the fibula is much longer than the tibia which was sectioned just below the tubercle.

The bone in the stump may be too short to allow an operation as such described, and it may not be wise to remove a graft from the other leg. In such a case a suitable graft might be obtained from a recently amputated limb. We have satisfied ourselves that bone transplanted from one animal to another of the same species—at any rate, in dogs—retains vitality in the same sense as does an ordinary autogenous graft—that is, those cells which are exposed on the surfaces to a supply of lymph survive and proliferate, and ultimately accomplish the absorption and replacement of the graft. It would be well, in transplanting bone from another patient or from a recently

amputated limb, to make sure that the cells of the one patient are capable of living in the lymph of the other, as indicated by the testing of their bloods for hæmolytic and agglutination. A recent paper by Masson indicates that Thiersch skin-grafts from a donor whose blood is not compatible with that of the patient do not live; if the bloods are compatible the transplantation is successful.

Up to now the operation described appears successful, but failure is still possible owing to absorption of the graft. Only time can show, and this paper is but a preliminary report. There is reason to believe, however, that such grafts will not disappear. When autogenous bone is transplanted into the muscles of the back in animals the bone ultimately disappears. But if such grafts are so placed that they have work to perform, as when used to bridge gaps in the long bones, they ultimately increase in thickness until the bone is restored to approximately its normal outline. Evidently the fate of such transplants is dependent upon the work performed. Up to the present the X ray shows no evidence of disappearance of the graft, and a mass of new bone has restored the normal thickness of the shaft where the graft was removed, and has also increased the thickness of the graft itself.

Among our wounded are many who could have such an operation done, for we have seen men passing through this hospital who had very short bones in their stumps and yet ample flaps of skin to allow bone-lengthening. It has been the practice to remove these redundant flaps by re-amputation. Again, if a successful lengthening of the bone can be looked forward to, the method of primary amputation, when short bones are inevitable, should be changed. The skin-flaps should be left very long, so that later sufficient skin will be available to cover the graft properly. This would also apply in civil practice.

A CASE OF  
CARCINOMA OF THE PELVIC COLON

TREATED BY EXCISION AND ANASTOMOSIS.

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THE following case of apparent cure following excision of a carcinomatous stricture of the pelvic colon may be of interest inasmuch as there is no evidence of recurrence after six years.

*The Case Described.*

A man, aged 47, was admitted into St. George's Hospital on July 4th, 1913, for intestinal obstruction. He had apparently been absolutely well until four days previously; he then noticed a certain amount of colicky pain and had absolute constipation, which was not relieved by drugs or enemata. On examination he did not look ill. Pulse 88, temperature normal. Tongue slightly furred. The abdomen was enormously distended and was tympanitic all over. Rectal examination was negative. An attempt was made by means of further enemata to open the bowels but without result, and it was clear that the obstruction was complete. The same evening I opened the abdomen in the middle line; all the intestines were greatly distended, the cæcum being enormous and showing commencing splitting of the serous coat. The cause of the obstruction was an annular stricture of the pelvic colon just above the pelvic floor; the growth was movable and there appeared to be a prospect of excising it with good results if the man recovered from the intestinal distension. The mid-line incision was therefore closed and a second muscle-splitting incision made over the cæcum; as soon as the peritoneum had been incised the cæcum bulged out and burst partly externally and partly intraperitoneally; a Paul's tube was sewn into the tear in the cæcum and the peritoneal cavity was cleansed locally as far as possible. In spite of the enormous distension present before the operation and the peritoneal infection he rapidly improved, so that three weeks later a second laparotomy was performed with the idea of excising the growth. On examination the growth, which resembled a tight ligature round the gut, was found to be quite freely movable, and there appeared to be no glandular involvement. It was situated so near the pelvic floor that the feasibility of an anastomosis seemed doubtful. However, after clamping and dividing the gut above the growth and dividing the mesentery, it was found possible to draw the growth and the distal part of the gut up and divide it about three-quarters of an inch above the pelvic floor. An end-to-end anastomosis

<sup>1</sup> Canadian Medical Journal of Medicine and Surgery, May, 1916.<sup>2</sup> Journal A.M.A., April 20th, 1918, lxx., 1134-40.



was then performed by means of a double layer of interrupted stitches. This proved to be a matter of very great difficulty and could only be effected by the use of the high Trendelenburg position and after partial division of the left rectus abdominis muscle to allow of easier access. Owing to the likelihood of leakage from the suture line, a rubber drain was left in for the first three days. Enemata were commenced on the eighth day after operation, and small actions were obtained every other day. On the twenty-fourth day after the excision the caecostomy was closed by operation, and normal actions of the bowels followed. The growth proved to be a columnar-celled carcinoma; some small glands in the mesentery were not involved.

*No Evidence of Recurrence.*

I saw the patient every few months up to the summer of 1914. Owing to the war I was unable to see him again until May, 1919, when he was in very good health and had no intestinal symptoms of any sort. Abdominal examination was negative, and there was no local evidence of recurrence.

In this case the absence of prodromal symptoms before the obstruction became absolute is remarkable, and the man must be regarded as extremely fortunate to have survived the enormous distension found at the first operation and the effects of the rupture of the caecum.

# A NOTE ON SEGMENTAL HYPERALGESIA IN MALARIA.

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In the course of 1918 I made a series of observations on segmental hyperalgesia in trench fever, which were embodied in a paper published in THE LANCET.<sup>1</sup> The substance of them was briefly as follows:—

If a series of light pin-pricks are made on the skin in a direction which crosses a large number of areas of segmental nerve distribution, it will be found in patients suffering from trench fever that three groups of areas are unusually sensitive, particularly as to their borders. The groups are an upper one containing the eighth cervical and first dorsal areas, a middle one containing the seventh dorsal area, and a lower one containing all the lumbar areas. The areas are not found in every case, and in positive cases only parts of these groups may be hyperalgesic, but something of the kind is present in the great majority.

I noted in this paper that in 18 cases of malaria which had been examined similar areas were found. I have since had the opportunity of examining patients suffering from malaria in very large numbers, both at a camp in France, where patients were treated who had been infected in other theatres of war, and also in Egypt and Palestine, where malaria was incomparably the highest cause of sickness during my service there. I was able to find the same areas of hyperalgesia in the great majority of cases, and they differ in no important particular from those found in trench fever, and such minor variations as were present are stated below.

*Analysis of Results.*

The following is an analysis of the results found in 120 cases examined consecutively for this sign.

Cases examined, 120. Positive 83 (70 per cent.). Negative 37 (30 per cent.). This is a lower incidence than in trench fever, where I found only five negative in 73 cases, but malaria is capable of far more certain recognition, and I came to rely on the presence of these areas for the differential diagnosis of trench fever.

The areas found hyperalgesic in the malarial cases were these:

Upper group	... { C. 8 ... .. 9 }	44 = 50% of positive cases.
	... { D. 1 ... .. 35 }	
Middle group	... { D. 7 or 8 ... .. 83 }	100% " "
	... { L. 1, 2, 3, 4, 5 ... .. 42 }	49 = 59% " "
	... { L. (incomplete) 7 }	
Full distribution	C. 8, D. 1; D. 7; L. 1, 2, 3, 4, 5, 8	cases = 10% of positive cases.

It was remarked that these areas could never be demonstrated while a rigor was in progress.

In 68 positive cases of trench fever the results were these:

Upper group	... 39 = 57%	Lower group	... 67 = 99%
Middle group	... 68 = 100%	Full distribution	24 = 35%

The only differences are the more frequent escape of the

lumbar in malaria, and the consequent reduction in the number of cases of complete distribution.

The middle group shows a few minor differences; in trench fever it is rare to find anything but D. 7 or D. 7 and 8 involved, but in the malarial cases D. 6 was found once, D. 8 17 times, and D. 9 once, also in nine cases the hyperalgesia was unilateral, which was hardly ever found in trench fever.

*Conclusion.*

The similarity between the signs as found in the two disorders remains very striking and adds one more to the many likenesses between them: one being mosquito-borne and the other louse-borne; one admittedly protozoal, and the latter probably so from its cyclic character and its capacity for lying latent; both associated with enlargement of the spleen.

It is necessary, however, for either disease to be excluded before the presence of such segmental hyperalgesia can be allowed weight in the diagnosis of the other.

# PARATYPHOID INFECTIONS OF THE PLEURA.

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PNEUMONIA, and especially bronchitis, is not an uncommon complication of paratyphoid fever<sup>1</sup>; but sero-fibrinous or purulent pleurisy due to infection with the paratyphoid bacilli is apparently so rare that the following cases deserve recording.

CASE 1.—F. L., a man aged 38, was admitted to the David Lewis Northern Hospital, Liverpool, on Feb. 12th, 1918, after being crushed between a wagon and a wall. The left side was strapped. During the 11 days he was in the surgical ward he had some diarrhoea, and typhoid was suspected. He was then transferred to a medical ward with signs of consolidation at the left base. As the breath sounds were very feeble, although there was no displacement of the heart, a needle was inserted into the pleura and 5 c.cm. slightly turbid fluid were obtained.

On bacteriological examination a motile Gram-negative, indol-negative organism was present in pure culture, which gave the characteristic reactions of paratyphoid B in lactose, glucose, maltose, mannite, and saccharose. It agglutinated with the Lister Institute paratyphoid B serum 1—6500, but not with the paratyphoid A or typhoid serum.

The patient's serum agglutinated his own organism 1—1250, and the results with the Oxford standard emulsions were: typhoid—1—25, paratyphoid A—1—25, paratyphoid B + 1—1250. The fæces were not examined.

Throughout his stay in the medical ward the temperature never rose above 100·4° F., and the respirations above 30, but the pulse averaged about 100. Treated on general lines he made an uninterrupted recovery without any further operative treatment.

CASE 2.—M. W., a woman aged 24, was admitted to the David Lewis Northern Hospital, Liverpool, on July 22nd, 1918. She stated that three months previously she suffered from "influenza," and recently had pain in the left side. There were obvious signs of pleural effusion, her temperature was 104° F., pulse 124, respirations 44. On July 23rd 2½ pints of clear fluid were removed by aspiration. On August 1st the chest was again explored, and as pus was found the empyema was opened; the patient made an uninterrupted recovery. The fluid was examined after aspiration and twice subsequently when the chest had been opened. It always contained a streptococcus longus and a bacillus which gave the characteristic cultural tests of paratyphoid B, it agglutinated with the Oxford paratyphoid serum up to 1—40, titre 1—100.

The patient's serum agglutinated her own organism 1—96, and the results with the Oxford standard emulsions were: typhoid—1—25, paratyphoid A—1—25, paratyphoid B + 1—50. The fæces were examined with negative results.

*Cases Reported by Other Observers.*

Lenhartz (1910) published the first case of pleurisy in paratyphoid fever; here the effusion was serous and contained paratyphoid B bacilli in pure culture.

<sup>1</sup> An Address on Sensory Changes in the Diagnosis of Trench Fever, THE LANCET, Oct. 5th, 1918.

<sup>1</sup> Dawson and Whittington, 1916; Willcox, 1916; Hurst, 1917.



Costa and Clavelin (1911) described the case of a man who developed empyema due to paratyphoid B five weeks after the onset of the fever. They also mention two of serous effusion described by R. Schmidt and Sacquépée and Chevrel respectively—here the type of paratyphoid bacillus is not stated, but it is almost certainly B.

According to Schottmüller (1911) pleurisy is often met with in paratyphoid fever, and even when suppurating will clear up with repeated aspirations. He alludes to a case by Lorey where the effusion occurred during a "long-drawn-out" attack of paratyphoid B fever.

#### War Cases.

Several others have been recorded during the war, notably by the French authors.

Joltrain and Petitjean noted that during the 1915-16 epidemic of enteric in the French Army pleural complications were rare amongst the typhoid cases—viz., 2-4 per cent., but common amongst the paratyphoid cases—viz., 19 cases in 310—i.e., 6 per cent. In the latter pleurisy was purulent in 2 per cent., dry in 2 per cent., and sero-fibrinous in the rest. Paratyphoid B was isolated—apparently from the blood—in all the cases except one, where paratyphoid A was found. The pleurisy usually developed in cases of atypical or latent paratyphoid; it was sometimes the first symptom. The exudate in the sero-fibrinous cases contained a preponderance of lymphocytes and endothelial plates.

Jean Minet (1915) carefully described 8 cases of paratyphoid infection with complications in the "lung and pleura"; the complication was usually bronchitis. In two, viz., Nos. 6 and 7, there were definite signs of effusion. In No. 7, some drops of citron colour liquid removed by aspiration were sterile. In No. 8 paratyphoid B bacilli were isolated from the sputum and from the blood.

Florenzano (1916) reports a case of pleurisy with effusion of clear yellow fluid which gave a positive agglutination to paratyphoid B. The patient later developed symptoms of typhoid.

Two other observers have noted paratyphoid A infections. (1) Giroux (1915). Here the patient developed pleurisy in the third week of paratyphoid; the fluid was first serous, then hæmorrhagic, and finally purulent; the bacilli were isolated from the empyema, but two blood cultures were negative. (2) Weeks (1916). Here the patient, who was also a soldier, "had diarrhoea for a fortnight and was apparently well, when two weeks before admission to hospital he was seized with acute pain in the back." He subsequently developed empyema, which was opened, and finally recovered.

A case of pleurisy due to an "inagglutinable paratyphoid B" bacillus is worth alluding to.

Pte. W. received a gunshot wound in the region of the left rib on Nov. 17th, 1916, after which he lay for 24 hours in water. He was transferred to Toxteth Military Hospital, Liverpool, under the care of Captain J. R. Logan. The bullet was removed at Toxteth in January, 1917; it had apparently damaged the pleura, but not the lung. An empyema developed, which was aspirated on three occasions in two months, after which he recovered. Each sample of pus contained in pure culture a persistently "inagglutinable paratyphoid B" organism; it did not absorb paratyphoid agglutinins; the patient's serum agglutinated it up to 1-128. The same organism was isolated from the urine once. Further particulars regarding it are given elsewhere.<sup>2</sup>

#### Civilian Cases.

In conclusion, it is noteworthy that both our cases of typical paratyphoid B pleurisy occurred in civilians.

During the years February, 1917, to February, 1919, the sera of about 40 civilian patients, excluding sailors, with enteric-like symptoms were tested in this laboratory with the Oxford standard emulsions. The patients were in the Liverpool Royal Infirmary and the Northern Hospital; none had been inoculated with T. or T.A.B. vaccine. Twenty—i.e., 8 men, 10 women, and 2 children—agglutinated typhoid only, the lowest titres being 1-25 one case, 1-50 two cases, while the rest ranged from 1-250 to 1-5000. On the other hand, five cases agglutinated paratyphoid B. only—viz., W., adult male + 1-50; M., adult male, hospital dispenser, + 1-1000; W., hoy, + 1-50; E., hoy, + 1-500; M., adult female + 1-25+. The rest were negative to all three emulsions. Including the two pleurisy cases, 27 patients gave some agglutination either to typhoid or paratyphoid.

Excluding the two cases with titres of + 1-25 (typhoid) and + 1-25+ (paratyphoid B), the clinical history and agglutination results indicate that 19 were almost certainly typhoid and six almost certainly paratyphoid B. These statistics are obviously based on too few cases to afford more than a very rough indication of incidence, but a proportion of approximately 1 of paratyphoid to 4 of typhoid is higher than most medical men or public health authorities would expect.

Nevertheless, there has undoubtedly been a relative increase in the number of cases of enteric<sup>3</sup> diagnosed as paratyphoid amongst the civilian population, since the outbreak of war. This increase is probably partly *real*, and due to the presence of soldiers or sailors with paratyphoid, most probably carriers who have escaped detection by the routine bacteriological examinations before discharge from hospital. The paratyphoid outbreak at Reading amongst civilians was probably due to infected soldiers (Donaldson, 1916). The increase is also partly *apparent* and due to improved serological and bacteriological technique, especially the former.

Dr. E. W. Hope, medical officer of health for the city of Liverpool, kindly informed us that during the years 1907-08, 929 civilians were notified as suffering from enteric or typhoid, and none from paratyphoid, while during 1917-18, 91 civilians were notified as suffering from enteric or typhoid and four from paratyphoid. Thus the number of paratyphoid cases notified in the whole city of Liverpool is, two, if not three, less in approximately the same period than those diagnosed serologically or bacteriologically in two hospitals where there were only 19 or 20 cases of typhoid. This discrepancy is undoubtedly explained by the fact that the medical man usually diagnoses his patient on clinical grounds only, and hastens to notify him as enteric or typhoid before a proper bacteriological investigation. If the patient is subsequently proved to be paratyphoid, the original notification is usually not corrected.

Thus the official figures of the relative number of typhoid and paratyphoid cases among civilians will be misleading until they are invariably controlled by the bacteriologist.

We are indebted to Mr. Hugh Smith for assistance in the bacteriological work.

For an interesting review of Typhoid Infections of the Pleura see a recent annotation in *THE LANCET*.

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## SMALL-POX NOTES FOR PRACTITIONERS.

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It may be a service to colleagues in practice who have been unable to keep in touch with the subject to note how small-pox stands at present, and give some brief notes on diagnosis. A list of sources of further information is added.

This year there have been cases of small-pox in London, Liverpool, Bootle, Bebington, South Shields, Hartlepool, Middlesbrough, Lincoln, Wishech, Ilford, Darlington, Pontefract, Featherstone, Bracebridge, Bury St. Edmunds, Herefordshire, Amersham, Chorley Wood, Bishops Stortford, East Ham, Southampton, Weymouth, Jarrow, Barnard Castle, Hull, Derby, Plymouth, Cowes, Strood, Mitcham, Penge, Southend, Gravesend. There has been an unusual prevalence.

#### Previous Epidemics.

Small-pox was last widely prevalent in England about the year 1902, when there were about 8,000 cases in London. It

<sup>3</sup> "Enteric Fever.—Varieties: (a) Typhoid Fever; (b) Paratyphoid Fever." See 1916 edition *Nomenclature and Classification of Diseases*, Royal College of Physicians, *THE LANCET*, 1916, i., 887.

<sup>2</sup> Glynn, A. L. Robinson, &c., 1917.



died down through 1903 and 1904, and has been almost quiescent until now. Previously to that there was a moderate outburst of it in 1893, about 2400 cases in London. Previously to that again, it was severe in 1885 and 1884, in each of which years there were about 6000 cases. In 1881 there were 6000 cases in London; prior to 1885 in London it was constantly prevalent, often in the thousands per annum for years together. In 1871, a very heavy year, there were 13,000 cases in London.

There has never been recorded before a period of small-pox quiescence so long as from 1903 to 1919, i.e. 16 years. The previous longest quiet interval was about 8 years. Prophecy of when small-pox will be epidemic again is futile; the practical thing is to be prepared for whatever may come. All that can be said is that it is more prevalent than usual this year.

#### *Importations from Abroad.*

At present, as often as it occurs in our country, so often it is extinguished; infection appears neither to remain nor seriously to spread. But it is being continually reintroduced from abroad, from ports such as Oporto, Lisbon, Bombay, Salonica, Alexandria, Naples. Many of the recent importations have been from European and nearer Eastern ports. Soldiers and sailors have been importers of infection. Many of these have been stopped at the ports. Others, however, and the most dangerous, are those who come through in the incubation stage, and are settled at home by the time the disease declares itself.

#### *A Pertinent Question.*

In keeping on the lookout for small-pox by far the most useful practice is to carry continually the question in one's mind, "Can this case be small-pox?" This is a question which can be usefully applied as a touchstone to every case in practice the diagnosis of which is not clear. Overlooking small-pox is mainly due to the possibilities of small-pox never having crossed the mind. It is a disease of extraordinarily deceptive qualities. Take its stages from the beginning. Onset simulating rheumatism, lumbago, influenza, to mention only a few. Prodromal rash simulating measles, scarlet fever, urticaria, for instance. Hæmorrhagic small-pox simulating meningitis, ulcerative endocarditis, septicæmia, among others. Severe confluent small-pox resembling measles, perhaps, or showing little sign of illness at all, because there are no spots, but only one spot; the skin of the face slowly rising (till early death) in one vesicle. Then there is the rash proper of a moderate case with a host of disguises: chicken-pox, syphilis, dermatitis, pustular eczema, scabies, impetigo, acne, and many more. These are not fancied, but are very close resemblances, as the rash passes through its various stages of papule, vesicle, pustule, ulcer, scab. Then there is the last stage of all, when scabs under the hard skin of the feet and the reddish scars elsewhere may be the only, but yet unmistakable, mark of small-pox.

#### *Value of a Second Opinion.*

Directly suspicion is aroused it is well at once to certify and get removal, or to get a second opinion. I recall very well a case where an action was brought for damages caused by an error in diagnosis. As soon as the jury were shown that the medical attendant had used all his skill and care and had also called a second opinion, they stopped the case and found for the defendant. Had this not been done, he would probably have had to pay heavy damages.

#### *Diagnosis.*

As to clinical details of diagnosis, reference is suggested to the various sources mentioned below. As I was a pupil of the late Dr. T. F. Ricketts and have worked by his methods for 22 years I naturally prefer them. They are set out in his "Diagnosis," with Dr. J. B. Byles's superb photographs; in my "Diagnosis," "Illustrative Cases," and "Differential Diagnosis between Small-pox and Chicken-pox."

For one faced with a suspected case it is best to take first the pathological features, especially the rash of the case, the history last, and to weigh all the evidence as a whole. The surest single guide is the distribution or arrangement of the rash on the skin. The key to that is that the rash of small-pox especially favours skin which is vascularised by irritation or exposure. May I also add this? Withhold an opinion in a doubtful light. Get the very best light possible. See the whole of the skin and as much as possible in one view. The sitting-up posture in

bed, the patient stripped to the waist and his arms crossed in front, is very useful.

The quickest and soundest method of learning the rudiments of diagnosis, apart from seeing actual cases, is to spend an hour with a stereoscope and some good stereoscopic photographs, with a small-pox date card and some explanation.

#### *Facts for Antivaccinators.*

With antivaccinators I have usually found most good can be done by setting out the facts when temperately asked for and by avoiding argument. I say that I am as much entitled to my opinion as they to theirs. When small-pox threatens it is worth while asking the question, What are you going to do about it? Are you going to gamble on the risk of taking small-pox, or make a certainty, at considerable present inconvenience, of safety? I found this kind of reasoning effective during the war with convinced antivaccinators, and learnt from many of them with whom I served that much opposition to vaccination comes from the facts never having been put to them. Further information on this point is in my "Lecture to Soldiers on Small-pox and Vaccination."

It is worth noting that successful vaccination within the first 48 hours of the incubation period of small-pox prevents an attack; vaccination can be performed later, but then it has little or no protective effect.

#### *Books.*

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- The Differential Diagnosis between Chicken-pox and Small-pox, Jenner Memorial Number of the British Medical Journal, 1912.
- Cases Illustrating Points in Small-pox Diagnosis, 1914, 6d.
- Lecture to Soldiers on Small-pox, 1915, 1s.
- A Short History of Vaccination, 1911.
- A Small-pox Date Card, 1919, showing the main dates associated with a case.
- The Medical Officer Weekly Journal, 36, Whitefriars-street, E.C.

## VACCINATION BY SUBCUTANEOUS INJECTION.

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In the spring of 1915, while attached to the Canadian Mounted Rifles as medical officer, I came frequently in contact with Dr. George Hume, of Sherbrooke. We discussed the question of vaccination of troops by subcutaneous injection. He had done a few cases in this way, and before inflicting this method upon the men of my unit I had myself vaccinated by Dr. Hume. I had been vaccinated ten times previously without success. Within three days my arm was sore, and I went through all the general symptoms of successful vaccination.

Since then I have vaccinated hypodermically approximately 6000 men and quite a number of officers' children.

#### *Method of Preparing Vaccine.*

It was impossible to procure vaccine in bulk, so vaccine put up in the small capillary glass tubes was used in the majority of cases.

These vaccine tubes were first placed in methylated spirit for a few minutes, then withdrawn singly by surgically clean or gloved hands, the excess alcohol wiped off with sterile absorbent cotton, the ends broken off, and, lastly, the sterile rubber bulb fixed to one end of tube to blow out the vaccine into a sterile beaker. The vaccine generally shoots out of the tube into the beaker in the form of a small cylinder.

When the vaccine available was in small wax tubes the extreme end was first punctured with a sterile needle and the vaccine squeezed out by compressing the container. From



one-half to three-quarters of a tube of vaccine was used per individual. Sufficient sterile water was then added to the vaccine to make each injection equal to 1 c.cm.

In private practice, or where one or two only are to be vaccinated, the vaccine may be prepared as an ordinary hypodermic injection, using vaccine instead of a drug.

Patients can be vaccinated with great rapidity. After preparation of the vaccine four medical officers vaccinated 1100 in two and a half hours by using 20-c.cm. Record syringes and injecting 1 c.cm. into 20 consecutive men, changing the needle after each injection.

#### *Technique of Injection.*

The arm was sterilised with iodine and the vaccine injected diagonally with a fine hypodermic needle and syringe into the subcutaneous tissues. In a few cases by mistake the vaccine was injected intracutaneously.

Everything should be done with surgical cleanliness.

#### *After-effects.*

The local reaction sets in usually between two and four days, but in a few cases the reaction is considerably delayed, and in one colonel's family three children were vaccinated, and reaction did not appear until 12, 13, and 15 days respectively. The local reaction is much like that following antityphoid inoculation and just as variable in intensity. About 8 per cent. proved ineffective, showing but slight local reaction, not more than perhaps could have been accounted for by the iodine applied to the skin; in 70 per cent. (approximate only) there was a reaction similar to the usual reaction after antityphoid inoculation—i.e., local swelling, heat, tenderness, slight pain, and redness. In a small percentage of cases the reaction was marked, causing swelling and œdema of the elbow, and in a few œdema involving the whole arm and hand.

In every one of the 6000 cases vaccinated hypodermically by myself or under my supervision (for all of whom I myself prepared the vaccine for injection) the local condition subsided without any signs other than those of excessive local reaction.

After the seventh or tenth day the local swelling and induration subside, leaving a hard nodule in the subcutaneous tissues, usually ill-defined at first, becoming later well circumscribed and lasting for about one month. This is quite painless after the first acute reaction. The process differs in no respect from that of an antityphoid reaction, except that the onset is slower and the reaction spreads itself over several days.

The general symptoms vary in intensity and do not differ from those of ordinary vaccination.

#### *Infection.*

In the 6000 cases quoted there was not one case of infection. This can be stated without question of doubt. The men were all soldiers who came directly under me and my medical officers for observation and for sick parade. They were all seen several times afterwards, and in about 50 per cent. of cases the vaccination was done at the same time or between the regular antityphoid inoculations. I saw one case of infection in another brigade; this was brought to my attention, and on close questioning it was found that there had been faulty technique. There was a punched-out ulcer, about the size of a halfpenny, exposing the fascia. The ulcer healed without untoward result.

None of the 6000 required dressings, and the men were not exempted from anything but physical training and rifle drill. A percentage were given light duty, and a very small percentage were excused duty for a few days, owing to excessive local or general reaction. There were no hospital admissions. In a few cases (about 10 altogether) the vaccine was injected intradermally, and about four or five days later there developed the typical vesicular and pustular stages of ordinary vaccination, quite uncomplicated.

#### *Advantages of the Method.*

1. This is a clean surgical operation. If untoward results develop they are due to faulty technique.
2. There is no open wound, and therefore dressings are not required.
3. Dangers of secondary infection are practically eliminated.
4. The percentage of positive reactions is very high.
5. In only a small percentage of cases the local and general symptoms caused complete incapacity.
6. It is painless as compared with scarification.
7. Children undergo the hypodermic vaccination without any difficulty, owing to the rapidity with which the injection is carried out.

## Reviews and Notices of Books.

*William Howard Lister.* By WALTER SETON. With a Foreword by Lieutenant-General Sir IVOR MAXSE, K.C.B., C.V.O., D.S.O. Printed for private circulation by Philip Lee Warner, Publisher to the Medici Society, Ltd., Grafton-street, London, W. 1919.

THE Life of William Howard Lister, Captain, R.A.M.C., by Walter W. Seton, LL.D., will interest a wider circle than that of the University College men for whom it is primarily intended. Senators of the University of London might read it with advantage, and the general public will find the incidents of this short life to be of thrilling interest. Though of Quaker stock, and educated at a Quaker school, he was eminently a fighter; not, however, for fighting's sake, but as a champion of good causes. Three or four such contests are a good record for one who had only reached the age of 31. He entered heart and soul, from the student's point of view, into the vain struggle to make the University into a real University of London; and in an unobtrusive way he was the instigator and leader of some of the more active movements of the London students of his day. Amongst these was the incident of the "Brown Dog" at Battersea, which is graphically described. The reader will see that it was not, as some thought, a mere piece of rowdiness, but a fight for a principle which was backed up by newspaper articles and debating society discussion. It was an easier task to cultivate the spirit of comradeship amongst his fellow students than to start such a spirit amongst the students of the University. His untiring efforts in this direction had much to do with the successful origin of University College Hall.

But the real spirit which inspired him is most clearly, though all too briefly, shown in the account of his service during the war. He was one of the first dozen qualified men to obtain a commission in the R.A.M.C. and was in time to take part in the battles of the Marne and of the Aisne, and, except for sick leave, he was continuously with the Army till he was killed on the Italian front in August, 1918. He was not one of those who do not know what bodily fear is, and the excitement of battle had no attraction for him. He was always anxious lest his courage should fail, but when the time came nothing could keep him from the place of danger. In a letter to a personal friend, dated B.E.F., France, March, 1918, he said:

"We are all of us a little grave and anxious out here, waiting in this quiet before the storm, not about the ultimate result, of course, for of that there can be no doubt. But there's going to be deadly work this year, and with so many splendid fellows round one, one wonders more than ever at the wickedness and beastliness of it all. The people I am with now are the most charming I have yet met, and I only pray I may be able to do my full duty by them."

His power of organising was great, and everywhere he inspired enthusiasm. Sir Ivor Maxse, in a foreword, says:—

"In fact, his eager temperament and immovable standard of duty made him indispensable to the troops whenever fighting was on, and we all recognised his value from the last recruit to the divisional commander."

Dr. Seton tells the story very simply, clearly, brightly, and without redundancy. There is not a dull page in the book. He is fortunate in having almost equally acceptable writers in the two friends who have supplied the longest quotations. It is a good testimonial for the author that one closes the book with regret and wishes that it had been longer. It is beautifully produced, and those who desire copies can obtain them from the senior clerk, University College, London, Gower-street, W.C.

*Practical Vaccine Treatment for the General Practitioner.* By R. W. ALLEN, M.A., M.D., B.S., late Captain, N.Z.M.C. London: H. K. Lewis and Co. 1919. Pp. 308 + ix. 7s. 6d. net.

THIS little volume contains a fund of useful information on the subject with which it deals. After an autobiographical introduction, in which the author claims that never in the past 12 years has he misled his readers on the subject of vaccine treatment, he passes on to explain the rationale of vaccine therapy in its varied forms. He is impatient of those who cannot distinguish between vaccine



and serum. He holds—and we think rightly—that every case undergoing vaccine treatment is “a law unto itself,” and therefore it is illogical to lay down beforehand any hard-and-fast scheme of dosage. The inference is that the clinical pathologist should give his own vaccines; but whereas it may conceivably be true, as Dr. Allen contends, that no dermatologist is a sound bacteriologist, it does not necessarily follow that every clinical pathologist is a sound physician.

The author's ruling principle in the administration of vaccine is to give the smallest dose which suits the patient, and he gives some sound advice on technique—e.g., “Use good tools and get it over and done with as quickly as possible.” To this axiom we should add the rider: “See that in your haste you have not injected vaccine into a vein unless you wish to do so.” He deprecates the employment of detoxicated vaccines as being unsound in principle. He is aware of the bearing on success of the barriers to the action of vaccine occasioned by want of access, as from fibrin in pneumonia and scar-tissue in wounds, and he illuminates this pitfall for the unwary. A novel and useful feature for the inquiring mind is the appendix of questions and answers as regards vaccines.

We find the author's experience entertaining, but we should like to know more of his failures in order that others may learn to share his successes. He is not always consistent. On one page we read that the staphylococcus forms endotoxin and endotoxin alone, and on the same page, a few lines further down, we are told that the staphylococcus forms one endotoxin and two exotoxins. Whereas it is twice stated that the author has never lost a case of septicæmia, we read that in relation to infective endocarditis of a streptococcal nature (and is not this septicæmia?) a few *successes* (the italics are ours) are on record!

The author has many lances to tilt, mostly “agin the Government,” and has apparently been “laughed to scorn” quite a number of times. Referring to pensioners or other discharged soldiers who may be dysentery carriers he writes: “..... what steps the Army or Government will take once they have been discharged, Heaven only knows,” a surmise which may be true, but does not presage well for a judicial survey of a difficult subject.

If he does not surrender his own judgment, the practitioner will find Dr. Allen's book useful to him.

*The Newer Knowledge of Nutrition: the Use of Food for the Preservation of Vitality and Health.* By E. V. McCOLLUM, School of Hygiene and Public Health, the Johns Hopkins University. Illustrated. New York: The Macmillan Company. 1919. Pp. 200. 6s. 6d.

REGARDLESS of the outcome of future studies relating to the importance of diet in the etiology of such diseases as pellagra, tuberculosis, and allied disorders, the author essays to give a non-technical presentation of the kinds of combinations of our natural foods which induce good or faulty nutrition in animals. This should be of service in showing the inadequacy of the practice, which is still in vogue, of regarding calories as the only factor of importance in the planning of the diet. It is neither necessary nor desirable to abandon the customary classification of food-stuffs. The author's great point is that a chemical analysis of a foodstuff may throw no light whatever upon certain aspects of its dietary properties, and that only by biological methods can we arrive at principles which can serve as a safe guide to the planning of a safe dietary.

The biological method for the analysis of a foodstuff is first dealt with. Over 3000 feeding experiments, most on domestic rats, and some on farm pigs, cattle, chickens, and guinea-pigs, were made, and in the result it is found that “the chemical requirements of these different types of animals are essentially the same.” It was only in 1897 that the first fertile suggestion was made by Eijkmann as to the dietary fault causing beri-beri. The various feeding experiments by other observers with purified proteins, amino acids, &c., are explained, as well as how it comes about that under certain conditions neither maintenance of body weight nor growth could be secured with such diets, and why the addition of certain unidentified food substances restored the balance. The relation of a diet of polished rice to experimental beri-beri and the “vitamine” hypothesis of Funk led up to the discovery of two classes of unidentified

substances as necessary constituents of a normal diet to which the terms fat-soluble A and water-soluble B were given. We need hardly refer readers of THE LANCET to the large literature on these points. A most interesting chapter is devoted to experimental scurvy and the dietary properties of vegetables. Guinea-pigs restricted to a diet of oats develop scurvy in a few weeks. All the “seeds”—wheat, oats, rye, barley, &c.—examined resemble each other very closely in their dietary properties, and all have important dietary faults, so that it is not possible to secure appreciable growth in young animals fed exclusively upon seed products as the sole source of nutriment. There seems to be no species of the omnivora which subsists entirely upon seeds. Appropriate mixtures of leaf and seed make fairly satisfactory food mixtures, and the author gives his reasons why the leaf should show such decided dietary differences as contrasted with the seed. The tubers and roots employed and their characteristics, more especially as regards the solubles A and B, are passed in review. The short chapter on the Vegetarian Diet is most suggestive, and so is the next on Foods of Animal Origin. Milk is our most important foodstuff, for in addition to the extraordinary value of its protein, when used in combination with the foodstuffs of either animal or vegetable origin, it corrects their dietary deficiencies. Milk and leafy vegetables and eggs are regarded as *protective* foods. The author is loud in his praises of milk; indeed, according to him mankind can be classified into two groups. Both groups have derived the greater part of their food-supply from seeds, tubers, roots, and meats, but differ in the character of the remainder of their diet. Those peoples—Europeans and North Americans—who have made liberal use of milk as a food, in contrast with those peoples—Chinese, Japanese, and people of the tropics generally—who have made use of the leaf as their sole protective food, in the words of the author—

“have attained greater size, greater longevity, and have been much more successful in rearing their young. They have been more aggressive than the non-milk using peoples, and have achieved greater advancement in literature, science, and art. They have developed in a higher degree educational and political systems which offer the greatest opportunity for the individual to develop his powers. Such development has a physiological basis, and there seems every reason to believe that it is fundamentally related to nutrition.”

In the United States 15–25 per cent. of the total food-supply is from the products of the dairy. Milk is the greatest factor of safety of our nutrition. Its value cannot be estimated on the basis of its content of protein and energy. It has a value as a protective food, improving the quality of the diet, which can be estimated only in terms of health and efficiency. The last chapter deals with the nursing mother as a factor of safety in the nutrition of the suckling.

This is a record of laborious and painstaking work on an important and urgent subject, illuminated by penetrating criticism and suggestive practical applications. It largely modernises and fructifies our ideas of the importance of food and feeding, while demonstrating how little we know as yet of the intimate factors of nutrition. Altogether a wonderfully suggestive contribution to the elucidation of some of the obscure phenomena of the physiology of metabolism in its widest sense.

*Health Resorts of the British Isles.* Edited by NEVILLE WOOD, M.D. Second edition. London: University of London Press, Ltd. 1919. Pp. 254. 6s.

THE present is an auspicious time for the publication of a second edition of this book. For one reason or another many patients will be prevented for many years to come from visiting the famous centres of hydrology on the continent. At the same time, owing to the efforts of a few English physicians, the importance of hydrology is at length being realised in this country, and there are prospects of a scientific development of our own not inconsiderable resources. As Dr. Wood points out, there are important mineral springs scattered throughout the Empire, and it is unfortunate that the medical men coming from our own overseas dominions should have to seek on the continent that post-graduate instruction in hydrology which we are at present unable to provide.

The lesser as well as the better known British watering-places are all noticed in this book, and their virtues, whether for baths, climate, or sunshine, are duly recorded.



There are numerous illustrations, many of which are already well known to those who travel. More important, perhaps, are the analytical tables which are given from time to time, and of which there might be even more with advantage to the medical reader. Some districts are necessarily better reported than others. The accounts furnished by medical committees and societies are obviously the best, and an increasing interest on the part of medical men in their own districts will doubtless lead to a continued improvement of this useful volume.

## JOURNALS.

IN the *Military Surgeon* for June Colonel H. L. Gilchrist describes the "mobile degassing station" devised by himself as Medical Director of the Chemical Warfare Service of the American Expeditionary Force. They were required to deal with damage to the mucous membranes by acid and chlorine and with damage to the skin by mustard gas. They had a blue flag by day, a blue lantern by night. When the men arrived any who showed gas symptoms were at once treated and sent on to hospital, the others were divided into groups of 24 for bathing and re-clothing. These last, after laying down arms and loose equipment, neutralised their hands and shoes with dry lime, and their helmets with lime water, the helmets being hung on numbered shelves. The men then undressed, stepped under the showers, sprayed themselves with liquid soap, the hot showers were turned on for 15 seconds, 45 seconds were allowed for washing, and the showers were then turned on again for 30 seconds to remove the soap. Each man had a clean towel. Eyes, noses, and throats were then sprayed with 5 per cent. solution of sodium bicarbonate, the men were inspected naked by medical officers, were served out with fresh uniform and underclothes, and returned to their units. The degassing unit was essentially a motor truck carrying a 1200-gallon tank, a rotary pump, and a device for heating the water; a portable

shower apparatus with 24 shower-heads like a pergola made of 2-inch tubing with sliding joints and standing 7 ft. 6 in. above ground; a hospital ward tent used as a bathing and dressing tent; and wagons to carry the stores and clothing. The baths could thus be taken to the troops, the showers could be erected in two minutes, the whole outfit in 17 minutes, and packed up again in nine. 160 outfits were ordered by the Army.

In the same issue Brigadier-General F. Winter, Medical Corps, U.S. Army, recounts the trials and triumphs of the Medical Corps, starting from crowded St. Nazaire, where surgical specialists helped the needed hospital outfit from the ships to the cars, through the difficulties of sanitation in France when deficiency of tonnage kept appliances short, and the early discomfort of hospitals when cargoes of linoleum were sunk by submarines, and Carrel-Dakin solution froze in the wards, and lice had not yet been mastered. It was enthusiasm for General Pershing and his leadership, General Winter thinks, that inspired all ranks to make the war machine work to best advantage; everyone helped, doctors, nurses, and orderlies. He claims great results for preventive medicine: 45,000 deaths from wounds, 22,000 from disease, including pneumonia, which, by the way, attacked least of all the 1st Army Corps in bivouac. He believes it was loyalty to their families that kept the U.S. soldiers off alcohol, and here they were greatly assisted by the Y.M.C.A. He pays a generous tribute to the work of the Red Cross, which was not only always friendly and open-handed with stores, but, looking ahead, published for the young army a book of the splints they might best use, and set up a factory in France to make them. He proudly quotes from Sir Arthur Stanley that the people of the United States raised more than five times as much for the Red Cross as was raised in England, but we must remember that the United States have had nothing like our war taxation. All American officers, speaking in the United States, give most cordial thanks to the French and ourselves for our sympathetic co-operation.

## A MONTHLY RECORD OF ATMOSPHERIC POLLUTION.

METEOROLOGICAL OFFICE: ADVISORY COMMITTEE ON ATMOSPHERIC POLLUTION: SUMMARY OF REPORTS FOR THE MONTHS

ENDING

August 31st, 1918.

Sept. 30th, 1918.

Metric tons of deposit per square kilometre.											Metric tons of deposit per square kilometre.										
Place.	Rainfall in millimetres.	Insoluble matter.		Soluble matter.		Total solids.	Included in soluble matter.				Place.	Rainfall in millimetres.	Insoluble matter.		Soluble matter.		Total solids.	Included in soluble matter.			
		Tar.	Carbonaceous other than tar	Ash.	Loss on ignition.		Asb.	Sulphate as (SO <sub>3</sub> ).	Chlorine (Cl).	Ammonia (NH <sub>3</sub> ).			Tar.	Carbonaceous other than tar	Ash.	Loss on ignition.		Asb.	Sulphate as (SO <sub>3</sub> ).	Chlorine (Cl).	Ammonia (NH <sub>3</sub> ).
ENGLAND.											ENGLAND.										
London—											London—										
Meteorological Office	37	0.10	0.99	1.93	1.18	0.59	4.79	0.74	0.31	0.04	Meteorological Office	—	—	—	—	—	—	—	—	—	
Embankment	—	—	—	—	—	—	—	—	—	—	Embankment	—	—	—	—	—	—	—	—	—	
Gardens	32	0.07	1.53	2.52	1.48	2.62	8.21	1.21	0.35	0.07	Gardens	60	0.16	1.76	2.21	3.89	12.18	20.20	4.85	1.31	0.11
Finsbury Park	36	0.04	1.16	5.72	1.04	2.81	10.77	1.18	0.24	0.06	Finsbury Park	121	0.03	1.53	5.67	2.42	2.39	12.04	1.35	0.46	0.21
Ravenscourt Park	22	0.02	0.27	0.76	0.93	2.34	4.32	0.94	0.20	0.10	Ravenscourt Park	59	Tr.	4.34	11.21	3.72	4.46	23.73	3.11	0.59	0.37
Southwark Park	32	0.06	0.97	2.21	2.09	3.22	8.54	1.29	0.46	0.11	Southwark Park	40	0.00	1.38	3.27	0.71	1.57	6.95	1.50	0.21	0.06
Victoria Park	12	0.02	1.03	5.32	0.64	1.27	8.27	0.34	0.10	0.03	Victoria Park	18	0.05	0.87	4.66	0.58	1.26	7.42	0.44	0.12	0.04
Wandsworth Com.	50	0.01	0.01	0.10	1.49	3.27	4.88	1.23	0.42	0.01	Wandsworth Com.	130	0.04	1.80	2.73	1.56	6.24	12.37	2.95	0.97	0.39
Golden Lane	41	0.05	1.93	3.02	0.66	3.63	9.34	1.44	0.45	0.15	Golden Lane	—	—	—	—	—	—	—	—	—	—
Malvern*	—	—	—	—	—	—	—	—	—	—	Malvern*	—	—	—	—	—	—	—	—	—	—
Manchester—											Manchester—										
Whitworth Street (garden) (roof of College)	63	—	—	—	—	—	12.20	—	—	—	Whitworth Street (garden) (roof of College)	249	—	—	—	—	—	24.90	—	—	—
Newcastle-on-Tyne	31	0.16	3.16	7.80	1.43	3.24	15.77	1.50	0.30	0.07	Newcastle-on-Tyne	112	0.10	2.86	4.33	2.23	4.46	13.99	2.45	0.91	0.28
Rochdale	79	0.17	1.28	3.37	2.77	6.42	14.01	2.01	1.43	0.12	Rochdale	—	—	—	—	—	—	32.88	—	—	—
St. Helens	79	0.17	1.28	3.37	2.77	6.42	14.01	2.01	1.43	0.12	St. Helens	201	0.43	3.18	6.92	4.02	6.54	21.09	4.43	2.98	0.07
Southport—											Southport—										
Hesketh Park	67	0.02	0.30	0.33	1.00	4.36	6.01	1.19	0.21	0.07	Hesketh Park	223	0.04	0.67	0.48	4.99	5.61	11.80	2.96	2.45	0.20
Woodvale Moss	62	—	—	—	—	—	5.51	—	—	—	Woodvale Moss	187	—	—	—	—	—	9.35	—	—	—
SCOTLAND.											SCOTLAND.										
Coatbridge	85	0.28	6.24	9.44	3.86	6.15	25.97	3.00	0.31	0.25	Coatbridge	130	0.14	1.94	6.44	4.16	7.30	19.98	2.96	0.65	0.26
Glasgow—											Glasgow—										
Alexandra Park	73	0.13	1.23	3.82	0.96	3.48	9.62	2.05	0.32	0.16	Alexandra Park	121	0.06	1.29	2.53	2.13	4.66	10.67	2.44	0.34	0.23
Bellahouston Park	81	0.08	1.02	3.03	2.67	3.77	10.57	1.88	0.32	0.08	Bellahouston Park	154	0.04	1.33	1.62	2.38	6.33	11.70	3.38	0.37	0.34
Blythwood-sq.	63	0.13	2.14	4.24	1.56	3.25	11.32	2.06	0.31	0.18	Blythwood-sq.	170	0.06	1.65	2.19	3.22	8.65	15.77	3.55	0.34	0.17
Botanic Gardens	71	0.09	2.14	4.08	2.35	4.80	13.46	1.98	0.31	0.08	Botanic Gardens	—	—	—	—	—	—	—	—	—	—
Richmond Park	85	0.10	1.61	5.16	4.36	5.72	16.95	2.87	0.44	0.14	Richmond Park	140	0.02	1.14	2.03	2.38	6.47	12.04	3.21	0.25	0.14
Ruchill Park	79	0.10	1.55	3.93	3.40	3.57	12.55	2.30	0.26	0.06	Ruchill Park	167	0.01	0.75	1.60	1.47	7.03	10.86	2.51	0.33	0.18
South Side Park	70	0.08	1.56	2.93	2.75	4.38	11.70	1.81	0.44	0.08	South Side Park	—	—	—	—	—	—	—	—	—	—
Tollcross Park	80	0.11	2.20	5.79	1.28	4.78	14.60	2.41	0.28	0.08	Tollcross Park	—	—	—	—	—	—	—	—	—	—
Victoria Park	100	0.12	1.97	3.79	2.71	3.80	12.39	2.16	0.62	0.18	Victoria Park	—	—	—	—	—	—	—	—	—	—

\* No returns.

† Excessive rainfall, bottle overflowed.

Tr. = trace.

"Tar" includes all matter insoluble in water but soluble in CS<sub>2</sub>. "Carbonaceous" includes all combustible matter insoluble in water and in CS<sub>2</sub>. "Insoluble ash" includes all earthy matter, fuel, ash, &c. One metric ton per sq. kilometre is equivalent to: (a) Approx. 9 lb. per acre; (b) 2.56 English tons per sq. mile; (c) 1 g. per sq. metre; (d) 1/1000 mm. of rainfall.

The personnel of public health authorities concerned in the supervision of these examinations and of the analytical work involved remains the same as published in previous tables. The analyses of the rain and deposit caught in the gauge at the Meteorological Office are made in THE LANCET Laboratory.



# THE LANCET.

LONDON: SATURDAY, AUGUST 16, 1919.

## The Reorganisation of Pensions.

THE speech of Sir LAMING WORTHINGTON EVANS, the Minister of Pensions, in asking the House of Commons, sitting as Committee of Supply,<sup>1</sup> to agree to the supplementary vote of £45,855,000 for the Ministry of Pensions, has helped the nation to realise the responsibility imposed by the care of its injured sailors and soldiers. A nation yet unborn will gather the aftermath of the world-war and see the last maimed pensioner carried to the grave from which the surgery of this generation saved him. It is with the sailor or soldier disabled by his service that our profession is chiefly concerned; it is here our assistance is indispensable to the carrying out of the work of the Ministry. The granting of pensions to the widows and dependents of the dead is another branch of pensions work, for which medical advice is essential, being invoked chiefly when there is doubt whether death by disease should be attributed to war service. The figures relating to pensions are instructive, and may do something towards explaining the occurrence of delays and mistakes in a department newly organised in the midst of war, of whose duties the granting of pensions to the injured and to dependents forms only one part. Pensions, gratuities, and final allowances during the past 12 months have been considered in respect of more than two and a quarter million persons, including officers, nurses, and men, with their widows, their children, and their other dependents. The annual payment at present comes to near £100,000,000, though this sum is subject to reduction in the future, not only by the deaths of pensioners, but by the cessation of gratuities that will not have to be repeated. Moreover, no pensioner, wounded or invalided at any date in the war, will leave the protection of the Pensions Ministry save under proper medical certification that he is fit to undertake the training proposed for him by the Ministry of Labour.

The part to be played by medical men in future pension administration was considerably insisted upon by the Minister of Pensions, who described the procedure in detail. The medical boards for men applying for pensions, or for the renewal of them, passed on April 1st out of the hands of the Ministry of National Service into those of the Ministry of Pensions, which department took over on August 4th from the War Office responsibility for the Re-survey Boarding of Officers. This is a task which demobilisation has rendered very heavy, and during the six months ending with last June medical boards were held upon 229,697 men. At the same time, and owing to the process of demobilisation, there has come under the jurisdiction of the Ministry the care of the disabled, including their treatment in hospitals, clinics, and convalescent centres. Colonel WEBB will be the chief medical officer, under whom a medical, surgical, and nursing staff will carry out the duties assigned to them by the Ministry, among which will be the provision of artificial limbs and their repair. These increases in the sphere of the

activities of the Ministry of Pensions will, however, be of less interest to the public than the steps which are promised for reorganisation of the work of the department. There has been public expression of dissatisfaction, which may have been exaggerated but has not been altogether baseless, and the existence of which cannot be denied. A system by which medical officers at the headquarters of the Ministry were empowered to review the decision of a medical board, and by which a medical officer was authorised to alter the amount of a man's assessment, though made by a board, without himself re-examining the case, was one which, in popular phraseology, "asked for trouble." There are now to be Medical Appeal Boards to which the medical assessor of the Ministry may refer a case, if not satisfied, on the perusal of the papers in it, that substantial justice has been done to the pensioner or to the taxpayer. For the taxpayer must be protected. To these boards the pensioner himself will have a right to appeal, if not satisfied with the amount awarded him, and such re-examination should do much to justify the finality assigned to the decision which will then follow. In a question of incapacity the body of the man concerned supplies an essential part of the material required for the consideration of his case, and a summary or statement of the observations and conclusions of others, whether medical men or not, cannot satisfactorily be substituted for it.

In addition to the Medical Appeal Boards there will be, we understand, other new tribunals set up as the result of the report of the Select Committee recently published, and these will be independent of the Ministry of Pensions, and appointed by the Lord Chancellor when a Bill for that purpose has been duly passed. Their functions will be to consider appeals by a claimant of a pension in cases of its refusal either on the ground that the disability was not attributable to, or not aggravated by, military service, or on the ground that the disability was due to serious negligence or misconduct of the claimant. They will also review refusals of pension to a widow or dependents on the ground that the sailor or soldier's death has not been due to military service. These tribunals will be composed of a barrister or solicitor as chairman, a medical practitioner, and a disabled officer or disabled man, according to whether the case to be considered is that of an officer or of one not holding a commission. Thus a statutory right will be granted, as distinct from one arising out of a Royal Warrant, to claim a pension before an independent statutory court, whose decision will be final. This court will have to decide, we may add, one of the most difficult of the many complex questions that arise in the granting of war pensions. A man may have entered the Army an apparently healthy man, or with an admitted unsoundness. He may have faced the rigours of one or more winters in the trenches and returned to develop disease, ending in death or disability, in the healthy surroundings of his home or of a well-ordered camp in the United Kingdom. Naturally, to him or to his surviving relatives it is clear beyond demonstration that his war service is the responsible cause of a result which otherwise would never have supervened, and yet it may not be so. We urge in such a case a liberal consideration of the facts, medical and otherwise, with the benefit for the claimant of such doubt as science may not be able to clear up. We are not, however, altogether in accord with the observations

<sup>1</sup> THE LANCET, August 9th, p. 267.



of Dr. D. MURRAY in the House of Commons when he said that this question of the attribution of disease to war service should not be put to a medical board at all. We agree with him that it is a cruel duty, and one the perfect fulfilment of which is wellnigh impossible. We regard the matter, however, as one essentially for medical decision, and we are inclined to ask ourselves whether an appeal tribunal with a majority of laymen upon it can really do more than relieve a medical board of a painful responsibility. Whether it supports or overrules a medical board's decision, it can hardly add weight to it. It is our fervent hope that the changes introduced by the present Minister of Pensions may result in his department combining justice with generosity, and giving that degree of public satisfaction which is essential to the smooth working of the affairs of the State. It has to create its own standards and to live up to them. The standards of pension administration created by previous wars are not merely obsolete; they were never altogether worthy of the occasions which called them into being.

### Ernst Haeckel.

THE death is announced at the age of 85 of Professor ERNST HAECKEL, who attained world-wide reputation as a biologist, a zoologist, and an apostle of Darwinism in Germany; later he secured notoriety as an expounder of a theory of the universe by which he settled, according to his own satisfaction, such problems as the existence of GOD, the freedom of the will, and the immortality of the soul. In addition to these labours he travelled widely in the East, and during the war was an embittered opponent of Great Britain and an ardent upholder of the German cause. He was a skilled artist both with the brush and the lead, and his books of travel were illustrated with his own hand, while many of his biological and zoological works were also embellished by him with magnificent drawings, both coloured and uncoloured. HAECKEL's chief claim to fame is that when quite a young man at the very beginning of his scientific career, apart from medicine, he read and at once accepted DARWIN's thesis as laid down in "The Origin of Species." He was the first German biologist to do so, and he maintained his position in opposition to many of the foremost thinkers in Germany, among whom the most prominent was VIRCHOW. Before very long, as every one knows, DARWIN's doctrine of evolution was accepted in scientific circles in Germany as well as elsewhere. HAECKEL's mind, however, worked on different lines from that of DARWIN, who was eminently cautious and who worked by amassing particulars and from them formulating a general rule. HAECKEL considered that the doctrine of evolution could be applied to the solution of all problems wherein men or animals are concerned with almost the certainty of mathematical laws, and in upholding this thesis he was as bitter and dogmatic as any of the clericals against whom he so often tilted. Thus, we find him saying in "The Riddle of the Universe" (we quote from the shilling edition of 1913), on p. 12:—

"In the famous speech which Emil du Bois-Reymond delivered in 1880 in the Leibnitz session of the Berlin Academy of Sciences he distinguished seven world enigmas, which he enumerated as follows: (1) The nature of matter and force; (2) the origin of motion; (3) the origin of life; (4) the (apparently pre-ordained) orderly arrangement of

nature; (5) the origin of simple sensation and consciousness; (6) rational thought and the origin of the cognate faculty, speech; (7) the question of the freedom of the will."

HAECKEL goes on to say that DU BOIS-REYMOND considered three of these problems entirely transcendental and insoluble—namely, problems 1, 2, and 5; three others, problems 3, 4, 6, capable of solution though difficult; while as to problem 7 he remained undecided. HAECKEL sweeps all doubts away as follows:—

"In my opinion the three transcendental problems (1, 2, and 5) are settled by our conception of substance; the three which he considers difficult though soluble (3, 4, and 6) are decisively answered by our modern theory of evolution; the seventh and last, the freedom of the will, is not an object for critical, scientific inquiry at all, for it is a pure dogma, based on an illusion, and has no real existence."

HAECKEL's "law of substance" is the combination of the fundamental chemical law of the constancy of matter with the fundamental physical law of the conservation of energy, and according to him it definitely rules out the three central dogmas of metaphysics—GOD, freedom, and immortality. We can expand this doctrine in the words of Mr. JOSEPH McCABE, who is HAECKEL's warmest supporter in this country, by the following quotation from his "Haeckel's Critics Answered," where he says that HAECKEL concludes—

"That the thinking and willing force in man—what we call his mind or spirit—is identical with the force that reveals itself in light and heat. In other words, he is forced to think that spirit and energy are one and the same thing, and so he uses the names indiscriminately. But he is further convinced ..... that matter and spirit (or force) are not two distinct entities or natures, but two forms or two aspects of one single reality, which he calls the fundamental substance. This one entity with the two attributes—this matter-force substance—is the sole reality that exists."

Belief in GOD is not the exploded idea that HAECKEL seemed to consider it, nor can we see how belief in the two cardinal doctrines of the conservation of matter and energy necessarily rules out belief in GOD. But here HAECKEL showed the typical psychology of the Prussian. Just as the pan-German—i.e., Prussian—ideal was that the whole world should be ruled and governed by Prussian kultur, that phase of psychology being the one and only mental attitude which possessed any real good, so HAECKEL held that belief in the law of substance explained all the problems which have exercised the mind of man for centuries, whence it followed for him that anyone who did not hold with his ideas was a gross obscurantist.

We turn with relief from HAECKEL the Monist philosopher to HAECKEL the biologist. In that field he undoubtedly did excellent work; his championship of DARWIN at a time when that great observer's views were generally looked upon with disfavour is greatly to his credit, and the biological museum which he gradually formed at Jena is comparable to the immortal HUNTER's museum in London. His "General Morphology" was highly praised by HUXLEY, while DARWIN gave similar praise to his "History of Creation." As to his views on the war, which, when they were published in October, 1914, rightly aroused indignation, we can, now that their author is dead, feel nothing but pity that one of such intellectual gifts should have associated himself with 92 other professors in glorifying the atrocities in Belgium and the German doctrine of kultur and militarism. His work as a biologist will stand as a whole, although it was undoubtedly defective in part; his philosophical and political views will be buried in oblivion.



## Annotations.

"Ne quid nimis."

### THE BIRTHDAY HONOURS.

ON the occasion of the celebration of His Majesty's birthday the King has conferred honours upon three members of the medical profession—namely, Lieutenant-Colonel Harry Gilbert Barling, Dr. Robert Charles Brown, and Mr. William Ireland de Courcy Wheeler. Lieutenant-Colonel Harry Gilbert Barling, who becomes a baronet, is the Vice-Chancellor of Birmingham University, where he has been Ingleby lecturer and dean of the medical faculty; he has also been examiner in surgery at the University of Cambridge. His public services during the war were of the first importance. Dr. Robert Charles Brown, who becomes a knight, is consulting medical officer of Preston Royal Infirmary and the founder of a scholarship for research at Cambridge. His work in connexion with the promotion of infant welfare has been indefatigable. Sir W. I. de Courcy Wheeler has rendered valuable scientific and organising service during the war, and is a member of the Consultative Committee of the War Office. Sir J. Y. W. MacAlister, secretary of the Royal Society of Medicine and its parent society for 32 years, is President of the Library Association, started and acted as secretary of the War Office Surgical Advisory Committee, and organised the Royal Army Medical Corps Bureau and an Emergency Surgical Aid Corps for the Admiralty, the War Office, and Metropolitan Police during the air raids. To these gentlemen, in the name of the medical profession, we heartily tender congratulations for well-deserved honours, and while doing so include the name of Mr. Laurence Richard Philipps, the founder of the Paraplegic Hospital in Wales, who becomes a baronet, and of Sir Henry Francis New, the mayor of Marylebone, and vice-president of Marylebone War Supply Hospital, whose knighthood has been thoroughly earned.

### EXPERIMENTS ON OUTPUT.<sup>1</sup>

THE first two publications of the Industrial Fatigue Research Board are a good augury of the high standard of future issues to be expected from this recently established board. They deal with subjects of paramount importance in the present industrial unrest. Miss Ethel E. Osborne's report is based on the hourly output of 43 women in a National Ordnance factory, who were employed on a particularly heavy and rapid operation in the turning of six-inch shells. Data from two shops were obtained of the hourly output for all operators for a whole week during two shifts, day and night, of 12 hours each, before hours were readjusted so as to replace those two shifts by three shifts of eight hours each; whereupon, after the lapse of five months so as to allow of adaptation to the new conditions, a fresh series of data was collected under precisely comparable conditions, the only variable factor being the alteration in the hours of work. The resulting relatively small increase in hourly output under

the short shift system depended on the large proportion of the working time which was absorbed by automatic machinery operations, the speed of which was constant and beyond the workers' control. But in the work of fixing and removing the shells, over the speed of which alone the operator has control, the time required for a fixed amount of work shows a decrease of 19·5 per cent. in favour of the shorter shift. (In the shorter shifts the average worker's hours in the factory seem to have been about 15 per cent. less than in the longer shifts.) Miss Osborne also shows that there was a drop in possible output of 3·43 per cent. for the long shift as compared with a drop of only 0·58 per cent. for the short shift—i.e., the machinery became more efficient and there was less idle time in the short shift. Moreover, during the last hour of each shift the 12-hour shift showed a constant, well-marked diminution in output, whereas no such uniformity exists in the case of the short shifts; on the contrary, several sets of curves exhibit no falling off. The curves of output for the short shifts give evidence of the possibility of running at full output right to the end of the shift; but the curves for the long shifts give no such evidence.

Dr. Charles S. Myers's report describes the remarkable effects of movement study, reduced hours of work, and an improved system of payment on output at the Derwent Foundry Company, Ltd., Derby. The workers were voluntarily trained in the best methods of casting, moulding, &c. Their hours were reduced from 54 to 48 per week. As soon as a worker reached 60 per cent. of "standard output" he began to receive a bonus on his piece-rate earnings, which was so contrived that the price paid per piece rose automatically with increasing output. Under this scheme the increase in hourly earnings amounted to about 200 per cent. in one instance examined. The output increased by more than 300 per cent. No evidence of increased fatigue was found, save, perhaps, in the case of two workers who had enormously increased their output and were producing far above "standard output." There was no complaint of increased monotony under the new system, and the workers were unanimous in their preference for it. The value of such a report as this needs no emphasis in the present industrial crisis.

### MORAL IMBECILITY.

IN the case of a man named Edward Noel Craven, convicted at the Central Criminal Court of obtaining property by false pretences, it was urged at his trial that he ought to be dealt with as a moral imbecile under the Mental Deficiency Act, 1913. He was, however, convicted, as stated, and sentenced to three years' penal servitude. From this he appealed to the Court of Criminal Appeal. He was a man able to earn a living as an engineer, but had committed many offences of dishonesty, and had been in a home under the Act of 1913. At the trial of Craven a medical witness from that home expressed the opinion that he was a moral imbecile and should be treated as such, but the Lord Chief Justice in giving judgment in the Court of Criminal Appeal held that the judge at the trial did not see his way to make use of the Act, and that he (the Lord Chief Justice) saw no reason for interfering with his discretion. The Home Secretary, he said, might order the examination of the prisoner when he was in prison and his removal to a home. An observation of Mr. Justice

<sup>1</sup> The Output of Women Workers in Relation to Hours of Work in Shell-Making. By Ethel E. Osborne, M.Sc. A Study of Improved Methods in an Iron Foundry. By Charles S. Myers, M.D., Sc.D., F.R.S. Reports No. 2 (price 6d. net) and No. 3 (price 2d. net) of the Industrial Fatigue Research Board, appointed by the Medical Research Committee and the Department of Scientific and Industrial Research. Published by H.M. Stationery Office, 1919.



Shearman at an earlier stage of the appeal may be noted. It was to the effect that the Mental Deficiency Act of 1913 contemplates the existence of homes for persons committed under it, but that there is usually no such home available, and that this had been his lordship's experience when trying such cases on circuit. He added that it was very difficult for a judge at the trial of a charge to investigate satisfactorily the mental condition of the prisoner. The proper deduction would seem to be that the Mental Deficiency Act is, in respect of such matters as those referred to, in danger of becoming a dead letter—first, because sufficient homes for moral imbeciles with criminal tendencies are not provided by the State, upon which the duty of providing them should fall; and, secondly, because the State does not supply for the guidance of judges the medical expert evidence which usually must be beyond the reach of the accused.

#### DEATHS FROM MALARIA IN ENGLAND.

THE Ministry of Health are frequently asked to assist in ascertaining the nature of obscure cases of illness in which a fatal issue has occurred. In two recent instances the post-mortem inquiries made for this purpose by medical officers of the Ministry have shown that the fatal issue was due to malaria. The Ministry are advised that in this country a death from acute malaria would be an exceedingly rare event if all medical practitioners adopted the diagnostic rule that in every case of obscure illness in a demobilised soldier, or other person who has served overseas, a blood film taken early in the illness should be examined. The Ministry have made arrangements by which such blood specimens sent to them for the diagnosis of malaria will be examined and reported on free of charge. The method of taking the specimen is described on p. 11 of the Memorandum, "Suggestions for the Care of Malaria Patients," of which a copy has been supplied to all registered medical practitioners in England and Wales. The specimens should be addressed to the Ministry of Health, Whitehall, S.W.1, accompanied by the patient's name and the name and address of the sender. The cover should be marked "*Malaria Specimen: Urgent.*"

Sir George Newman, Chief Medical Officer to the Ministry, takes this opportunity to add that during the present hot weather there is a possibility that, as regards cases of illness in demobilised soldiers, symptoms which appear to be due to "heatstroke" or other effects of the sun may in reality be due to malaria. Medical practitioners are reminded that in accordance with the provisions of the Public Health (Pneumonia, Malaria, Dysentery, &c.) Regulations, 1919, it is incumbent upon them to notify cases of malaria to the medical officer of health for the district.

#### INFLUENZAL OTITIS.

THE tendency to aural complications in influenza varies considerably in different epidemics. In the winter of 1889-90 and in the following years influenzal otitis was very frequent. In the 1918 epidemic, on the other hand, it was decidedly less common. Farner,<sup>1</sup> assistant at the Zurich clinique for diseases of the ear, nose, and throat, states that from the beginning of July to the end of December 1918, only 85 ear cases visited the clinique, and in another hospital at Zurich only 30 ear cases occurred among 861 influenza patients.

Of the 115 cases, 71 were males and 44 females, 90 were between the ages of 16 and 35, 12 were younger, and 13 older. In 49 the otitis was of the acute catarrhal variety (in 40 unilateral, in 9 bilateral), and in 56 suppurative (in 47 unilateral and in 9 bilateral). The otitis began on the first day of the disease in 23 cases, on the second day in 7, on the third to the seventh day in 45, in the second week in 24, in the third week in 4, and in 12 the date of onset could not be determined. Haemorrhagic vesicles on the tympanic membrane and sanguineo-purulent secretion in the tympanic cavity were seen in 31 cases. In 13 paracentesis was performed. Mastoid irritation was observed in 17 cases and mastoid abscess in 12, in 1 case on both sides. The following organisms were found in the pus: pneumococcus in 5, streptococcus pyogenes in 3, streptococcus mucosus, diplostreptococcus, pneumococcus and diplococcus in 1 each; in 1 the pus was sterile. The course of influenzal otitis, apart from the cases complicated by mastoid abscess, was rapid and favourable, and purely nervous symptoms such as neuralgia and "nervous" deafness were much less frequent and pronounced than was formerly the case.

#### POOR-LAW MEDICAL INSTITUTIONS AND LAY SUPERINTENDENCE.

SEIZING the opportunity afforded by the re-arrangement of certain Government departments, the National Association of Masters and Matrons of Poor-law Institutions is attempting to revive an old controversy by addressing to the Minister of Health and to the public generally a statement in support of the lay administration of hospitals. If this document sets forth the best case which can be made for a departure from established principles, it does not appear that the medical men aimed at have much cause for alarm. The Council of the Association claims for its members "probity of conduct, continuity of work, sympathy, consideration, and a fair holding of the scales between all the interests concerned." It does not state that these qualities are lacking among the medical men who undertake administrative work, though unless that implication is intended to be conveyed the argument has no weight. Accepting, however, the criteria proposed, we think that any unbiassed person would admit that they are most likely to be efficiently presented by professional men with higher education, more profound knowledge of human nature, and wider experience of public affairs than is characteristic of the class, however morally worthy it may be, from which masters and matrons in the Poor-law Service are drawn. Those who have seen the experiment tried know that lay superintendence means divided control and consequent friction—friction which impedes the running of the administrative machine and may bring it to a standstill. There must, in practice, be one head, and as between the qualifications of medical men and workhouse masters to manage institutions for the sick the choice is not difficult. And the question of choice is clearly raised, for in the opinion of the Council "many of our Poor-law institutions are bound to become more and more of the nature of State hospitals." Nor is the matter merely one affecting medical officers. In the Poor-law Service the term "matron" has not the same connotation as in ordinary hospital practice. It is not to be expected that trained nurses will submit to continual interference by a superior officer who is incompetent to judge their work aright and who

<sup>1</sup> Correspondenzblatt f. Schweizer Aerzte, 1919, xlix., 356-9.



has not the technical knowledge which would enable her to be appealed to in case of need. No sane person, so far as we know, has suggested that military hospitals should be placed under the charge of the Army Service Corps, but the plan would have quite as much to recommend it as could be said for the proposals of the National Association of Masters and Matrons of Poor-law Institutions. The practice of appointing medical men as heads of institutions has stood the test of time, and any drawbacks which attach to it are not to be overcome by substituting for a fully qualified officer, one ignorant of the most important part of the duties required.

#### INTERNATIONAL HEALTH AND THE LEAGUE OF RED CROSS SOCIETIES.

WITH the approval of the Ministry of Health, Dr. G. S. Buchanan proceeded at the beginning of the week to Poland to make one of a small International Committee formed at the instance of the new League of Red Cross Societies. This league has been requested by the Polish Government to aid in devising a public health organisation for that sorely tried country in face of the devastating attack of typhus which it has recently experienced, and of other epidemics which are threatened. Dr. Buchanan's collaborators are Professor Castellani (Italy), Professor Dopter (France), and Colonel Hugh Cumming (United States of America), so that each and all of the Committee will be able to advise from close personal experience on the practical ways of preventing and of combating epidemic disease. A great promise may lie behind this announcement, though more than this cannot be said until the League of Red Cross Societies has received the report of the International Committee; for obviously when a country in the special condition of Poland is concerned it may be impossible for the Committee to suggest practical measures; or it may be easy to suggest the measures that should be taken while impossible to give any assurance that public health organisation, however well defined, can live in so distressed an environment. Looking, however, on the brighter possibilities, we see in the appointment of this International Committee, with a mandate to give considered counsel to the League of Red Cross Societies, a prevision of what may be done in the future by the League of Nations, a grand part of whose programme is maintenance of world health by inter-State support. It seems to us that the League of Red Cross Societies may be a very valuable pioneer in those territories of international hygiene which the League of Nations will have to take over.

#### AMPUTATION STUMPS.

MANY accepted principles of surgery remain unchanged by the lessons of the war. For instance, despite all the experience of the last four years, the routine treatment of amputation stumps and the methods of prosthesis remain essentially the same in principle as they were before the war, though they have been much improved in details. No doubt during the times of stress the claims of urgent surgical procedures were so overwhelming that no leisure was left for the trial of methods of which the practical value was not yet established, such as the operations advocated some years ago by Dr. Vanghetti. Now, however, we may hope that surgeons will be able to devise new methods of treatment, and that mechanics may be successful in constructing suitable apparatus

for the improved amputation stump. Two papers which we print in this issue of THE LANCET are doubtless only an earnest of the developments to come. Major Fitzmaurice-Kelly's paper contains nothing, perhaps, startling in its novelty, but it offers what is just now much wanted—namely, a valuable contribution to the technique of the operation for forming plastic motors. In the Pavilion Hospital at Brighton there is a plentiful supply of material, probably unrivalled in the Empire, of which Major Fitzmaurice-Kelly has availed himself, so that he has been able to perform what is perhaps a greater number of kinematic operations than any other British surgeon has yet published. At the present moment most surgeons are sceptical of the practical value of Vanghetti's methods, but the next few months should see the improved plastic motors fitted with suitable artificial limbs and their value established or disproved. The paper by Major W. E. Gallie, of the Canadian Army Medical Corps, records an attempt to lengthen an amputation stump which is too short to be useful, by means of an osteoplastic operation. If sufficient muscular attachments and muscular control can be secured there seems no reason to doubt that this procedure may be of value. As in both Major Fitzmaurice-Kelly's and in Major Gallie's operations the risk of leaving the patient worse off than before is negligible, there seems no reason why these operations should not be repeated until an agreed technique is arrived at.

#### MARINE HYGIENE.

AT the Congress of the Royal Sanitary Institute, held at Newcastle-upon-Tyne from July 28th to August 2nd, Surgeon Rear-Admiral Sir Robert Hill, Director-General of the Medical Department of the Navy, read an excellent paper upon Marine Hygiene. After pointing out to his audience that much of the organisation of sanitation afloat was similar to that required upon land, he emphasised the fact that marine hygiene necessarily differed in one important particular from land hygiene—only a limited allowance of sleeping and working space is available in a ship. The ventilation of ships, especially fighting ships, is a difficult problem, for armoured sides, decks, and bulkheads must be kept intact as far as possible, main watertight bulkheads must not be pierced below the main deck, and ventilation outlets or inlets, on or above the upper deck, must not interfere with the working of the guns, nor be placed within the area of their blast. The technical and constructional difficulties of the naval architect are therefore many when merely ventilation is in question. Three systems are employed in the Navy: (1) the Plenum system in which fresh air is forced into the space to be ventilated, thus driving out the foul air; (2) the exhaust system in which foul air is drawn out, thus sucking in fresh air; (3) the combined system, consisting of both artificial supply and exhaust. At present the Plenum system is generally used for living spaces, but the exhaust system for spaces in which are generated great heat, disagreeable odours, water vapour, or dangerous gases. The combined system is used for medical dressing stations and operating rooms. Means are provided for preventing draughts and for distributing air and warmth evenly. Air is warmed by passing between tubes heated by steam and a temperature of from 55–60° F. is aimed at. Speaking of the water-supply on board ship, Sir Robert Hill said that it had to be most strictly guarded, distilled water only being used when the ship



is at sea; when lying in harbour or in rivers ships are supplied by water-boats from the shore, which are designed and handled so as to reduce the possibility of pollution to a minimum. All water, moreover, supplied from the shore is treated with chloride of lime in the proportion of 30 gr. to 100 gallons. For ventilation and disinfection of ships formaldehyde vapour is used and also sulphurous acid. The former disinfectant was found of great service during the influenza epidemic of 1918. As to the health of the Grand Fleet during the war it was eminently satisfactory as regards pneumonia, enteric fever, and preventable diseases generally. The only serious epidemics were the two of influenza in the spring and autumn of 1918; in the former of these the death-rate was 0·03 per cent., in the latter 2·8 per cent., owing to the prevalence of broncho-pneumonia as a complication. We commend a study of this paper to our readers, for they will there learn to estimate aright the never ceasing watch which is kept by the Naval Medical Department over the health of its charges.

#### HOUSING SCHEMES.

WE learn that sites have been selected for the 400,000 houses which are to be built at some time or another to provide for the needs of the population, and the Ministry of Health is urging, in its magazine *Housing*, the necessity for speeding up. It is implied that local authorities are responsible for the delay, but we can imagine that local authorities are naturally chary about entering on schemes which must involve the spending of large sums of money. Economy appears to be the watchword of the Prime Minister and the Chancellor of the Exchequer, but we doubt whether economy will be realised in Government house-building after reading an article in *Housing* headed the Production Department. From this we learn that there are three problems in the production of a house: materials, labour, and transport. To manage these there is to be a production officer who will work in liaison with officials from the Ministry of Munitions for materials, the Ministry of Labour for labour, and the Ministry of Ways and Communications for transport. There will also be a regional advisory committee. We are not told whence the money is to come which all these bodies will assuredly demand, but we doubt whether local bodies will speed themselves up to get into liaison with this army of officials. In the meantime it is very desirable that the taxpayers, on whose pocket the cost of the housing is sure to fall, should be enlightened as to the manner in which the Government houses are to be built. For instance, we should like to know whether the water pipes will be run as much as possible away from the outer walls, or carefully packed if run down them, so as not to freeze in cold weather. Again, will the cut-off taps (if such are supplied, as they should be) be in a place where the tenant can get at them without risking: (a) setting the house on fire, (b) spoiling his clothes, (c) breaking his leg by having to scramble into mainly inaccessible places in a dark loft. Again, if there are electric bells will the bells be put where they can be seen and also easily reached. The members of the Housing Department of the Ministry of Health do live in houses, and have some idea as to what constitutes comfort and freedom from worry in a house be it ever so small. We should like to know that in the projected buildings all these things are being thought out,

for they are of immense medical importance. The medical interest in housing does not cease when ordinary questions as to site, aspect, and drainage have been satisfactorily answered.

#### THE ACTION OF ULTRA-VIOLET RAYS ON THE ACCESSORY FOOD FACTORS.

AN interesting differentiation of the accessory food factors appears in a paper by S. S. Zilva, published in the July number of the *Bio-Chemical Journal*. This investigation showed that the exposure of treated lemon juice to ultra-violet rays in neutral condition does not influence its antiscorbutic activity. Similarly the exposure of autolysed yeast juice for the same length of time does not impair its antineuritic potency; but butter exposed for eight hours to ultra-violet light undergoes a very noticeable change, and the fat-soluble A factor in it becomes inactivated. The moral of this is that butter should be kept in the dark, and it is well known also that light is a contributory factor in rendering butter rancid.

#### ANDREW CARNEGIE.

By the death of Andrew Carnegie, in his eighty-fourth year, a conspicuous figure passes from the ken of this world. Born of comparatively poor parents, who were in his childhood ruined by the introduction of the power loom in displacement of the hand loom, he arrived in America with his family in 1848. After passing through the stages of bobbin-boy in a cotton-mill, furnace-boy in a factory, telegraph operator, and various posts in the Pennsylvania Railway Company, he became, in 1863, superintendent of the line. He had both made money and acquired experience, and the enormous development of the iron industry which began after the American Civil War gave him his opportunity. He possessed to the full the faculty of using men, and though naturally kind-hearted and generous, business always came first. In 1873 he put £50,000 into an iron and steel company; 26 years later the business was sold for something over £90,000,000, Carnegie's share being more than a half. Although relentless in his methods of making money he gave away enormous sums, his total benefactions by 1908 being estimated at about £85,000,000, and most of this was devoted to organs, education, peace propaganda, and the Hero Fund. If his benefactions did not bring about all the benefits that he desired it was not for want of will, and his gift of £2,000,000 to Scottish universities is an example to be followed, for all the criticisms which have been showered on it. It is because of this gift that he may be regarded as a supporter of the cause of science. His mentality was curious, his gospel of wealth laid down strict theories as to the duties of wealth, yet, as the great Homestead strike showed in 1892, he was a bitter, even venomous, opponent of organised labour. If he did not live to see one of his ideals realised—namely, the union of Great Britain with the United States—yet he at least saw the two nations brought into more intimate relations than ever before. His other ideal, the abolition of war, received a rude shock in 1914, and while the conflict was being fought out he relapsed into complete seclusion. On the whole it may be said of him, that other men laboured and he entered into their labours, yet he tried his best to do good with wealth which in some ways had ominous origin.



## REGISTRAR-GENERAL'S DECENNIAL SUPPLEMENT (1901-1910).

### I.

IN Part III. of the recently issued supplement to his seventy-fifth annual report Sir Bernard Mallet contributes a volume which will certainly be welcomed by students of statistical science. This volume contains detailed statistics of natality as well as mortality in England and Wales during the ten years 1901-10, and forms part of a series of decennial reviews of which the first, published in 1864, related to the period 1851-60.

Although in some earlier years summaries of recent mortality had been issued from the General Register Office, Dr. William Farr decided in 1864 to inaugurate a regular system of decennial reviews in which the proportions, resting on the experience of a sufficient number of years, should deserve the confidence of statisticians. At the close of each subsequent decennium similar supplements have been issued, retaining to a large extent the essential features of the original volume. In this report the Registrar-General presents an interesting review of the whole series from 1851-60 onwards. He expresses regret at the late appearance of the work, but attributes the delay to the war, which has entailed depletion of the staff and imposed new and urgent duties upon those responsible for the production of this volume. The present supplement, like its several predecessors, deals with registration areas, which, except in the case of counties, are not coextensive with any territories used for public health or other administrative purposes. It is the last of its kind, the scheme designed for the next supplement being based on administrative in place of registration districts as the local units for tabulation.

#### *Natality, Legitimate and Illegitimate.*

The births in England and Wales during the ten years ended in 1910 numbered 9,298,209, of which 370,418 were born out of wedlock. There has been a creditable decrease of illegitimacy between 1871-80 and 1901-10, a decrease which is the more remarkable as it commenced whilst the legitimate birth-rate was still rising. Stated in terms of the living at all ages, the decennial birth-rate in the course of the last six decennia has varied from 35.4 in 1871-80 to 27.2 in 1901-10; but, calculated as it ought to be, in proportion to the numbers of women of child-bearing ages—i.e., from 15 to 45—the birth-rate shows a greater fall than when calculated on the aggregate population.

#### *Natural Increase of Population in Recent Decennia.*

The mean populations employed in this volume were calculated by the method described in the annual report for 1907, which is a modification of that used for the decennial supplement of 1891-1900. The results obtained by the two methods differ very slightly, the main principles in both cases being identical. The estimated mean population of England and Wales in the latest decennium was 34,180,202 persons, among whom females were in excess by more than a million.

The natural increase of the population by excess of births over deaths in each of the last six decennia is shown by a table from which it appears that the fall in the death-rate had almost exactly compensated for the fall in the birth-rate throughout the period from 1851-60 to 1901-10. But, during the latest decennium this balance has been upset, the further decline in the death-rate being insufficient to compensate for the fall in the birth-rate, even before the war. Dr. T. H. C. Stevenson gives reasons for believing that "these excesses of crude birth-rate over crude death-rate (which are of practical importance as measuring the rate of increase actually occurring) are the result in each case of two factors, the tendency towards reproduction or death, and the opportunities afforded by each population for the display of these tendencies."

#### *Deaths and Standardisation of Death-rates.*

The deaths registered in England and Wales during the decennium 1901-10 numbered 5,248,774, corresponding to a crude rate of 15.4 per 1000 living, which is the lowest recorded since the establishment of civil registration. From a table of male and female death-rates in the respective decennia it appears that mortality has fallen by 30 per cent. in the course of the last 60 years, the fall in 1901-10 being

much more rapid than in any previous decennium. For comparative purposes it has long been the Registrar-General's practice to express mortality in the form of "corrected death-rates"—i.e., rates "weighted" to allow for differences of sex and age in the population experiencing the observed mortality. These rates are now referred to as "standardised," the reasons for this change having been explained in the annual report for 1911. The enumerated population of England and Wales in 1901 has been retained as the standard in the present volume, and all standardised rates incidental to earlier decennia have been recalculated accordingly. From a useful table we learn that during the last half century a much greater decline has occurred in the mortality of females than in that of males at all ages from 15 upwards. This has had the effect of increasing the excess of mortality in the male sex which has been manifest at all adult ages from the earliest periods for which records are accessible. This excess has long been, and still is, very marked at age 45-55, when it amounts to 30 per cent. But the changes at some other ages are even more noteworthy. Thus, equality of mortality between the sexes at age 35-45 in 1841-50 has been converted into a male excess of 22 per cent. in 1901-10, and a female excess mortality of about 6 per cent. at ages 25-35 in 1841-50 has gradually been changed into a male excess of 17 per cent. in 1901-10. It is notorious that the number of females aged 20-25 has been overstated in the Census returns. And if such misstatement at this period did not apply equally to the returns of age at death, it would have the effect of reducing the recorded mortality of females at this age, and so, possibly, of converting a real deficiency into an apparent excess of male mortality. Nevertheless, there can be no doubt of the male excess in 1901-10, when it amounted to not less than 19 per cent. At ages 15-20 the pre-existing excess of female has during the last two decennia been converted into an excess of male mortality.

At age 5-10, on the other hand, female excess has during the same period replaced a pre-existing excess of male mortality. This is the only age-period at which the mortality of females has increased relatively to that of males. At age 10-15 the death-rate of females has been in excess throughout the seven decennia, though in 1871-80 practical equality was attained. It is particularly noteworthy that at every age-period from 5 to 25 years among males and from 5 to 35 years among females the mortality in 1901-10 was less than half that recorded 50 years previously—viz., in 1851-60. The decline in mortality in 1901-10 from that in the preceding decennium was shared by each sex at every age-group, the slight increase among young children experienced in 1891-1900 having given place to a decrease in 1901-10 amounting to 20 per cent.

#### *Mortality in Infancy and Early Childhood.*

An outstanding feature of the decennium under review is the substantial diminution in loss of life among young children, especially infants. The mortality of infants in their first year was equal to 128 per 1000 births, while that of children under 5 years was equal to 46 per 1000 living at that age. Both of these rates are the lowest recorded in any previous decennium. The fall in the mortality of the first year of life started about the beginning of this century. Infant mortality in the last quinquennium of the nineteenth century was as high as it had ever been since 1837, and had been slowly rising for 15 years. The remarkable fall since experienced commenced with the year 1902. The death-rate in the first five years of life, which had been stationary in the last three quinquennia of the nineteenth century, began to fall again with the first year of the new century. It has since maintained an almost parallel course with that of infant mortality, of which, naturally, it is largely composed.

It is noteworthy how closely the relative position of the English counties, as regards mortality in early life, corresponds to that of subsequent ages in the aggregate. The six counties with highest total mortality—viz., Stafford, West Riding, Glamorgan, Northumberland, Durham, and Lancaster—return also the highest mortality at ages under 5 years, almost in the same order, as well as furnishing five out of the six highest places in infant mortality. Evidently the environment which weeds out most of the weeklings in early life is also the most prejudicial to survival at later ages. A similar conclusion would be reached if comparison were made between *counties* instead of *counties* as above, and it seems to follow that measures



which preserve the lives of young children must generally promote the vitality of survivors likewise.

The distribution of mortality over each of the first five years of life is here discussed, both for the country at large and for the urban and rural groups of counties. The difference between urban and rural environment appears to influence the death-rate considerably more in the second and each of the three succeeding years of life than in the first. The urban excess, which is 30 per cent. in the first year after birth, grows to not less than 96 per cent. in the second and third years, after which it declines to 56 per cent. in the fifth year. This excess is at all ages much less due to the extent by which the urban rates exceed the average, than to that by which the rural rates fall below it; this, indeed, is natural, in view of the relative populations of the two groups. Among girls the favourable effect of rural environment is more perceptible than among boys at the earlier ages, but after the second year there is scarcely any difference in this respect. The death-rate of females, which is much below that of males in the first year after birth, gradually approximates to it in the next three years, and in the fifth year even slightly exceeds it, as it tends to do also in the two subsequent quinquennia of age. So considerable is the influence of environment on life and health during the second and third years of life that whilst in 1901-10 the mortality of the urban group of counties in the third year was practically identical with that at all ages together, that of the rural group was only two-thirds of the corresponding figure for that group at all ages. In childhood the difference between urban and rural mortality may be regarded as a rough indication of the comparative extent to which mortality generally is preventable. And thus the extreme importance is emphasised of safeguarding the health of children in the years intervening between infancy and compulsory school attendance—a matter which is now happily receiving the public attention which it deserves.

## THE PUBLIC SUPPLY OF VACCINE LYMPH.

A MEMORANDUM has been prepared by the Ministry of Health, for the use of the medical officer of health, in connexion with the supply and use of vaccine lymph for the vaccination or revaccination of persons who may have been exposed to small-pox infection. The Memorandum has been prepared for convenience of reference in consequence of a number of small outbreaks of small-pox that have occurred during recent months in which it was evident that the procedure to obtain vaccine lymph is not always fully understood. The Memorandum runs as follows:—

1. The importance of obtaining the prompt vaccination of persons who have been exposed to small-pox infection needs to be emphasised, as cases have recently occurred in which known contacts of small-pox cases have not been offered vaccination promptly and subsequently have developed small-pox.

2. It is the duty of the public vaccinator to vaccinate or revaccinate at the public expense persons in his district who apply to him for the purpose, and who have not previously been vaccinated or revaccinated within a period of ten years. Vaccination of small-pox contacts by the public vaccinator should therefore be regarded as the ordinary procedure when this can be arranged without causing delay. In this connexion it should be remembered that public vaccinators frequently have in their possession a recent supply of vaccine lymph ready for use. In any case, the medical officer of health is requested immediately to acquaint the public vaccinator and vaccination officer concerned when cases of small-pox come to his notice.

3. Vaccination of small-pox contacts may also be carried out by the medical officer of health without reference to the public vaccinator, and sometimes it is obviously the best course that these contacts should be vaccinated by him at once when the fact of exposure to infection has been discovered. The Local Government Board issued in 1917 the "Public Health (Small-pox Prevention) Regulations," which provided that: "The medical officer of health of any local authority may, on the occurrence of any case of small-pox and where the circumstances, in his opinion, so require and permit, perform vaccination or revaccination on any person who has come in contact with the infection and is willing to be vaccinated, and without charge to the said person."

4. Vaccine lymph from the Government Lymph Establishment will be supplied for this purpose to medical officers of health on application by letter, telegram, or telephone to the Government Lymph Establishment, Colindale Avenue, The Hyde, London, N.W. 9. Telegraphic address: "Defender," Hyde, London." Telephone No.: Kingsbury 41 (London District).

The next three sections of the Memorandum contain important counsel and information. The Government Lymph Establishment advise that lymph sent out by them should be used within a week of its receipt as an obvious precaution against unnecessary storing. An exception can be made in the case of ports in frequent communication with the continent if the medical officers of health of such ports communicate with the Establishment. It is also stated that lymph supplied to medical officers of health is for vaccinations performed by them, their assistants, or deputies, while arrangements for facilitating public vaccination in an affected district will continue to rest with the boards of guardians and public vaccinators. Medical officers of health, in vaccinating contacts, are enjoined to keep a dated record of vaccination, revaccination, and their results, with name, age, and address of the subject. Where Government lymph is employed the official reference number should be recorded, and lymph from supplies where no information concerning source is kept should not be employed.

The Memorandum quotes from a circular of the Local Government Board of Feb. 13th, 1917, the regulations referred to in its third paragraph, which run as follows:—

(a) Vaccination should at every stage be carried out with aseptic precautions, which should include the cleansing of the surface of the skin before vaccination, the use of sterilised instruments, and the protection of the vaccinated surface against extraneous infection both on the performance of the operation and on inspection of the results. Advice as to the precautions to be taken in this respect until the scabs have fallen and the arm has healed should always be given to the person vaccinated or, in the case of the vaccination of a child not more than 14 years of age, to the parent or other person having the custody of the child.

(b) In all ordinary cases of primary vaccination the vaccinator should aim at producing four separate good-sized vesicles or group of vesicles not less than half an inch from one another. The total area of vesiculation resulting from the vaccination should not be less than half a square inch.

(c) If any person vaccinated or revaccinated requires medical treatment in consequence of the vaccination or revaccination, the local authority should offer to provide such medical treatment as may be required.

(d) The local authority should arrange to pay to the medical officer of health such sum as is reasonable in respect of the extra work which he undertakes in pursuance of these regulations. For their guidance the Board may state that in their view the payment should be not less than 2s. 6d. for every vaccination or revaccination performed.

When a medical officer of health reports to the Ministry of Health a case of small-pox in his district (Article XIX. of the Local Government Board's General Order of Dec. 13th, 1910), it is desirable that he should add a note regarding the steps taken to secure the vaccination of contacts. Recent experience shows that it is important to bear in mind that inspectors or others concerned with the removal of small-pox cases or the disinfection of their clothing, and members of hospital staffs who at any time are likely to come into contact with a small-pox case, should at all times be well protected by revaccination, and should not take the risk of waiting to be vaccinated until exposure to infection has occurred.

**DROUGHT IN BELFAST.**—Like many other places in the United Kingdom Belfast is now feeling the effects of the continued drought. July is usually a wet month, but during July of 1919 rain to the extent of only 0·68 in. fell in nine days, the average for the previous 44 years being 2·80 in. during that month. Indeed, for the whole of the year 1919, up to July, the rainfall has been only 15·15 in., while the average is 20·51 in. All over Ulster the weather has been very dry; for example, in Warrenpoint, at the head of Carlingford Lough, there were only four days in July during which rain fell to the extent of 0·54 in., while in the same month of 1918 rain fell to the extent of 5·11 in. in 13 days. As a result farmers and water commissioners are becoming uneasy. In Belfast the water in store on July 31st was reduced to 1461 million gallons—that is, 340 million gallons less than at a corresponding date in last year. The supply has been already reduced, and it is announced that, if the weather continues, a still further reduction will be made.



## PARIS.

(FROM OUR OWN CORRESPONDENT.)

*The Prevalence of Rabies in Paris and in the Department of the Seine and Oise.*

THE annals of the Pasteur Institute contain the annual report for 1918 of the Institute with respect to the treatment of rabies for the year. The tables affixed to the report make very instructive reading, for they display a great progression of cases of rabies observed and treated. The number of these cases amounts to 1803 for the year 1918, while the information collected by the antirabic service allows us to foresee that for 1919 the total will be still higher. In 1914 only 373 cases came under treatment. It is in the Department of the Seine and Oise that increase has been particularly marked. Before the war from this department only 30 cases of rabies came to the cognisance of the Institute each year. In 1918 there were 193 cases.

*Boric Acid in the Preservation of Food.*

The report by M. Lindet to a committee of the Health and Hygiene Department of the Seine calls attention to the increased employment of boric acid in connexion with food-stuffs, and dwells on the dangers which emerge for public health. Before the war such employment of boric acid was interdicted where not limited to small percentages in case of certain products. Severe proceedings have been taken against the manufacturers of soft cheese, who employ for preservative purposes a German speciality containing boric acid to a degree which renders the food dangerous to habitual consumers. The war suppressed the importation of this stuff and the cheeses grew better, but to-day there is a renewed danger, the incriminated substances, no doubt, coming into France by devious routes. Moreover, there is a sale now for the yolks of eggs, rare and costly delicacies, which have been preserved by boric acid, while butchers use borates to retard putrefaction of their wares, and so do those who sell fish and butter. Evidently the use of boric acid is not being controlled owing to the urgent food difficulties of the war. M. Lindet's report concludes with a demand for the return to the legal repression of these dangerous procedures.

*Æsthetic Surgery.*

Æsthetic surgery, or, as you call it, cosmetic surgery, continues to develop its territory. Two communications have already been received at the Academy of Medicine upon the correction of nasal deformities by surgical intervention within the nostrils and under the skin, the sections and sutures being carried on without any cicatricial result which is visible from without. More recently Dr. Passot has undertaken the cure of wrinkles. He had observed that when the skin in front and above the ear was pulled upon obliquely from below upwards and backwards effacement of many wrinkles took place, while folds due to laxity of the integument disappeared. His technique for obtaining these results consists of a little cutaneous resection under local anæsthesia at a site preferentially covered by the hair. The scalp is shaved before the operation, and cicatrices will be hidden by the growing hair. The operation, made with full aseptic precautions and followed by minute suturing, gives, he considers, excellent results, no trace of the proceeding remaining. For wrinkles on the forehead a similar operation is practised in the temporal region. The hair having been shaved previously, the cuts here are spindle-shaped. These little operations appear to have been followed with considerable success, particularly among women.

*Venous Tension and Varicose Veins.*

Dr. Mabile has made important advance in the diagnosis and treatment of varicose veins in employing the sphygmometer and the viscometer, in order to measure the blood-tension in venous system. This examination is made in the recumbent position, the leg being first horizontal and then vertical; then in the sitting position, the legs hanging down; and finally, in the standing position. The observation of the differential pressure measuring the deviation between the maximum and minimum pressures, and of the oscillometric index, allow venous troubles to be classified in three groups:—(1) Venous erethism, temporary troubles due to fatigue or to the great ingestion of liquid; (2) valvular

insufficiency; and (3) endocrine troubles. Each of these has its different characteristics. This procedure allows the fixing of rules for treatment: to the first category of cases massage is assigned, to the second surgical intervention with resection of the femoral vein, and to the third treatment by medicaments.

August 11th.

## AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

*The Influenza Epidemic.*

FOR the last two months the feature of the epidemic in Victoria has been the steady level of morbidity and mortality. From 10 to 12 deaths daily occur for the whole State. The number of hospital patients is gradually diminishing. There are at present about 750 in public hospitals. In New South Wales the lifting of the restrictions soon after Easter was followed by an immediate, though not explosive, spread, just as happened in Victoria. During the past month in Sydney the spread has been very acute, and the death-rate has become very serious, although it is difficult to say what ratio it bears to the actual number of cases. Banks and public offices have been partly closed owing to shortage of staffs. There are at present 2000 hospital cases, and fear is expressed that further accommodation will have to be provided. The Government have not reapplied the restrictions as to masks or public assemblies, and the chief health officer for Sydney has expressed the opinion that no measures of public health are likely to be of any avail. In Brisbane the disease has appeared in epidemic form, but has never reached alarming proportions, although the death-roll already numbers some hundreds. In South Australia it appears to be smouldering. Tasmania still remains free, and owing to the shipping strike has practically been cut off completely from the mainland for the last month. Lord Jellicoe visited several Tasmanian harbours, but no communication was allowed with the shore.

*Returning Troops.*

Practically the last of the hospital cases from overseas have arrived in the hospital ship *Karoola*. The system of dealing with returning men in Victoria, or, as it is called, "finalising" them, has been brought to very smooth working. The men are brought straight from the transport to a depot where a number of medical boards are in waiting. The medical officers sit in groups of two and mark the men in three divisions. Those who have suffered no disability and are well are classed A and discharged forthwith. Those who have suffered disability but do not need treatment are B and are awarded a pension on the spot, which is subject to review in six months. Those who need treatment in hospital are sent to Caulfield Military Hospital; those who need out-patient attention or require a special examination to assess their pension rights, are referred to No. 5 A. G. H., now used only for out-patient cases. As many as 500 men are handled in an hour and a half by seven boards, and the system is popular with the men. The scene outside the depot where the relatives of the men are in waiting is one of considerable animation, and everyone inside works their hardest to pass the men out as rapidly as possible. Every man is examined by a dentist and given the right to six months' dental attention if needed, whether discharged or not. The Red Cross officials also give each man a parcel of underclothing.

*A Question of Ethics.*

An ethical question is attracting attention in Sydney. Professor D. A. Welsh, who occupies the chair of pathology in the University, recently wrote several articles over his own name in the *Sun*, a Sydney daily newspaper, on the subject of influenza. This constitutes a breach of the by-laws of the New South Wales branch of the British Medical Association, and the matter was brought to the notice of the local council. Professor Welsh wrote intimating that he would resign his membership of the branch, but the council replied that he could not do so unless he also resigned his membership of the British Medical Association. There the matter stands at present. Professor Welsh is one of the three members of the consultative council on influenza appointed by the Government in New South Wales.



*Medical Honours.*

Several well-known practitioners have received distinctions in the Birthday Honours. Sir J. C. Verco has been a leader in Adelaide for many years, and has held almost every position of professional distinction as a practitioner and teacher. Surgeon-General C. S. Ryan, of Melbourne, has received the honour of C.B.E. Dr. T. P. Dunhill receives a C.M.G.

*Eliza Hall Institute.*

The position of director of the Eliza Hall Institute of Research, which been established at the Melbourne Hospital by an endowment for that purpose, has been given to Dr. S. W. Patterson, who is a graduate of the Melbourne University, but has been for some years engaged in special study in London. Dr. Patterson served during the war with the rank of major in the R.A.M.C.

June 26th.

## NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

*The Soldier's Life in India.*

REFERRING to the relief of the Territorials which is now proceeding, a leading Indian journal says: "Apart from their military services, one of the most important achievements of the Territorial in India has been his success in obtaining better conditions for soldiers in garrison. The old regular who happens to be in India to-day will admit the amenities of his life have been enormously increased. For much of this the new units will have to thank the Territorial officers and men who, having a 'divine discontent,' made it felt to good effect."

*Red Cross Work for the Afghan War.*

The Indian branch of the Joint War Committee of St. John and the Red Cross telegraphed within 24 hours of the outbreak of hostilities for supplies to be sent up to the front from the main dépôt at Bombay. Shortly afterwards the five Assistant Red Cross Commissioners, whose services had been obtained from the Commander-in-Chief, arrived at their bases at Rawal Pindi, Peshawar, Kohat, Bannu, and Quetta. Since then the committee have been receiving indents from them almost daily and have already sent up supplies valued at five lakhs of rupees (£33,000 sterling).

*Women's Medical Service.*

The Central Committee of the Countess of Dufferin's Fund for the junior branch of the Women's Medical Service for India announces that in selected cases promotion will be made from the junior to the senior branch of the Women's Medical Service. Such selection will be made from any grade, even the lowest, when the Selection Committee is convinced that promotion is deserved and a vacancy has occurred. Should the Central Committee consider that it would be in the interests of any of the members recommended for selection to proceed to Europe for post-graduate study financial assistance will be given to deserving members in their own and the public interest. In such cases definite courses of study will be laid down such as may from time to time be found suited to the requirements of India. It must, however, be understood that the number of vacancies in the senior Women's Medical Service is at present small, although it is hoped that the service may in the near future be augmented.

*Calcutta Ophthalmic Hospital.*

The absence of an efficient ophthalmic hospital in Calcutta has long been a reproach to Bengal. The existing hospital is inadequate and ill-equipped, and it has to serve not only the requirements of Bengal but of areas outside that province, patients coming from great distances to be treated. Just before the war the Government is understood to have purchased a site for a new hospital. The Indian press has been commenting on the subject in strong terms, and it suggests that what is wanting is a larger conception of the whole situation regarding the treatment of eye diseases in India and a more statesmanlike way of dealing with it.

*Beggars in Madras.*

An agitation is on foot in Madras to do something to control the large number of diseased beggars who infest the

streets. The Governor has just issued an appeal on behalf of the lepers, for whose suffering thousands much more ought to be done than has been achieved in the past; but until it is recognised as an offence instead of a legitimate profession to beg from every possible victim, the large army of those who exist by this means will prefer to pick up their living as hitherto.

*I.M.S. Officers from Ceylon.*

In response to the appeal recently made for recruits from Ceylon, upwards of 50 applications have been received from Ceylon doctors desirous of joining the Indian Medical Service. The number of Ceylon Government medical officers allowed to join the Indian service has not yet been decided on.

*Pilgrimage Sanitation.*

The Government of Bihar and Orissa have submitted to the Government of India a Bill to make better provision for the control and sanitation of places of pilgrimage in the province.

*Bombay Water-supply.*

A recent official report by the municipal hydraulic engineer stated that "if two consequent failures of the monsoon should occur before the water-supply is again increased, it will be absolutely necessary to stop all water supplied for trade purposes." The daily amount available for domestic supply during the last nine months has been only 22 gallons a head of the population.

July 20th.

## URBAN VITAL STATISTICS.

(Week ended August 9th, 1919.)

*English and Welsh Towns.*—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had been 9.0, 10.3, and 9.7 in the three preceding weeks, was again 9.7 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual rate was 9.5 per 1000, and coincided with that in the previous week, while among the remaining towns the rates ranged from 2.9 in Wimbledon, 3.0 in Willesden, and 3.5 in Ilford, to 15.5 in St. Helens, 16.2 in South Shields, and 16.5 in Stockton-on-Tees. The principal epidemic diseases caused 131 deaths, which corresponded to an annual rate of 0.4 per 1000, and included 53 from infantile diarrhoea, 35 from diphtheria, 21 from measles, 11 from whooping-cough, 7 from scarlet fever, and 3 from enteric fever. Diphtheria caused a death-rate of 1.0 in Bolton, 1.1 in Portsmouth, and 1.2 in St. Helens. There were 1547 cases of scarlet fever, 1092 of diphtheria, and 1 of small-pox under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 1538, 1117, and 2 respectively at the end of the previous week. The causes of 25 deaths in the 96 towns were uncertified, of which 5 were registered in Liverpool, 4 in London, and 3 in Gateshead.

*Scotch Towns.*—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had been 10.6, 11.1, and 10.6 in the three preceding weeks, further declined to 10.0 per 1000. The 224 deaths in Glasgow corresponded to an annual rate of 10.4 per 1000, and included 9 from infantile diarrhoea, 4 from diphtheria, 3 from enteric fever, and 2 each from measles and whooping-cough. The 62 deaths in Edinburgh were equal to a rate of 9.6 per 1000, and included 1 each from whooping-cough and diphtheria.

*Irish Towns.*—The 99 deaths in Dublin corresponded to an annual rate of 12.7, or 0.9 per 1000 above that recorded in the previous week, and included 12 from infantile diarrhoea and 1 each from enteric fever and measles. The 73 deaths in Belfast were equal to a rate of 9.5 per 1000, and included 2 from infantile diarrhoea and 1 from scarlet fever.

*DONATIONS AND BEQUESTS.*—By the will of the late Sir Archibald Davis Dawney, of Cedars-road, Clapham Common, Mayor of Wandsworth, the testator has left, among other bequests, 5000 £1 shares in Messrs. Dawney and Sons, Ltd., each to King Edward's Hospital (Cardiff Infirmary) and the Putney Hospital, Lower Common, Putney; 500 shares to the Royal Hospital for Incurables; his premises known as Eddington, Barnet Wood-lane, Ashted, to the Putney Hospital; and No. 108, Penylan-road, Cardiff, to King Edward's Hospital (Cardiff Infirmary).

*FATALITY FROM CARRYING LOOSE MATCHES.*—At an inquest held by Mr. Ingleby Oddie on August 5th at Lambeth on the body of David Rothery, aged 17, employed by the Nugget Polish Company, a witness stated that he saw Rothery with his clothing alight. He turned the hose on him and put the flames out. Rothery's clothes were saturated with turpentine, and before his removal to the hospital he stated that he had stumbled over a barrel, when some loose matches in his pocket caught fire. A verdict of "Accidental death" was returned.



## Correspondence.

"Aud alteram partem."

## INTRAVENOUS INJECTIONS OF ANTIMONY TARTRATE IN BILHARZIASIS.

To the Editor of THE LANCET.

SIR,—Dr. Frank E. Taylor's series of ten cases of vesical bilharziasis treated successfully by antimony tartrate, as recorded in THE LANCET of August 9th, are very interesting because they are all British soldiers who contracted the disease in Egypt during the recent war. There must be hundreds of soldiers in this country similarly infected, and, in view of the fact that such cases if not cured will demand and receive pensions, it is of importance that this treatment should become known and scientifically carried out by keen and able observers. The treatment needs care and skill and some tenacity of purpose, for it demands, to ensure success, that the urine shall be examined microscopically every day of injection. But care, skill, and tenacity of purpose expended are amply repaid by the great interest of the developments which result and by the certainty of the cure.

Mr. J. R. Newlove and I reported at length<sup>1</sup> details of the treatment as carried out at the Khartoum Civil Hospital during the last two and a half years. Over 70 cases were included in that paper and we have watched the result of treatment in some cases for a period of over two years. The result has conclusively demonstrated the permanency of the cures.

With regard to the series of cases reported by Dr. Taylor I shall not be surprised if, in every case, ova reappear in the urine and with the ova hæmaturia (microscopic blood only perhaps) and some albuminuria. But supposing, as is most likely, ova do appear again in the urine of these cases this will not mean that the treatment has not been successful, for the ova are those already deposited by the worms before the course of treatment. They, naturally, are eliminated as foreign bodies, even after the death of the worms. In some of our cases dead ova were eliminated for two years after the course of injection. Further, if the ova which are eliminated after a total of 10 or 15 gr. of antimony tartrate have been injected be microscopically examined it will be found that they are *small, shrivelled, black*, and have lost their double contour, and that their contents are granular and do not show the outline of primitive organs. They are, in fact, dead, sterile, and incapable of harm.

Antimony tartrate not only kills the bilharzia worms in the portal circulation; it also acts directly on the ova already deposited in the bladder and rectum, and these ova, although they are eliminated in due course, are sterile—in fact, the patient has ceased to be a carrier of bilharzia disease. That the ova are sterilised by antimony tartrate is a fact more important than that the worms are killed. Prophylaxis is more important than the individual cure.

The case reported by Major R. G. Archibald and Major Arthur Innes<sup>2</sup> should never have been reported as a case of death from the treatment. He died of influenza pneumonia, as was shown by the post-mortem examination. I have written fully in reply to this paper.<sup>3</sup> Any fatty degeneration found by the authors in the organs was probably due to other causes—intestinal parasites, ankylostomum, tænia nana, or to bilharzia itself (it is a mistake to think that bilharzia acts as a mere mechanical agent and that the only effect is the physical one, the ova acting merely as foreign bodies; Ferguson and Fairley have both shown that bilharzia is more far-reaching in its effects). It has yet to be proved that antimony tartrate, given in doses necessary to cure bilharzia (25–30 gr.), gives rise to fatty degeneration, or, in fact, that its causes fatty degeneration at all. Other workers have recorded cases of bilharzia where 37 and even 67 gr. have been given, and, as Dr. Taylor states, very much larger doses have been given for trypanosomiasis and, I may add, for kala-azar, without any untoward result.

The suggestion of Major Archibald that the deaths which have occurred in cases of kala-azar where antimony tartrate

has been used are due to fat embolism needs a rather serious call on the imagination, for it is difficult to believe that microscopic fat, deposited in the cells of an organ, becomes dislodged and finds its way into the blood-vessels and so to the heart to form the embolus. So far as my experience goes, these cases of death in kala-azar are due to heart failure—e.g., an emaciated kala-azar patient after an injection tries to sit up in bed, or perhaps gets out of bed to urinate or defæcate in the absence of the attendant, and the resulting heart-strain is in itself sufficient to produce the fatal result in the later stages of the disease. In bilharzia the patient is not as a rule weak and this danger does not present itself.

For the information of practitioners who may wish to give this treatment a trial I append a list of references to papers of workers who have written on the subject of the antimony tartrate cure for bilharziasis.

## References.

1. Macdonagh, J. E. R.: The Biology and Treatment of Venereal Disease, 1915.
2. Wiley, C. J.: Brit. Med. Jour., 1918, ii, 716.
3. Low, G. C.: Jour. of Trop. Med. and Hygiene, May 18th, 1919.
4. Archibald and Innes: Jour. of Trop. Med. and Hygiene, April 1st, 1919.
5. Taylor, F. E.: THE LANCET, August 9th, 1919, 462.
6. Christopherson, J. B.: THE LANCET, Sept. 7th, 1918, 325; Brit. Med. Jour., 1918, ii, 652, and April 19th, 1919, 489; THE LANCET, June 14th, 1919, 1021; Jour. of Trop. Med. and Hygiene, June 16th, 1919, ii, and July 15th, 1919.

I am, Sir, yours faithfully,

August 10th, 1919.

J. B. CHRISTOPHERSON.

## THE ORIGIN OF LIFE: THE WORK OF THE LATE CHARLTON BASTIAN.

To the Editor of THE LANCET.

SIR,—In my letter concerning the origin of life published in your issue of August 2nd I said, referring to Hon. H. Onslow's experiments, "I suggest that Mr. Onslow kept some of his 'white solution' tubes far too long—three years in some cases—before opening them and examining their contents." Mr. Onslow refers to this as a misrepresentation. I should be sorry to have misrepresented Mr. Onslow in any way in discussing his experiments or the results thereof, but my information was obtained solely from his own published report, contained in the Proceedings of the Royal Society, B 628, p. 268, wherein he seeks to prove—and does prove to the entire satisfaction of several persons—that my father was totally in error not only in regard to his facts, as recorded in his book, "The Origin of Life," but in regard to the necessary interpretation arising therefrom. Mr. Onslow states that 8 out of 10 tubes of his "white solution," cited as being typical examples of the whole series, were kept for 33½ months before they were opened. This is certainly too long, and in such circumstances the tubes could only contain, as they did, dead organisms.

Without quoting in extenso what is said in Mr. Onslow's report, I think any reader of it will acquit me of misrepresentation. I plead guilty only to a legitimate misunderstanding of this account of scientific experiments, which, by Mr. Onslow's own showing, is a very incomplete one, in parts somewhat vague. Furthermore, the experiments strike me as being open to criticism in some other respects, notably as regards the kind of glass used, which, to the best of my recollection, was not "hard German glass" but soft soda glass. I consider Mr. Onslow's conclusions should not be finally accepted as refuting the conclusions of my father which were based on such a prolonged, careful and systematic research. It is, perhaps, just as likely that Mr. Onslow's comparatively few negative results are open to as much criticism as the many alleged positive results obtained by my father and others. What work of this nature could be expected to be entirely free from error? In any case we are not in a position to judge as to the cogency of this or that series of experimental results unless we are put in possession of *all* the facts and are shown, by way of some help, photomicrographs of what was actually found in the experimental tubes—dead or alive.

It is for these reasons, and because I venture to think that sufficient evidence has not yet been produced to disprove the reality of archebiosis, that I would urge the necessity of my father's experiments, not only in archebiosis but also in

<sup>1</sup> Journal of Tropical Medicine and Hygiene, July 16th, 1919.<sup>2</sup> Ibid., April 1st, 1919.<sup>3</sup> Ibid., June 14th, 1919.



heterogenesis, being repeated in many different quarters by independent observers. It is only by these means that we may expect the ultimate truth to be revealed.

I am, Sir, yours faithfully,

W. BASTIAN,

Chesham Bois, August 10th, 1919.

Surgeon Commander, R.N.

To the Editor of THE LANCET.

SIR,—A word of explanation is needed in reply to M. Albert Mary's interesting letter in your issue of August 9th. The effects due to radioactivity are totally distinct from those produced by barium, strontium, calcium, manganese, or lead. For the latter precipitate in the course of time to the bottom of the test-tubes, whilst the former remain at the top. These disappear when heated or exposed to daylight, and reappear again when kept for some hours in the dark. They have all the properties of Mr. Emil Hatschek's vortices referred to in my previous letter of July 26th. Mr. Raphaël Dubois, as M. Mary is perhaps unaware, did not describe anything of the sort, and his observations refer merely to the "grosses vacuolides," which are undoubtedly not due to radioactivity. It is clear, therefore, that he did not, in the first instance at any rate, observe the bodies I have called radiobes, which I am convinced are due to radium and are totally distinct from his vacuolides, for they are much smaller and possess different properties. Furthermore, they are not vesicles, and are, on the other hand, too large to be bubbles of the emanation (as Sir William Ramsay suggested), the quantity of radium salt used being insufficient for this. The best results are obtained with the weak salt of radium chloride. Strong radium bromide almost obliterates the effect, probably owing to the heat evolved or other influence of the bombardment.

As I have already suggested, each  $\alpha$ -particle should give rise to a vortex in the "gel"; and as these particles are being continually projected in all directions a series of such bodies in "massed formations," ever moving forward, would endeavour to force their way out, and ultimately a scrimmage would ensue, when the group finally segregated; each half going its own way. I estimate on Sir Ernest Rutherford's most recent work on  $\alpha$ -particles<sup>1</sup> that the boundary would be about  $0.3\mu$ , the size I had found to be the maximum for radiobes.<sup>2</sup> This boundary formed by the  $\alpha$ -particles' vortices would be the nucleus which I have observed, whereas the outer boundary would be due to the fast-moving H-atoms which Rutherford and Marsden have found to be projected through the violent impact of the  $\alpha$ -particles with oxygen, nitrogen, carbon, and hydrogen. It is noteworthy, as it appears from their latest results, that the principal constituents of protoplasm—namely, H, C, N, and O—are the ones which are thus broken up by the  $\alpha$ -particles; heavier atoms not being so affected.

According to the "principle of relativity" now so much discussed by physicists, there should be a directional force as the resultant influence of all the  $\alpha$ -particles; for the effect of the earth's rotation would impart to these an unequal motion in different directions; an effect of about 0.4 per cent. This should give the aggregate of vortices so produced a tendency to evolve in one particular direction rather than another; and thus, perhaps, give us a physical analogue to the "élan vital" of living matter, to which hitherto there has been no clue, from physico-chemical considerations. My earlier experiments seemed to indicate something of the sort with radium, that could not be accounted for at the time; but I am investigating the matter further in the light of more recent facts on these lines. The suggestion, then, in my previous letter to you was that similar effects might be set going by purely catalytic actions, if  $\alpha$ -particles are emitted with sufficient violence in chemical reactions; and it is possible, in the light of these considerations, that Dr. Bastian's and M. Mary's synthetic corpuscles may owe their origin to this cause, which, whether it produces them or not, should thus give rise to others like them.

I am, Sir, yours faithfully,

Kingston Hill, August 9th, 1919.

J. BUTLER BURKE.

\* \* The original title of this correspondence indicated the question at issue to be the accuracy of the work of the late Charlton Bastian.—ED. L.

<sup>1</sup> See his papers in the Philosophical Magazine, June, 1919, and his Royal Institution lecture, Nature, July 31st, 1919.

<sup>2</sup> Nature, May 25th, 1905.

## TALENT AND MISCEGENATION.

To the Editor of THE LANCET.

SIR,—It is reported of one of the modern gladiators who, for good or evil, command to-day so much public attention and support, that he has in him a good deal of American Indian blood. The same was said of Longboat, a Marathon runner, as also of a musical comedy actress well known over here in the "nineties." But the coincidence of mixed race with distinction is not confined to those whom Aristotle would have called professors of the little arts. Onida was half French, Lettson of creole extraction. The late Watts Dunton's origin was always supposed to include a gypsy element. It is curious that Mr. W. B. Yeats, the noted poet, has a parentage exactly similar to that of the Brontës—namely, an Irish father and a Cornish mother. Rossetti was three-quarter English and one-quarter Italian. Freud, Ehrlich, Bergson, and Kerensky have, or had, plenty of Jewish blood. And one could go on in like fashion for a long time, overloading this letter with capitals and proper names. It seems a pity that the subject is not investigated more. There does exist a German work upon it, reviewed in the medical press of this country about a dozen years ago. Mr. Havelock Ellis, too, has touched it in his study of British genins. Of his 1030 persons of ability, 143 sprang from some degree of miscegenation, which is, perhaps, a high proportion for an island country, 97 being mixed British—i.e., of intermingled English, Irish, Scotch, or Welsh origin—and 46 mixed British and foreign. English-Irish was found to be the commonest of the former crosses, and of the latter English-French. Among the few women in the list about a third were of mixed race, the English-Irish combination again coming first. Mr. Ellis's qualification for inclusion in his study material was rather high, as a general thing a notice of at least three pages in the "Dictionary of National Biography." It is possible, however, that miscegenation tends to the production of various kinds of minor talent, too. In turning over the pages of a large encyclopædia, in reading obituary notices, in recalling persons of ability among ordinary acquaintances, one is apt to come upon the phenomenon under notice.

### Miscegenation in Theatrical Celebrities.

It is curious, again, on going through Mr. Ellis's detailed list, to have found that the celebrities of mixed blood include Garrick, Mrs. Siddons, Macready, the two Kembles, Helen Fancit, Kitty Clive, Barry Sullivan, and Kelly. Clearly there are here the flower of British acting. Five out of these nine owned continental strains of blood. Play-writers are numerous too—Marston, D'Urfey, Lillo, Killigrew, Vanbrugh, Beddoes, and Browning. No other calling was so strongly represented as actors and dramatists. The rest were mostly occupied with art or literature, there being only two men of science, and no inventors. This last is a little surprising. It had seemed possible that American inventiveness might have been traceable to the copious American miscegenation, that country being now "the jakes of Europe," as England, with doubtful correctness, was called by Defoe.

### How does Mixture of Race Originate Talent?

Several speculations are possible as to how the mixture of race originates talent. The simplest supposition, perhaps, is that the mere cross is without influence, persons of ability being more likely than others to travel and meet and marry foreigners, their offspring inheriting their talent. It may be so. The comparative lack of high grade talent (except, as already stated, inventiveness) in America seems to corroborate this view, for emigrants nowadays are not persons of eminent ability. Peter the Great took his Deptford paramour home with him and begat the elder Cozens, known widely as a painter in water-colours. The elder begat the younger Cozens, also a painter, whose works Constable described as being "all poetry." But why painting talent? We do not know that either Peter or the mother had any ability that way. We do know that Peter had other ability. Also that he showed atavistic traits—for instance, primitive savage callousness notable even in an absolute monarch of an uncivilised seventeenth-century people. Those of strong nerves may read how he conducted a mistress of his, a noblewoman, as far as the arms of the executioner, slipped round to the front for the final spectacle, picked up the head,



demonstrated rather competently—he was always interested in anatomy—to his courtiers the musculature surrounding the severed vertebra, turned it round, lightly kissed the lips, put it down again, and went off upon his business. This may suggest remotely another explanation. The crossing of breeds was shown by Darwin to lead to reversion or atavism, and atavistic traits of various kinds are common accompaniments of artistic talent.

Again, first crosses in domestic stock do seem to result in hardiness and good constitution, as in the mule or in poultry; mongrel dogs, too, are often more sagacious than pure-breds. Besides the instance given, many others exist of pugilists of mixed race: Jewish half-breeds, gypsy half-breeds, are frequent in the history of the ring. The many professional golfers from the Channel Islands may be a further example of physical ability caused by miscegenation, this territory having been alternately French and English for some centuries.

#### *The Dumas Family.*

In face of the history of the Dumas family it is hard to rule out the mere blending of race as the prime cause. Here miscegenation seems all-important, producing talent, indeed genius, out of nothing. An undistinguished French aristocrat meets an undistinguished Hayti negress wench. Their child is a prodigy of physical courage, development, and prowess. A noted cavalry leader, he can gallop at a grenadier, pluck him from the ground, and throw him across his saddle-horn. With other environment, say poverty in present-day America, this "Horatius Cocles of the Tyrol" would have been one of the half-breed boxers, who, although mostly Roumanian or Mexican or Scandinavian, for some reason call themselves by a true blue Anglo-Saxon name. Horatius's son, by an undistinguished woman, is Dumas père, the best story-teller pure and simple in the world. His son, again, by another out-cross, a mere Belgian milliner, is Dumas fils, the best playwright of latter-day France (in both note again the association with the stage).

#### *Generalisations.*

On this pedigree, certainly a slender foundation, it is possible to construct a theory of the origin of miscegenate talent. That, to begin with, the lowest form mostly results, mere physical aptitude, or histrionic ability, the lowest form of art—the production of histrionic capacity being how miscegenation helps up so the list of distinguished women, because acting is the only art in which women quite equal men. Then sometimes the original physical or histrionic talent may transmute in the succeeding generation into psychical or higher psychical, a professional cricketer begetting a novelist, an actor begetting a Wagner. But these generalisations grow dangerously top-heavy. The subject, not in the line of present-day thought, is likely to attract much interest before, say, the end of the century. Its Darwin may be some unorthodox scholar-biologist, roaming happily, his life through, from *Bibliothek* to *Bibliothek*. I am, Sir, yours faithfully,

August 4th, 1919

CADUCEUS.

### THE POSITION AND PAYMENT OF THE PENSIONS BOARDS.

*To the Editor of THE LANCET.*

SIR,—Dr. Lauriston E. Shaw propounds a scheme to relieve the temporary financial embarrassment of "partial" pensioners who break down. He does not know, it seems, that these cases are already provided for admirably or that the Medical Services Branch of the Ministry has given birth to a body of experts in assessment whose work is far from likely to bring blame upon our profession, as he suggests. A little practical knowledge would convince him that it is these experts rather than the well-cared-for pensioners who stand in need of sympathetic advocacy. On my hoard the senior members (engaged and paid by the session) hold responsible posts requiring daily attendance, special knowledge, and some administrative ability. Officially part-time, we are actually whole-time members, and yet if we are all ill or there is a bank or peace holiday our pay ceases. We have protested more than once, claiming pay proportionate to the nature and value of our work and to the cost of living, with security of tenure and right to a holiday. We have been told—our claim receives sympathy—the value of our work is recognised; if we will kindly carry on something may be

done some day, nobody is to blame except the Treasury. Meanwhile, by way of humour, perhaps, hatches of men paid more than ourselves and on the terms we ask, are sent to be trained by us for similar work in the provinces. We remain at our posts as much from interest and pride in our board—a model of organisation—as from loyalty to our president, to whom it owes its unique value for the pensioner and taxpayer. But we feel that we are entitled to relief from an unjustifiable financial anxiety—a relief that is essential if our work is to be continued at its present level of efficiency.

Your admirable leading article of August 2nd points out that the common policy of the profession is to serve humanity but carries a right to remuneration calculated to secure good service. The bare fact is that we are denied a living wage, and are suffering in consequence. The outlook is alarming. Is it the desire of the Treasury to reduce our families to the standard of living which the Ministry of Health has been set up to abolish? Are we to be a precedent upon which our profession will be made to suffer in the future? We should welcome investigation by any body standing for the ideals of our profession. I enclose my card with the name and address of my board for your use should any such body propose to accept the invitation, and would appeal especially to the medical Members of Parliament to assist us to prevent circumstances and the spreading spirit of discontent from forcing us unwillingly in a wrong direction.

I am, Sir, yours faithfully,

MEDICO.

August 10th, 1919.

### THE INCIDENCE OF TUBERCULOSIS AMONGST ASYLUM PATIENTS.

*To the Editor of THE LANCET.*

SIR,—The figures and conclusions given by Dr. F. A. Elkins and Dr. Hyslop Thomson in their valuable paper in your issue of August 9th will not surprise those acquainted with an essay on the frequency, causation, prevention, and treatment of phthisis pulmonalis in asylums for the insane, which was printed in the *Journal of Mental Science* for October, 1899. In this paper, however, any special liability of the insane to tuberculosis, apart from hereditary and environmental conditions, was ascribed rather to the shallowness and infrequency of the respiratory movements than to lowered tissue resistance. The conclusions reached in this essay were in 1901 entirely and handsomely endorsed by the report of a special commission of the Medico-Psychological Association, though the findings of this commission perhaps received somewhat less than their due meed owing to the fact that certain tables drawn up by the commissioners were afterwards shown to be not free from statistical error.

But no statistical or other error was ever shown to have had place in the original essay which provoked the appointment of the commission, and Dr. Elkins and Dr. Thomson now, by implication, have not only vindicated its conclusions but drawn attention to the consequences of neglect of its lessons. War has been responsible for much, but there is no reason why we should not now recognise that which was pointed out in 1899—namely, that "in the majority of cases in which phthisis leads to a fatal issue the disease is acquired in the asylum," and that aggregation, lack of ventilation, overcrowding, and a diet poor in fats, are each and all in measure responsible for the deplorable results.

I am, Sir, yours faithfully,

F. G. C.

London, W., August 10th, 1919.

Lieutenant-Colonel W. B. Edwards, C.B.E., R.A.M.C.; Lieutenant-Colonel J. E. H. Davies, D.S.O., R.A.M.C.; Lieutenant-Colonel D. Hepburn, C.M.G., R.A.M.C. (T.); and Colonel Sir Charles A. Ballance, K.C.M.G., C.B., M.V.O., A.M.S., have been appointed Knights of Grace of the Order of the Hospital of St. John of Jerusalem in England.

DEATH FROM STATUS LYPHATICUS.—At an inquest held by Mr. Wynne Baxter at Stepney on August 5th on the body of Eric Richardson, aged 3 years, who died while under an anæsthetic in the Poplar Hospital, it was stated that death was due to the existence of status lymphaticus. The coroner, having pointed out to the jury that the existence of this condition was not possible to discover before the administration of the anæsthetic, a verdict of "Death from misadventure" was returned.



## The Services.

### THE HONOURS LIST.

The following "statements of services" are announced for the awards recorded in *THE LANCET* of March 8th, 1919, p. 398. All are members of the R.A.M.C. except where otherwise stated:—

#### *Bar to the Distinguished Service Order.*

Capt. (acting Lieut.-Col.) JAMES HENRY FLETCHER, D.S.O., M.C., comd'g 35th Fld. Amb.—For most conspicuous gallantry and devotion to duty near Mametz, on August 26th, 1918, when in command of bearers. With another officer he crawled out under heavy machine-gun fire into "No Man's Land," dragged back two wounded bearers to a more sheltered spot, and after dressing them crawled back for assistance, organised two squads of bearers and brought the wounded men in under heavy fire; also two more wounded men found lying out. He set a splendid example to all serving under him.

Maj. (Temp. Lieut.-Col.) FRANCIS CORNELIUS SAMPSON, D.S.O., 91st Fld. Amb.—For exemplary devotion to duty on the night of Oct. 3rd/4th, 1918, at Le Baraque (north of St. Quentin) when this area was heavily bombed. This officer, regardless of personal danger, by his initiative and personal influence organised and accompanied relief parties and was instrumental in the rapid evacuation of the wounded. The bombing was very severe and the casualties heavy, there being 13 amongst the R.A.M.C. bearers alone; the actual number of killed exceeded 40.

#### *Distinguished Service Order.*

Capt. PATRICK AUGUSTINE ARDAGH, M.C., New Zealand M.C., att'd. 1st Bn. Auckland R.—For conspicuous gallantry and devotion to duty during an attack east of Masnières. Being forced to place his dressing station in a spot constantly shelled by the enemy for 36 hours, he continued to dress wounded while shells fell on the station. He attended, not only his own battalion wounded, but men of three other battalions, and worked continuously without sleep all the time. He displayed high courage and resource, and was the means of saving many lives.

Temp. Major CHARLES FRASER KNIGHT, 133rd Fld. Amb.—For conspicuous gallantry and devotion to duty in personally supervising the collection of wounded and visiting forward posts regularly under heavy shell fire. It was largely due to his energy and disregard of danger that the large number of wounded in his sector were successfully cleared. This was during the operation against the Hindenburg Line, east of Ronsoy, on Sept. 27th, 28th, and 29th, 1918.

Major LEONARD MAY, M.C., Aust. A.M.C., att'd. 11th Bn. Aust. Inf.—During the attack near Villers on Sept. 18th, 1918, he displayed great gallantry and devotion to duty whilst attending to the wounded. In consequence of his excellent organisation for clearing the wounded he was able to keep in touch with the advance, constantly moving his aid-post forward with the barrage, and maintaining liaison with the attacking companies throughout. He showed great disregard of danger under heavy artillery and machine-gun fire, and by his skill saved many lives.

Lieut.-Col. STANLEY PAULIN, 11th Fld. Amb., Can. A.M.C.—He was in charge of the evacuation of the brigade wounded in the operations about Cambrai. For the five days of that battle he worked day and night with very little rest. He was always leading and directing his men, and by his splendid example was responsible for the wonderful work done by those under him. His work under heavy shell and machine-gun fire was admirable.

#### *Second Bar to the Military Cross.*

Temp. Capt. GEORGE OLIVER FAIRCLOUGH ALLEY, M.C., att'd. 2nd Bn. R. Ir. Regt.—For conspicuous courage, energy, and initiative during the operations on Oct. 8th, 1918, in front of Niergnies. He followed up the battalion in the attack, dressing and evacuating wounded under heavy shelling, eventually establishing his aid-post right forward in a section of trench in the rear of the front line. Here he dressed and evacuated wounded, not only of his own battalion and brigade, but of battalions operating on the right and left flanks. Throughout the day he behaved splendidly, and by his fine devotion to duty saved many lives (M.C. gazetted June 4th, 1917).

Lieut. (Temp. Capt.) WILLIAM JOHN KNIGHT, M.C., att'd. 89th Fld. Amb.—During the operations east of Ypres from Sept. 28th to Oct. 3rd, 1918, he was in charge of the stretcher-bearers attached to a brigade. He led his bearers in the rear of the attacking infantry, dressing the wounded as they fell, and seeing that every case was carried away from the battlefield. During the whole of the advance he showed an utter contempt for danger, dressing the wounded under shell, machine gun, and rifle fire. Later, when the advance came to a standstill, he established touch with all the regimental medical officers and personally conducted the evacuation of wounded from the R.A.P.'s. On many occasions he went forward with stretcher squads to bring back wounded to the R.A.P.'s. He displayed great gallantry throughout and did admirable work.

Temp. Capt. (acting Major) MAURICE ALOYSIUS POWER, M.C., att'd. 148th Fld. Amb.—For conspicuous gallantry and devotion to duty whilst in charge of bearers during the operations on Niergnies on Oct. 8th, 1918. He personally followed the attacking troops to the final objective, establishing bearer relay posts en route, all the while utterly regardless of personal danger, though exposed to heavy enemy shell fire. His skilful organisation of the evacuation of wounded, and his maintenance of touch with all battalion medical officers, ensured the speedy evacuation of casualties. He set a splendid example to all ranks under his command.

#### *Bar to the Military Cross.*

Capt. (acting Major) JOHN BERNARD CAVENAGH, M.C., att'd. 113th Fld. Amb.—On Oct. 1st, 1918, when the advanced dressing station, Cambrai, was shelled, he went out to see about his men and ordered them under cover quite regardless of his own safety. On this occasion he was slightly wounded, but made no mention of it. Again, during the period from Oct. 11th-15th, when his advanced dressing station at Douvrin was being shelled, he displayed great coolness and courage. Following on this, while advanced dressing stations were in turn established at Berclau, Provin, Camphin, Les Croquet, Templeuve,

Bachy, Rumes, and Faintignies, he displayed great initiative and daring in keeping in close touch with the infantry. It was chiefly due to his sound judgment and coolness during the most trying circumstances that all the wounded and sick were so successfully evacuated.

Temp. Capt. FREDERICK ORLANDO CLARKE, M.C., att'd. 149th Fld. Amb.—For great gallantry and devotion to duty. During the operations against the village of Niergnies on Oct. 8th, 1918, when his aid-post was established in a dug-out at the Slag Heap, he observed two men lying out in the open about 50 yards off. Though a heavy bombardment at the time was on, he at once called for volunteers and, regardless of his own safety, went out and dressed them, and helped to carry them in. During this time one of the men was killed. It was undoubtedly owing to the gallant conduct of this officer that the man's life was saved.

Temp. Capt. CLAUDE NORMAN COAD, M.C., 74th Fld. Amb.—For great gallantry and devotion to duty when in charge of bearers during heavy fighting on Oct. 11th between Avesnes and St. Aubert. It was due to his fine personal example and total disregard of danger that over 400 casualties were evacuated on that day. He carried on his work often in front of the forward posts under heavy artillery and machine-gun fire until all the casualties had been brought back.

Capt. (acting Major) THOMAS FREDERICK CORKILL, M.C., att'd. 139th Fld. Amb.—While acting as officer in charge of forward bearers during the operations from Sept. 29th to Oct. 3rd, 1918, south-east of Ypres, he not only showed great resource in dealing with difficult evacuation to advanced dressing station, but a total disregard of danger. He personally frequently visited all posts at all times, both night and day, with most untiring energy and courage.

Temp. Capt. (acting Major) JOHN EDGAR DAVIES, M.C., 131st Fld. Amb.—For conspicuous gallantry and devotion to duty at Englefontaine on Oct. 25th, 1918. Hearing that there were over 1000 civilians in the captured town, he volunteered to go into it, interview the Mayor, and make the necessary arrangements for the distribution of smoke helmets. He entered the town under heavy bombardment and made his way to the cellar occupied by the Mayor through streets swept by enemy machine-gun fire. Several casualties occurred on the way up to a support battalion, and these he attended to and removed to safety.

Capt. FRANKLIN FLETCHER DUNHAM, M.C., Can. A.M.C., att'd. No. 5 Fld. Amb.—During operations about Neuville Vitasse, August 26th, 27th, and 28th, 1918, for conspicuous gallantry and devotion to duty. He organised stretcher parties under heavy shell fire, and located and dressed many wounded. On the 28th the stretcher-bearers under him moved practically with the infantry, and he personally directed the clearing of wounded from "No Man's Land" in daylight, under heavy machine-gun fire. His initiative and coolness were the means of saving many lives.

Capt. (acting Major) FRÉDÉRIC GAMM, M.C., att'd. 2/3rd (Home Counties) Fld. Amb., T.F.—During the attacks and counter-attacks near Peiziers from Sept. 22nd to 24th, 1918, when it was found impossible to obtain in the village a suitable spot for an advanced dressing station, he took up an ambulance car and used it as a dressing-room, working under constant shell fire all the time. His boldness and devotion to duty undoubtedly resulted in the saving of many lives and the mitigation of much suffering.

Capt. (acting Major) WILLIAM CLAVERING HARTGILL, M.C., 55th Fld. Amb.—For conspicuous gallantry and devotion to duty when supervising the evacuation of brigade casualties during the attack on Ronsoy, Sept. 18th, 1918. He early established his various posts and went forward and assisted in clearing wounded of his own and other brigades under heavy machine-gun and shell fire. He worked unceasingly, and it was greatly owing to the co-ordination of the arrangements and his personal supervision that casualties were cleared in a markedly efficient and speedy manner. Throughout he has done fine work.

Capt. (Temp. Major) ROBERT ALEXANDER HEPPLER, M.C., att'd. 28th Fld. Amb.—For conspicuous gallantry and devotion to duty during the operations at Roulers, Menin Road, and Leffeghem, Sept. 25th to Oct. 5th, 1918. As officer in charge of bearers he worked incessantly day and night, personally keeping in touch with the battalions in spite of shell and machine-gun fire; he never once lost touch with the regimental medical officers, evacuating the wounded with the utmost rapidity, thereby saving numerous lives.

Temp. Capt. (acting Major) BENJAMIN KNOWLES, M.C., att'd. 88th Fld. Amb., T.F.—For conspicuous gallantry and initiative in charge of stretcher-bearers during operations east of Ypres from Sept. 28th to Oct. 3rd, 1918. He led his stretcher-bearers following a barrage during the attack and organised relays for his men along the road of evacuation. Later he visited regimental aid-posts, often under heavy fire, and several times took up ambulance cars to casualties, carrying them away under fire. For six whole days he superintended the evacuation of wounded from the forward areas, and it was due to his great energy and disregard of personal danger that the wounded were evacuated without a hitch.

Temp. Capt. ALEXANDER CAMPBELL WHITE KNOX, M.C., att'd. 2nd Bn. R. Suss. R.—For conspicuous gallantry and devotion to duty throughout the operations north and south of the river d'Oignon from Sept. 18th to 24th, 1918. As medical officer of the battalion he organised and supervised the evacuation of the wounded in the most perfect manner despite shell fire and gas. Besides superintending the work at the regimental aid-post he personally supervised the work of the stretcher-bearers with the leading waves of the assaulting troops. Owing to his energy and personal supervision every wounded man was attended to and evacuated without delay. He did fine work.

Temp. Capt. (acting Major) HAROLD DUNMORE LANE, M.C., att'd. 1st N. Mid. Fld. Amb. (T.F.)—For conspicuous gallantry and devotion to duty. On Oct. 3rd, 1918, during the attack on Ramcourt and Wiancourt, he, who had already done magnificent work during the capture of Bellenglise on Sept. 29th, 1918, and since that date had worked unceasingly under heavy fire, pushed forward through the enemy's barrage, and, although wounded, continued to search for and dress wounded under heavy shell and machine-gun fire. By his absolute disregard of danger he set a splendid example to the men serving under him.

Capt. JOHN SHAW MACKAY, M.C., 12th Fld. Amb., Aust. A.M.C.—For conspicuous gallantry and devotion to duty on Sept. 18th, 1918, south of Le Verguier. He moved forward with his bearers closely in rear of advancing battalions and under heavy machine-gun and shell fire, and by absolute disregard of his own personal safety



was able to keep in close contact with brigade R.M.O.'s. By this action the wounded were evacuated in the quickest possible manner, all congestion at regimental aid-posts was prevented, and undoubtedly many lives were saved.

Temp. Capt. JAMES DAVID MACKINNON, M.C., attd. 4th Bn. Liverpool R.—During the operations on Sept. 29th and Oct. 10th/11th, 1918, at Villers Gislain and Le Cateau, he displayed consistent and conspicuous gallantry in attending to wounded under heavy fire, and saved many lives. His example of coolness and devotion to duty was very fine.

Capt. (acting Major) WILLIAM ARCHIBALD MILLER, D.S.O., M.C., attd. No. 6 Fld. Amb.—For conspicuous gallantry and devotion to duty from Sept. 27th to Sept. 29th, 1918, when in charge of stretcher-bearers during the advance from the Canal du Nord to the Canal de St. Quentin. He worked for three days without rest, and repeatedly led his stretcher-bearers to the front line, exposing himself to direct fire from enemy machine-gun posts. Especially on Sept. 28th, he led his bearers across the canal in close touch with the infantry, and brought back wounded through intense machine-gun and shell barrage. By his fine behaviour he saved the lives of many men.

Capt. LAUREL COLE PALMER, M.C., 13th Fld. Amb., Can. A.M.C.—In the operations before Cambrai he was in charge of stretcher-bearer squads from Sept. 27th to Sept. 30th, 1918. During this period he had absolutely no rest day or night, and was constantly under heavy shell fire; and on the 28th he personally brought up field ambulance squads, and carried out the wounded from in front of the front line under heavy shell and machine-gun fire. His untiring energy and disregard of personal danger were admirable.

Capt. JOSEPH GREGOR SHAW, M.C., 12th Fld. Amb., Can. A.M.C.—During operations near Cambrai from Sept. 25th to Oct. 1st, 1918, he was in charge of a party of stretcher-bearers clearing the 12th Canadian Infantry Brigade. He went for four days practically without sleep, during which time he was constantly superintending clearing operations in the vicinity of the regimental aid-posts. After two days, his senior officer having been gassed, the total responsibility devolved upon him. During this time, while constantly exposed to shell and machine-gun fire, his conduct was splendid, and he was the means of saving the lives of many wounded.

Capt. (acting Major) JAMES CALVERT SPENCE, M.C., attached 34th Fld. Amb.—For conspicuous gallantry and devotion to duty while in command of a bearer division, during the attack on Oisy-le-Verger and the subsequent operations from Sept. 28th to Oct. 2nd, 1918. In addition to handling his bearers with marked skill and initiative, he reconnoitred and selected sites for regimental aid-posts under heavy fire. Throughout the operations he showed untiring energy and complete disregard of danger. His fine leading of bearers on several occasions through heavy barrages enabled the wounded to be rapidly cleared, and undoubtedly resulted in the saving of many lives.

Capt. DONALD GEORGE KENNEDY TURNBULL, M.C., 11th Fld. Amb., Can. A.M.C.—During the recent operations before Cambrai, Sept. 29th, 1918, it was reported that there were still a great many wounded out in front of the regimental aid-posts of another brigade. He at once proceeded up the line with all available bearers, and under heavy fire investigated the conditions as to wounded. He got them all out so that none were left during the night of Sept. 29/30th, thus assisting materially in preventing deaths from exposure.

#### The Military Cross.

Temp. Capt. (acting Major) JOHN RICHARD PERCY ALLIN, 90th Fld. Amb.—For conspicuous gallantry and devotion to duty in charge of bearers on Sept. 29th, 1918, and following days. On the 29th, during the advance, he made his way through Lehaucourt to Le Trouquet despite severe shell and machine-gun fire. He promptly organised the evacuation of the wounded, and by his fine example and energy secured the rapid evacuation of over 250 casualties.

Capt. ALAN FENON ARGUE, Can. A.M.C., attd. 87th Can. Bn., Quebec R.—For conspicuous gallantry and devotion to duty, Sept. 2nd/3rd, 1918, at the Dury-Arras sector. During the attack he accompanied the battalion during its advance under very heavy fire, and established his first-aid post in a trench close to the front line reached by the battalion, and continuously during the day and night worked without any rest and under constant fire. Later, he went to the assistance of a wounded officer under heavy shell fire, dressed his wounds, and remained with him until he died in his arms. Throughout he behaved admirably.

Temp. Capt. (acting Major) BASIL WILLIAM ARMSTRONG, attd. 100th Fld. Amb.—For conspicuous gallantry and devotion to duty. During the fighting around Forenville and Seranvillers on Oct. 8th, 1918, he was in charge of the bearers clearing casualties of an infantry brigade. He constantly visited all the regimental aid-posts, having to pass along roads and tracks subjected to very heavy machine-gun fire throughout the whole day. All his work was done in the open, and by his energy, disregard of danger, and skilful organisation he succeeded in evacuating all the wounded in a very short time.

Capt. FREDERICK GRANT BANTING, 13th Fld. Amb., Can. A.M.C.—Near Haynecourt on Sept. 28th, 1918, when the medical officer of the 46th Canadian Battalion was wounded, he immediately proceeded forward through intense shell fire to reach the battalion. Several of his men were wounded, and he, neglecting his own safety, stopped to attend to them. While doing this he was wounded himself and was sent out notwithstanding his plea to be left at the front. His energy and pluck were of a very high order.

Capt. JAMES HAROLD BLAIR, C.A.M.C., attd. 72nd Bn. Brit. Col. R.—For conspicuous gallantry and devotion to duty during the Bourlon Wood operations before Cambrai from Sept. 27th to Oct. 1st, 1918. During the attack on Sept. 27th he rushed ahead under heavy fire and rendered immediate medical attention to all wounded in the vicinity. During the attack on the 29th he followed the attacking troops closely and dressed the wounded as he went forward, and formed the enemy prisoners into stretcher parties. Immediately after the town of Sancourt was captured he established a regimental aid-post there and continued to work under heavy fire. His work throughout was of the highest order.

Capt. EDWIN JOHN BRADLEY, attd. 1/3rd (N. Mid.) Fld. Amb., T.F.—He was in charge of the bearers during the attack on the St. Quentin Canal on Sept. 29th, 1918, and displayed great gallantry and initiative. He went forward and sought a position for an advanced dressing station in Bellenglise when it was being heavily shelled by the

enemy, and finally organised collecting and relay posts on a route farther north. His dispositions were most skilful and the rapid evacuation of the wounded was mainly due to the exertions of this officer.

Capt. MILLS GILLESPIE BROWN, Can. A.M.C., attd. 85th Can. Bn. Nova Scotia R.—For conspicuous gallantry and devotion to duty during the Bourlon Wood operations before Cambrai. On Sept. 27th, 1918, he advanced with the attacking wave from the assembly position, and attended wounded in the open under constant machine-gun and shell fire. He established his regimental aid-post in an open trench, no other place being available. Later, after his assistant was killed beside him and his sergeant wounded, he continued his work with absolute coolness and outstanding devotion to duty. He behaved splendidly throughout and saved many lives.

Capt. EDWIN THOMAS CATO, Aust. A.M.C., attd. 1st Bn. Aust. Infy.—In the operations near Hargicourt from Sept. 18th–21st, 1918, he showed untiring energy and devotion to duty in his care of the wounded, particularly on Sept. 21st, when in order to give early attention he established his aid-post in an open trench which was under shell fire and moved about the area continually, dressing wounded in shell holes and open country. By his disregard for personal safety and his cheerful confidence he set a splendid example to all.

Capt. HERBERT TROUGHTON CHATFIELD, attd. No. 6 Fld. Amb.—For conspicuous gallantry and devotion to duty from Sept. 27th to Sept. 29th, 1918, when in charge of stretcher-bearers. He frequently led his parties through machine-gun and shell fire to bring in wounded. He succeeded in keeping in close touch with the infantry throughout the advance to and the crossing of the St. Quentin Canal near Noyelles. By his fine conduct and example he was instrumental in saving many lives.

Temp. Capt. THOMAS CLAPPERTON, 141st Fld. Amb.—For conspicuous gallantry and devotion to duty during the attack on the Hindenburg Line on Sept. 29th, 1918. Throughout the day he repeatedly conducted bearers to the most exposed parts of the line to search for casualties. Though his advanced bearer post at Berthaucourt was heavily shelled he succeeded by his promptitude and energy in getting his wounded away without further casualties. His fine work was the means of saving many lives.

Capt. (acting Major) HUBERT ROY DIVE, 1/2nd Mtd. Bde., Fld. Amb., attd. 230th Fld. Amb.—On Sept. 21st, 1918, at Templeux le Guerard, when in charge of evacuation of casualties from the front line, he worked incessantly without rest under intense shell fire, exposing himself in the most fearless manner when bringing in casualties. He showed a very fine example of devotion to duty, and the successful evacuation was entirely due to his personal gallantry and initiative. He has been superintending the evacuation from the front line continuously since Sept. 2nd, and during all this period has shown the greatest zeal and resource.

Temp. Capt. ROBERT DONALD, attd. 35th Fld. Amb.—For conspicuous gallantry and devotion to duty on Sept. 27th, 1918, during the advance on Epinoy. He dressed cases in the open all day under fire, and established a chain of aid-posts as the infantry advanced. It was solely due to his unflinching zeal, his initiative and absolute disregard for personal safety, that a most difficult front-line evacuation was carried out with the utmost rapidity.

Capt. LEWIS HAYES FRASER, Can. A.M.C., attd. R. Can. Horse Arty.—On Oct. 10th, 1918, near Le Cateau, when a battery commander was reported badly wounded at the observation post, this officer went forward some 1500 yards through heavy fire to attend him. He arrived at the observation post just after the enemy barrage came down on it. Having attended to the battery commander he went out of the trench and crawled about under the heavy barrage for nearly an hour attending to wounded infantry. He showed great gallantry and devotion to duty.

Temp. Capt. WILLIAM BALFOUR GOURLAY (N. Russia).—Throughout the period Oct. 7th–15th, 1918, he showed exceptional devotion to duty in the care of the sick and wounded in the village of Borok, under frequent shell fire and several infantry attacks. His hospital at Borok had twice to be moved owing to fires caused by shelling; and though worn out by want of sleep and hard work he attended to the evacuation of the wounded when the troops moved back from the village, marching with them for a long distance and helping to ease them over bad roads under difficult circumstances. He set a fine example throughout of unselfish endurance in the performance of his duties.

Temp. Capt. NORMAN FRANKISH GRAHAM, attd. 6th Bn. Lond. R.—Near Maricourt, during the operations of August 26th, 27th, 28th, and 31st, 1918, this officer showed the greatest courage and devotion to duty. On three occasions, when the battalion to which he was attached moved forward, he immediately followed behind the battalion and established his regimental aid-post close up to the line, tending and superintending the collection of wounded under very heavy shell fire. He so organised the stretcher-bearer parties, largely using prisoners for this task, that the wounded were evacuated with a minimum of delay and discomfort. He was twice slightly wounded but carried on.

Capt. GERALD WALLACE GRANT, 4th Fld. Amb., Can. A.M.C.—For conspicuous gallantry and devotion to duty near Vis-en-Artois on August 27th/28th, 1918. He was in charge of 15 squads of bearers, and throughout the whole operations superintended the clearing of casualties under almost continuous fire from the area allotted to him. On the 27th he led his squads in advance of the infantry position, and under machine-gun fire succeeded in removing from shell holes several badly wounded men to the collecting posts, whence they could be evacuated. He set a splendid example to those under him.

Temp. Capt. RICHARD PERROTT HADDEN, 103rd Fld. Amb., attd. 152nd Bde., R.F.A.—For conspicuous gallantry and devotion to duty when some transport came under heavy howitzer fire near Toubrielen on Oct. 8th, 1918. He went straight to the place through heavy shelling to attend to a wounded man, and by his prompt action and disregard of danger probably saved the man's life.

Capt. ALBERT ROBERT HAGERMAN, Can. A.M.C., attd. 78th Can. Bn., Manitoba R.—For conspicuous gallantry and devotion to duty during the Bourlon Wood operations before Cambrai. On Sept. 27th, 1918, he followed close behind the attacking infantry and established a regimental aid-post in the open under heavy shelling and dressed wounded under heavy machine-gun fire. On Sept. 29th he established a dressing station in a forward trench, and for two days he worked unceasingly under shell fire in this position, dressing hundreds of wounded. He did admirable work.



Capt. JAMES MANN HENDERSON, Aust. A.M.C., attd. 12th Bn. Aust. Infy.—During the attack near Jeancourt on Sept. 18th, 1918, he established his regimental aid-post immediately in rear of the jumping-off place and attended to the wounded of his and of a supporting battalion under heavy shell fire in an exposed position. As the attack progressed he moved forward and treated large numbers of casualties in the open. By his energy, disregard of danger, and clever organisation, he relieved a great deal of suffering, and throughout set a splendid example to those under him.

Temp. Capt. ALEXANDER HUNTER, attd. 63rd Divl. Eng.—During the operations on Niergnies on Oct. 8th, 1918, whilst attached to the advanced dressing station, when the advanced dressing station was being heavily shelled he went out to attend to some wounded. On his way he was knocked down by the explosion of a gas shell, but although severely burned he continued to attend to the wounded, displaying a remarkable coolness and utter disregard to personal danger. He refused to be evacuated and remained on duty until relief.

Temp. Capt. WILLIAM BOYD JACK, attd. 5th Bn. Leic. R., T.F.—For conspicuous gallantry and devotion to duty during the attack on Pontuet on the morning of Sept. 24th, 1918. His regimental aid-post was situated in a valley which was shelled consistently with gas and high-explosive shell. He had no dug-out and his work was entirely in the open. From 5 A.M. till 3 A.M. the following morning he worked unceasingly, entirely regardless of danger, and his fine conduct saved many lives.

Temp. Capt. MATTHEW JAMES JOHNSTON.—During an air raid at St. Omer on the evening of May 30th, 1918, four men had been buried at the Caserne d'Albret in the debris of part of the building which had been destroyed by bombs. He arrived immediately with an ambulance, and, in spite of the fact that the enemy planes were still overhead, set to work at once to effect a rescue. This had to be done in the dark, but the men were got out alive, and only one of them subsequently died. Other bombs were dropped near by whilst the work of rescue by this officer was still proceeding. On this, as on many other similar occasions, the conduct of this officer was very gallant.

Capt. CHARLES TERRELL LEWIS, Can. A.M.C., attd. 10th Bde. Can. F.A.—For gallantry and devotion to duty. On August 29th, 1918, during the operations along the Arras-Cambrai road, two gun pits were set on fire by hostile shells. An ammunition dump was exploded and several men wounded. He hastened to the spot and dressed the wounded and removed them to a dressing station. Throughout the whole operations he was untiring in his efforts to afford immediate medical attention to the wounded, many times under severe fire.

Temp. Capt. CHARLES WILLIAM BERRY LITTLEJOHN, 140th Fld. Amb.—For great gallantry and initiative in the operations south-east of Ypres from Sept. 28th to Oct. 4th, 1918. During this period he was in command of forward stretcher bearers, and it was solely due to his energy and dash that close touch was kept with battalions and their wounded promptly evacuated. He exposed himself freely to sniping, machine-gun and shell fire to get at the wounded of not only his own brigade but of other divisions, and by his fine conduct saved many lives.

Temp. Capt. ALFRED MASON, attd. 229th Fld. Amb.—Near Moislains and Hargicourt, Sept. 2nd/25th, 1918. While in charge of the bearer division working in front of the advanced dressing station he was unceasing in his efforts on behalf of the wounded. Although his area was on many occasions subject to very severe shell fire, and although he was for some days himself ill, he succeeded through sheer gallantry and devotion to duty in maintaining touch with the regimental aid-posts continuously during the advance, thereby securing the rapid evacuation of the wounded. His work was admirable.

Capt. HARRY CLARKE MOSES, Can. A.M.C., attd. No. 5 Fld. Amb.—For conspicuous gallantry and devotion to duty in charge of the advanced post of the right sector during operations round Neuville, Vitasse, Wancourt, and Cherisy, August 26th/27th, 1918. He was exposed to frequent enemy shelling, bombing, and machine-gun fire from aeroplanes, and when a shell exploded among a number of wounded awaiting evacuation he directed the adjustment of the masks on the wounded and succeeded in protecting them from all effects of the gas.

Lieut. WILLIAM PERCIVAL NELSON, attd. 128th Bn. Lond. R.—At Rumillies, on Oct. 8th, 1918, for gallantry and devotion to duty. During a very severe bombardment of both artillery and machine guns he constantly went out to the help of the wounded, attending them with utter disregard for danger, and was the means of saving several lives and alleviating a great deal of suffering. He has at all times set a striking example by his fearlessness and devotion to duty.

Capt. JOHN ARCHIBALD NICHOLSON, attd. 1st Bn. Sea. Hghrs. (Egypt).—For most gallant conduct and devotion to duty near Tabor on Sept. 20th, 1918. He moved about in the open under a heavy machine-gun fire to dress the wounded and bring them to a place of safety. Though casualties were very heavy, he continued to perform his duties with the greatest calmness and disregard of danger. He set a very fine example of devotion to duty and showed great courage.

Capt. KENNETH CLAUD PURNELL, Aust. A.M.C., attd. 11th Bde. Aust. Fld. Arty.—For conspicuous gallantry and marked devotion to duty during the attack on the Hindenburg line, south of Vendhuile on Sept. 29th, 1918. He dressed the wounded under very heavy shell fire, and organised a stretcher party, and conducted them to the battery positions, and by his personal and untiring efforts assisted in getting them to the nearest dressing station, a distance of about 1000 yards, and still under heavy fire. Throughout the day he worked splendidly.

Capt. ALLAN MELROSE PURVES, Aust. A.M.C., attd. 2nd Tunnel. Coy., Aust. Engrs.—On Sept. 29th, 1918, during the operations against the Hindenburg line, in the neighbourhood of Bellicourt, he formed an aid-post in a forward position. At this point the enemy put down a very heavy barrage which lasted about six hours and caused heavy casualties amongst the road party and the infantry in the vicinity. The whole of this time he attended to the wounded in the open, showing great gallantry and devotion to duty, and undoubtedly saved many lives.

Temp. Capt. EDWARD ROGERSON, attd. 2nd Bn. K.R.R.C.—For gallantry and devotion to duty east of Malsmeys on Sept. 18th, 1918, and during the operations of Sept. 24th/25th. On Sept. 18th he attended to and bandaged wounded men under heavy machine-gun fire. His actions undoubtedly saved many lives. During the heavy shelling of our positions on Sept. 24th/25th he was conspicuous for his utter disregard of danger while carrying out his duties, and throughout the operations he set a splendid example to those under him.

Temp. Capt. JAMES SCOTT, attd. 12th Bn. March. R.—On Oct. 12th, 1918, in front of Neuville, under heavy and accurate shell fire out in the open, he dressed the wounded without cessation. His cool courage under fire and his speed and skill, combined with his energy in keeping the stretcher-bearers going and in working eight enemy squads, saved many lives. He worked untiringly, and showed such spirit as inspired all who came near him.

Temp. Capt. THOMAS MCCALL SELLAR, attd. 118th Bn. Lond. R.—During the period August 28th to Sept. 6th, 1918, the battalion was continually in offensive action. Most of the stretcher-bearers became casualties. Throughout this time he worked with such untiring energy and marked gallantry that the regimental aid-post was constantly in touch with the attacking troops, and wounded were got back to the aid-post by his continually organising and leading forward small parties of bearers under heavy fire.

Capt. (acting Major) ARTHUR LEONARD SHEARWOOD, attd. 33rd Fld. Amb.—For conspicuous gallantry and devotion to duty on Sept. 27th/28th, 1918, during and after the attack on Oisy-le-Verger and Epino, when in charge of the evacuation of the wounded from the divisional front by motor ambulance. He worked for 36 hours unceasingly, visiting forward positions and establishing car-posts, under shell fire. His initiative and skill in carrying out these dispositions and his complete disregard for personal danger and fine example to all those under his command saved many lives and rendered the evacuation a complete success.

Capt. GEORGE ALEXANDER SMITH, Can. A.M.C., attd. 47th Can. Bn. W. Ont. R.—For conspicuous gallantry and devotion to duty during the operations in front of Cambrai from Sept. 27th/29th, 1918. He followed the battalion closely throughout the operations, showed great energy, and dressed many cases under heavy shell fire, working out in the open with practically no shelter. He set a very fine example to those under him.

Capt. CLIFFORD HALLIDAY KERR SMITH, attd. 14th Bn. K.O.S.B., T.F.—During the enemy attack on Mœuvres on Sept. 17th, 1918, this officer, when informed that there were many serious cases lying out requiring immediate attention, went forward in face of a very heavy artillery, rifle, and machine-gun fire and gave them his personal attention. As those urgent cases could not have been brought to the regimental aid-post in time for the necessary attention, this officer, by his prompt action and fearless devotion to duty, was undoubtedly the means of saving many lives of men in this battalion.

Capt. JOHN STIRLING, attd. H.Q. 12th Bde. R.F.A.—On August 26th, 1918, north of Maricourt, hearing that D 112th Brigade was being heavily shelled by the enemy, he immediately went to the battery and attended the wounded. Again, near Moislains, on Sept. 9th, 1918, when battalions were suffering casualties from enemy long-range guns, he went to them and attended their wounded. His gallantry and devotion to duty on numerous occasions have been most marked.

Capt. JOSEPH TOWNSEND STIRLING, 11th Fld. Amb., Can. A.M.C.—For conspicuous gallantry and devotion to duty. During the attack on Bourlon Wood on Sept. 27th, 1918, he dressed wounded in the open in the vicinity, under heavy shelling and machine-gun fire. Again, on Sept. 29th, when one of his men was killed and several others seriously wounded, he went to their assistance, got them dressed, and carried to safety.

Capt. RICHARD CHAPMAN WELDON, Can. A.M.C., attd. 2nd Can. Motor M.G. Bde.—While in action east of Arras on August 25th, 1918, at Jig-Saw Wood and Artillery Hill, he was in charge of the regimental aid-post, where he showed great gallantry and devotion to duty. The heavy and continuous shell fire made the work at the aid-post both heavy and difficult, entailing constant work for 36 hours without rest.

Temp. Capt. GEORGE BURKETT WILKINSON, 28th Fld. Amb.—On the night of Oct. 3rd/4th, 1918, at Waterdamhoek, he was in charge of advanced dressing station. Everyone had left the village on account of intense shelling. As wounded continued to come in he carried on dressing and evacuating wounded regardless of the risk he ran till the advanced dressing station was closed down. He showed great courage and devotion to duty.

#### ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. E. W. P. V. Marriott retires on retired pay.

Capt. W. C. Hartgill relinquishes the acting rank of Major.

Temp. Capt. J. McP. MacKinnon to be Lieutenant and to be temporary Captain.

Lieut. (temp. Capt.) T. C. Bowlie to be Captain.

Temp. Lieut. H. C. Hinwood to be temporary Captain.

Officers relinquishing their commissions:—Temp. Lieut.-Col. J. F. Woodyatt (on ceasing to be in charge of Halifax War Hospital, and retains the rank of Lieutenant-Colonel); Temp. Hon. Lieut.-Col. W. J. Richard (on ceasing to be employed at the Merryflats War Hospital, and retains the honorary rank of Lieutenant-Colonel); Temporary Captains retaining rank of Captain: M. A. McKeever, W. P. Over, B. J. Hackett, J. A. G. Sparrow, J. N. Donnellan, J. A. N. Scott, E. E. Frazer, F. J. Wheeler, J. A. MacLeod; Temp. Lieut. C. O. Miller (retains the rank of Lieutenant).

#### Canadian Army Medical Corps.

Temp. Lieut.-Col. (acting Col.) T. C. D. Bedell to be temporary Colonel.

Temp. Major W. J. McAlister to be acting Lieutenant-Colonel while in command C.C.O.H., Matlock, Bath.

Temp. Majors (acting Lieut.-Cols.) R. M. Filson and E. A. Neff relinquish the acting rank of Lieutenant-Colonel.

The undermentioned temporary Captains (acting Majors) relinquishing the acting rank of Major: A. M. Yeates, J. N. Taylor, H. C. Allison, M. G. Thomson.

The undermentioned temporary Captains (acting Majors) to be temporary Majors: P. D. Saylor, H. C. Davis, D. J. Millar.

The undermentioned retire in the British Isles: Temp. Col. W. L. Watt; Temp. Lieut.-Cols. S. R. Harrison, E. L. Pope; Hon. Major I. D. Carson; Temp. Majors A. B. Walker, S. G. Ross, D. J. Cochrane, H. W. Whytock; Temp. Capts. H. C. Watson, V. D. Davidson, J. W. Dorsey, J. E. C. Henderson, M. G. Thomson, W. E. Jones, O. E. Kennedy, F. A. O'Kelly, G. W. M. Smith, T. G. Macdonald, R. G. Moffat, L. C. Reid, M. Krolik, T. Campbell, T. D. Wheeler, F. B. Sharp, R. MacKinnay, J. L. Poirier, J. W. Begg, G. B. Ferguson, D. Smith, R. F. Price, H. G. McCarthy, W. C. Lowry, M. F. D. Graham, V. K. O'Gorman, H. J. G. Geggie, B. Cohen. Temp. Hon. Capt. A. V. Whipple.



*Canadian Army Dental Corps.*

Temp. Major G. N. Briggs retires in the British Isles.

*South African Medical Corps.*

Temp. Capt. E. L. Reid relinquishes his commission and retains the rank of Captain.

**TERRITORIAL FORCE.**

Lieut.-Col. (acting Col.) H. Collinson relinquishes the acting rank of Colonel on vacating the appointment of Assistant Director of Medical Services.

Majors (acting Lieut.-Cols.) A. W. Moore, J. Wood, and D. H. Weir relinquish the acting rank of Lieutenant-Colonel on ceasing to be specially employed.

Cpts. (acting Lieut.-Cols.) H. H. B. Cunningham, W. Brown, and F. G. Dobson relinquish the acting rank of Lieutenant-Colonel on ceasing to be specially employed.

Capt. (acting Lieut.-Col.) L. D. B. Cogan to be Assistant Director of Medical Services, and to be acting Colonel whilst so employed.

Cpts. (acting Majors) F. E. Stokes, J. W. Thomson, A. L. Heiser, C. S. P. Black, J. W. McIntosh, and A. E. Ironside relinquish the acting rank of Major on ceasing to be specially employed.

Capt. H. H. B. Cunningham to be a Deputy Assistant Director of Medical Services, and to be acting Major whilst so employed.

1st London General Hospital: Lieut.-Col. Sir Anthony A. Bowlby, K.C.M.G., K.C.V.O., C.B., is retired and is granted the honorary rank of Major-General.

4th Northern General Hospital: Major (acting Lieut.-Col.) F. S. Genney relinquishes the acting rank of Lieutenant-Colonel on ceasing to be specially employed.

1st London Sanitary Company: Lieuts. J. Buckland and W. H. S. Dunn to be Captains.

1st Eastern General Hospital: Capt. P. N. B. Odgers is restored to the establishment.

3rd Western General Hospital: Capt. (acting Major) R. C. Elsworth relinquishes the acting rank of Major on ceasing to be specially employed.

**ROYAL AIR FORCE.**

*Medical Branch.*—Lieut.-Col. H. E. South (Fleet-Surgeon, R.N.) relinquishes his commission on ceasing to be employed.

Capt. (acting Major) C. J. G. Taylor and Capt. T. H. James are transferred to the unemployed list.

*Dental Branch.*—G. Packman is granted a temporary commission as Captain.

P. E. Bernard and R. H. More are granted temporary commissions as Lieutenants.

**INDIA AND THE INDIAN MEDICAL SERVICE.**

Lieut.-Col. J. Jackson, C.I.E., to be Colonel.

The King has approved the retirement of Lieut.-Col. A. H. Nott and Major D. S. A. O'Keefe.

Lieut.-Col. J. Stevenson, C.I.E., is retiring from the appointment of Principal of the Government College, Lahore. Capt. C. E. R. Norman resigns the service. Lieut.-Col. W. Vonne, Civil Surgeon, Cawnpore, has been granted leave, and Dr. C. A. Fuller officiates as Civil Surgeon, Cawnpore, during his absence. The Secretary of State for India has appointed Mr. Nibhatan Dhar to the Indian Educational Service as Professor of Physical and Inorganic Chemistry, Muir Central College, Allahabad. Capt. R. B. Lloyd, Imperial Serologist, has been appointed Chemical Examiner to the Government of Burma.

## Medical News.

THE death is announced of Dr. William Smith Greenfield, F.R.S. Edin., at the age of 73, who was Emeritus Professor of Pathology and Clinical Medicine, Edinburgh University, from 1881 to 1912.

UNIVERSITY OF LONDON.—At the Second Examination for medical degrees (Part I.) held recently the following candidates were successful:—

Francis Glen Allan, St. Thomas's Hosp.; Katharine Margaret Andrew, Newnham College; Joseph Atkin and Philip Bernard Atkinson, King's College; Grace Lily Austin, University College; Maud Kirkdale Baden-Powell, London School of Medicine for Women; Judah Samuel Benzery, University College; William Claude Morpott Berridge, St. Thomas's Hosp.; Mark Bersinski, Middlesex Hosp.; Hilda Alice Bond and Gwendolyn Jane Brooke, University College; Grace Emily Budge, London School of Medicine for Women; Helen Bumstead, King's College; Lily Clarkson Butler and Hilda Louisa Byett, London School of Medicine for Women; Dorothy Maude Campbell-Meiklejohn and Fanny Louise Cattle, University College; Gladys Maud Clarke and Marian Bertha Coleman, London School of Medicine for Women; Arthur Basil Cooper, St. Paul's School; William Leigh Spencer Cox and Eleanor Mildred Creak, University College; Hilda Mary Cunningham, London School of Medicine for Women; Donald Vaughan Davies, St. Paul's School; Morris Denman, Middlesex Hosp.; Barbara Joan Edwards, University of Birmingham; David Glyn Mason Edwards and Alfred Claude Mitchell Elman, University College; Brenda Harks English, London School of Medicine for Women; Charles Walter Evans, University College; George Morgan Evans, University College, Cardiff; Shafik Abd-el-Malek Fam, King's College; Mary Dorothy Fletcher, University College; Louis Fogelman, Guy's Hospital; Annie Foner, University College; Mary Elizabeth Fox, London School of Medicine for Women; Emily Lorna Franklin and Labib Ghabrial, King's College; Laura Phoebe Gibson, Lady Margaret Hall, Oxford; Cecil Percy Roderick Gibson, St. Thomas's Hosp.; Winefride Mary Gibson, Victoria Tutorial College; Horace Philip Goldsmith, University

College; Dorothy Eva Gray, London School of Medicine for Women; John Griffiths, University College, Cardiff; Aaron Gullorteln, London Hosp.; Margaret Constance Nool Hadley and Samuel Halperin, University College; James Rowland Hamerton, St. Bartholomew's Hosp.; Marjorie Florence Hayward and Barbara Joan Hilek, London School of Medicine for Women; Norman Gray Hill, London Hosp.; Gwynedd Hugh-Jones, London School of Medicine for Women; Robert Hunt Cooke, St. Bartholomew's Hosp.; Morris Jablonsky, King's College; Douglas James Tendon Jeans, Guy's Hosp.; Harry Victor Mainwaring Jones, St. Thomas's Hosp.; Robert Owen Jones, Middlesex Hosp.; Norman Adams Jory, St. Bartholomew's Hosp.; Jean Pierre Kies, St. Thomas's Hosp.; Alfred Charles King, London Hosp.; Charlotte Anne Kingdon, London School of Medicine for Women; Isaac Kinsler, St. Bartholomew's Hosp.; Charles Henry Landau, London Hosp.; Miriam Annabella Lawson, London School of Medicine for Women; Charles Emile Marie Joseph Libert, King's College; \*Edith Treveling Marshall, London School of Medicine for Women; Doris Ivy Mart, University College; Annie Pearce Martin, London School of Medicine for Women; Ysobel Maisie Howard Martin, Newnham College; Lucy Margaret Theodora Masterman and Margarethe Mautner, London School of Medicine for Women; Alan Aird Moncrieff, Middlesex Hosp.; Thomas Walter Morgan, University College, Cardiff; Richard Murchison Morris, London Hosp.; Herman Mould, University College; Ethel Murgatroyd, Newnham College; Frances Louisa Nichol, London School of Medicine for Women; Albert Boswell Nutt, University of Sheffield; Herbert Leslie Oldershaw, St. Bartholomew's Hosp.; Guan Yong Oon; University College; Beryl Palmer-Jones, University College, Cardiff; Emily Constance Noel Paterson, Newnham College; Dorothy Edith Peake, London School of Medicine for Women; Cyril Morgan Pearce, St. Bartholomew's Hosp.; Herbert John Plowright, Guy's Hosp.; Kathleen Mary Potter, University of Leeds; Violet Alice Quilleay and Alysoun Hurndall Rowntree, London School of Medicine for Women; Dorothy Stuart Russell, Girton College; George Drury Shaw and Thomas Archibald Shaw, Guy's Hosp.; Elizabeth Shlouden, King's College; Walter Roworth Spurrell, Guy's Hosp.; Betty Stainer, King's College; Edith Emily Stephens, Hilda North Stoessiger, and Margaret Swete, London School of Medicine for Women; Selwyn Edward Tanner, University College, Cardiff; Robert Wise Holden Thicker, St. Bartholomew's Hosp.; Maurice Auvache Townshend, University College; John Rutherford Tree, Middlesex Hosp.; Olga Frances Tregelles, London School of Medicine for Women; Thomas Fenemore Waring, London Hosp.; Reginald Lawson Waterfield, Guy's Hosp.; Lewis John Watkins University College, Cardiff, and private study; Constance Clara Maude Watson, King's College and Charing Cross Hosp.; Hilda Marion Weber, University College; Henry John William Jennings Westlake, Guy's Hospital; Edward Lincoln Williams, London Hosp.; and Esther Wingate and Isabelle Joan Woodhouse, London School of Medicine for Women.

\* Awarded a mark of distinction.

## Parliamentary Intelligence.

**NOTES ON CURRENT TOPICS.****WAR PENSIONS (ADMINISTRATIVE PROVISIONS) BILL.**

THE House went into Committee on Thursday, August 7th, on the War Pensions (Administrative Provisions) Bill.

*The Right of Appeal.*

On the motion "that this be the Schedule of the Bill,"

Mr. HOGGE complained that many of the men who were wounded in 1914-15 had not even an appeal against the assessment of the Medical Board. There was no medical referee in those days attached to the Local War Pensions Committee to which any of these men could appeal. He wanted to know if the appeal set up in Clause 8 of this Bill enabled any man who was eligible for a pension from the first date on which men were being wounded to go to this tribunal? This was an extraordinarily important point.

Sir JAMES CRAIG said it was the desire and duty of the Pensions Minister to see that the responsibility of passing men on to the Ministry of Labour rested with the medical advisers. Consequently, the desire of Mr. HOGGE was adequately met. No pensioner left the auspices of the Pensions Ministry until he was certified by their own medical staff to be absolutely fit to undertake the training which the Ministry of Labour proposed to give him. As to an appeal to a superior class of medical board, the door was by no means closed, but he could not pledge the Minister without having first consulted him.

The Committee Stage was concluded, and the Bill was reported to the House and read a third time.

**HOUSE OF COMMONS.**

WEDNESDAY, AUGUST 6TH.

*Hospital Arrangements in India.*

Colonel YATE asked the Secretary for India whether he could make any statement as to the amelioration of the hospital arrangements for the sick and wounded in the operations on the North-West Frontier of India; whether he was aware that one officers' hospital was so badly equipped that the patients had to use their shaving mugs



as drinking cups and tumblers; that no casualty lists were issued for more than a month subsequent to May 17th; and even wives were not officially informed of their husbands' deaths and were left to hear of it from other sources.—Mr. MONTAGU replied: As regards the first part of the question, I would refer my honourable and gallant friend to the very full statement which I have made in answer to another question of his [summarised in THE LANCET of last week]. The second part is covered by the request which I have already addressed to the Government of India for a report on the hospital referred to. It is not the case, so far as I am aware, that no casualty lists were published for more than a month subsequent to May 17th. Reports of casualties are communicated to the War Office as they are received by the India Office and are published by the former. Apart from publication, reports of casualties are immediately communicated by the India Office to the next-of-kin in all cases in which the names of the next-of-kin have been registered. If the honourable and gallant Member will inform me what are the cases to which he refers in the last part of his question I will have inquiry made.

Colonel YATE: I refer to the publication by the Government of India. I would ask with regard to the statement in yesterday's full statement which is referred to that the scale of equipment of Indian general hospitals has been reviewed and that arrangements for providing additional equipment are in progress does not show that the shortage brought to light by the Mesopotamia Commission has not yet been remedied in India, and that the pernicious report of Lord Nicholson and Sir William Meyer, which caused Lord Crewe to limit the expenditure on the Indian Army to £19,500,000 is still operating, and—

The SPEAKER: The honourable and gallant Member is making an argumentative speech.

#### *Hospital Carriers for Russia.*

Lieutenant-Commander KENWORTHY asked the First Lord of the Admiralty whether he was aware of the fact that six hospital carriers had been sent to North Russia for service on the River Dwina which could not ascend that river owing to their excessive draught; whether, in consequence, the arrangements for transporting wounded might be insufficient should heavy casualties be inflicted on our forces; and whether all possible steps were being taken to send out smaller carriers for wounded with all dispatch.—Dr. MACNAMARA (Secretary to the Admiralty) replied: The six hospital carriers referred to are six paddle steamers which were fitted out temporarily owing to the unavoidable delay on passage from Mesopotamia of vessels of smaller draught. They were the shallowest draught craft available at the time, and but for the abnormally low river would have been entirely suitable for the service. I am advised that adequate craft are now available at Archangel, and should more be required others are on their way.

#### *Public Health Research.*

Mr. WATERSON asked the Prime Minister whether the Minister of Health would throw wide open the door of research to all new ideas and methods, so far as the promotion of health was concerned.—Dr. ADDISON replied: I have been asked to answer this question. It is certainly the intention of the Ministry of Health to utilise every possible means for promoting the health of the people in co-operation with the Medical Research Committee and otherwise, and including in particular the investigation of the causes of disease and the encouragement of research, with an open mind for the reception of new ideas and methods.

#### *Medical Arrangements in Russia.*

Mr. RAWLINSON asked the Secretary for War if he would state how many hospital ships were now being used for the troops in North Russia; and whether an adequate supply of doctors, nurses, and hospital requirements had now reached our troops.—Mr. CHURCHILL replied: Two hospital ships are being used to evacuate patients from the military hospitals in North Russia. An adequate supply of doctors and hospital requirements are present at both Archangel and Murmansk. Six British nurses are doing duty in the hospital at Murmansk. There are no British nurses stationed at Archangel.

#### *Venereal Disease.*

Major WARING asked the Secretary for War whether he was aware that patients undergoing treatment for venereal disease in certain military hospitals in this country were permitted to move freely in populous districts every afternoon; and would he issue instructions that these infected persons should be confined to the precincts of the hospital throughout their period of treatment.—Mr. CHURCHILL replied: Patients undergoing treatment for venereal disease in military hospitals are not permitted to move freely, as suggested in the first part of my honourable and gallant friend's question. Except under very exceptional circumstances patients who are in a condition to spread infection are not granted leave from the hospital.

#### *Food for Patients in Sanatoriums.*

Mr. GRATTAN DOYLE asked the Minister of Health whether his attention had been called to the complaints that many tuberculosis patients in sanatoriums and similar institutions under the control of local authorities still suffered from the severe régime imposed by the war and food control as to food and nourishment; and whether he would cause such inquiries and alterations to be made as would ensure to such patients every consideration and help.—Major ASTOR (Parliamentary Secretary to the Ministry of Health) replied: I am aware that complaints have been made from time to time in respect of food and other matters in sanatoriums and similar institutions, and I am now inquiring into a particular case which has just been brought to my notice. I am advised that where the official dietary scales are properly carried out they are found suitable, but if the honourable Member will give me the details of any particular place where he has information that the food is inadequate, I will gladly have it investigated and reported upon.

THURSDAY, AUGUST 7TH.

#### *Filthy Streets and the Public Health.*

Major C. W. LOWTHER asked the Minister of Health whether he was aware of the dirty condition of the streets in the neighbourhood of Paddington, and whether he would take steps to cause the streets in question to be thoroughly disinfected with a view to preventing the propagation of disease.—Major ASTOR replied: My right honourable friend has no official representations on the subject, but in view of what has otherwise come to his knowledge he is in communication with the local authority with a view to considering what steps it may be desirable to take to safeguard the health of the people.

Colonel YATE: Is the right honourable gentleman in communication with the Kensington authorities, where the situation is very serious?—Major ASTOR: Yes, my right honourable friend has been in touch with Kensington for some time, and I understand that seven vans are collecting refuse in Kensington and that there will be 20 on the streets to-morrow.

#### *Breaches of Discipline at Warlingham Hospital.*

Sir STUART COATS asked the Secretary for War whether on Peace Day it was necessary, in answer to an urgent summons, to send a detachment of troops in motor lorries, with a machine-gun, from the Guards' barracks at Caterham to suppress a serious riot at the military hospital for venereal diseases at Warlingham; and whether he was now in a position to state what steps he was taking to prevent in future the recurrence of such breaches of discipline.—Mr. CHURCHILL replied: I am informed that there has never been a riot at the military hospital at Warlingham. A number of patients were, or had been, absent without leave on the night July 18th-19th, and to prevent additional men leaving the hospital a detachment from the Guards' Depot was sent on the morning of the 19th. No machine-gun accompanied the troops. The detachment of Guards was relieved the next day by other troops, who are still there. The breaches of discipline have been, and are being, dealt with in the ordinary course, and 20 men are now awaiting trial by district court-martial in connexion with the occurrence.

#### *Nurses at Archangel.*

Mr. JODRELL asked the Secretary for War if there were any British nurses in the port and town of Archangel; and, if so, how many, and when did they arrive.—Mr. CHURCHILL replied: There are at present no British women nurses in the port and town of Archangel. A matron and 13 sisters were, however, on duty on a hospital ship which was stationed at Archangel from Nov. 2nd till June 2nd last, when the ship returned with them to this country. The hospital ship returned to Archangel on July 7th with one matron and ten sisters and left again on the 28th with the nursing staff on board.

#### *Small-pox and the Italian Expeditionary Force.*

Mr. WATERSON asked the Secretary for War if he could state how many men who went to Italy in the spring of 1918 were vaccinated against small-pox.—Mr. CHURCHILL replied: Two cases of small-pox were reported as occurring among the troops of the Italian Expeditionary Force during the year 1918. One was reported in January and the other in April. I cannot say whether the latter went to Italy in the spring of 1918 nor whether the soldier was vaccinated.

#### *Treatment for Neurasthenic Patients.*

Major PRESCOTT asked the Pensions Minister whether he could make any statement as to the amelioration of the hospital arrangements for discharged sailors and soldiers suffering from neurosis and neurasthenia; whether he was aware that many of these Tottenham cases, together with those of epilepsy, were still awaiting admission into homes of recovery; whether he was aware that Mr. H. G. Cooke, a discharged soldier, of 39, Franklin-street, Tottenham, had been waiting for over five weeks to be admitted into



hospital; whether he was aware that a similar case which had been waiting for a similar period ended fatally a few days ago; and would he take immediate action to see that all outstanding cases were admitted to hospital without further delay.—Sir J. CRAIG (Parliamentary Secretary to the Ministry of Pensions) replied: This matter has engaged the serious attention of the medical officers. It is hoped that soon a central neurological institution will be established in each region, available for both in-patient and out-patient treatment. It is recognised that in a great number of neurosthenic cases in-patient treatment is not required, and in order to provide for this a number of clinics are being established in various parts of the country where expert out-patient treatment will be given. It is therefore confidently expected that very soon ample accommodation will be available for the efficient treatment of these cases. As regards the case of Mr. Cooke his admission to an institution has now been arranged. There was, unfortunately, a little delay in obtaining a vacancy in a suitable hospital. The other case quoted was complicated by the fact that the patient was also suffering from epilepsy, and it was from this disease that he died.

MONDAY, AUGUST 11TH.

#### Insurance Medical Benefit.

Mr. G. LOCKER-LAMPSON asked the Minister of Health if he could make any announcement about the proposed extension of medical benefit under the National Insurance (Health) Acts.—Major ASTOR (Parliamentary Secretary to the Ministry of Health) replied: The question of what changes, if any, in the existing medical benefit under the Insurance Acts will be proposed for 1920 is not yet decided. Various improvements in the conditions of service and the possible establishment of some of the additional matters that were suggested in the Estimates of 1914 have been under consideration at the Ministry and in conference with the practitioners, and will be further discussed with the new consultative councils, with the insurance committees, and with approved societies. But these matters are not yet in a sufficiently advanced state to admit of any precise statement from me to-day.

#### Seale-Hayne Hospital Victualling.

Mr. GEORGE LAMBERT asked the Secretary for War whether tenders had been invited for the Victualling of the Seale-Hayne Hospital, Devon; and when the promise made to evacuate this institution would be fulfilled.—Mr. CHURCHILL replied: Inquiry is being made as to the first part of my right honourable friend's question. As regard the latter part, I can add nothing at present to the letter that was sent to him on Friday last.

TUESDAY, AUGUST 12TH.

#### Medical Treatment at Ilford and Barking.

Sir PETER GRIGGS asked the Pensions Minister whether he was aware that notice had been given to stop the medical and surgical treatment of pensioners and discharged soldiers at the Ilford Emergency Hospital for the towns of Ilford, Barking, and district, some of these men badly requiring treatment, having had to leave their military hospitals too soon; and whether he would make arrangements for the doctors to be paid for continuing the work which they had done gratuitously in the past.—Sir J. CRAIG (Parliamentary Secretary to the Ministry of Pensions) replied: My right honourable friend is aware that the authorities of the Ilford Emergency Hospital have given notice to terminate the treatment at their hospital of pensioners and discharged soldiers at the end of next month owing to lack of accommodation. Arrangements will be made at the earliest possible date for providing the necessary and suitable treatment for discharged men in the areas mentioned.

## Medical Diary for the ensuing Week.

### LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

LONDON HOSPITAL MEDICAL COLLEGE, in the Clinical Theatre of the Hospital.

A Special Course of Instruction in the Surgical Dyspepsias will be given by Mr. A. J. Walton:—

MONDAY, August 18th.—4.30 P.M., Lecture V.:—Gastric Ulcer. *Ætiology and Pathology.*

FRIDAY.—4.30 P.M., Lecture VI.:—Gastric Ulcer. *Symptoms, General and Special.*

A Course of Clinical Lectures for Advanced Students on Intermittent Blood Infections and their Relation to Certain Common Diseases of the Kidney, Prostate, Testicle, and other Organs will be delivered by Mr. F. Kidd:—

WEDNESDAY.—4.15 P.M., Lecture III.:—Hæmatogenous Infections of the Testicles and Bladder. *Clinical Course; Diagnosis; Treatment.*

## Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

BARLING, SEYMOUR, C.M.G., M.S. Lond., F.R.C.S., has been appointed Honorary Surgeon to the General Hospital, Birmingham.

BERRY, W. A., M.D. (State Med.), B.S. Lond., D.P.H., Medical Officer of Health and School Medical Officer for the Heston and Isleworth Urban District Council.

COOK, W. W., M.R.C.S., L.R.C.P. Lond., one the Medical Referees under the Workmen's Compensation Act, 1906, for County Court Circuit No. 2.

DAVIES, TREVOR B., M.D., B.S. Lond., M.R.C.P. Lond., F.R.C.S. Eng., Obstetric Surgeon to Out-Patients, Queen Charlotte's Hospital.

HARDY, T. LIONEL, M.B. Cantab., M.R.C.P. Lond., Assistant Physician to the General Hospital, Birmingham.

HOOD, J. H., M.B., Ch.B. Edin., Honorary Surgeon to the Royal Cornwall Infirmary, Truro.

QUINE, A. E., M.B., Ch.B. Vict. Manch., F.R.C.S. Eng., joint Venereal Diseases Medical Officer for the Cumberland and Carlisle City County Councils.

Certifying Surgeons under the Factory and Workshop Acts: LAVIN, M. F. (Ballymore Eustace District), FERGUSON, J. (Manchester, South-East District), REES-THOMAS, W. H., M.R.C.S., L.R.C.P. Lond. (Basingstoke).

## Vacancies.

For further information refer to the advertisement columns.

Adelaide University.—Prof. of Path. and Bact. £300.

Ashford, Kent, Grosvenor Sanatorium.—Sec. Asst. M.O. £250.

Barnsey, Beckett Hospital.—Res. H.S.

Bath City Council.—M.O.H. £700.

Battersea General Hospital, S.W.—Res. M.O. for Cancer Wing.

Birmingham Education Committee.—Asst. Sch. M.O. £300.

Bradford Royal Infirmary.—Res. Surg. O. £250.

Brighton Education Committee.—Sen. Sch. Doctor. £600.

Brighton and Hove Hospital for Women.—Hon. S.

Cairo, Egyptian Government School of Medicine.—Professors and

Lecturers. ££1,000 and ££600. Also Radiologist and Lect. in

Radiology, ££500. Anaesthetist and Lect. in Anaesthetics, ££500,

and Registrar and Tutor, ££600.

Canterbury, Kent and Canterbury Hospital.—Jun. Res. M.O. £150.

Carlisle, Cumberland Infirmary.—Res. M.O. £200.

Chester County Asylum.—Locum Tenens. 7s. per week.

Chorley Education Committee.—Asst. Sch. M.O. £400.

Derby, County Borough Education Committee.—Asst. Sch. M.O. £500.

Derbyshire Royal Infirmary.—Oph. H.S. £200.

Devonport, Royal Albert Hospital.—Res. H.S. £200.

Dunfriesshire Education Authority.—Med. Asst. £350.

Durham County Council.—Asst. Welfare M.O. £500. Also District

Tuberc. M.O.'s. £600.

East London Hospital for Children, Shadwell, E.—Cas. O. £120.

George Town Municipality, Penang, Straits Settlements.—Asst. M.O.H.

£4200.

Glamorgan County Asylum, Bridgend.—Fourth Asst. M.O. £400.

Great Yarmouth Hospital.—H.S. £200.

Greenwich Metropolitan Borough.—M.O. for Maternity and Child

Welfare Work. £540.

Guisborough Union.—M.O. £700.

Hong-Kong Government.—Bact. and Path. £600.

Hong-Kong University.—Lecturer in Biology. £400.

Huddersfield, Pontefract, and Wakefield, West Riding County Council.

—Dist. Tuberc. O.'s £500.

Ilford Urban District Council.—M.O.H. and Female Asst. M.O.H. £650

and £400.

Kent County Mental Hospital.—Jun. Asst. M.O. £300.

Khartoum, Wellcome Tropical Research Laboratories.—Asst. Bacterio-

logist. ££600.

King's Lynn, West Norfolk Hospital.—H.S. £150.

Leeds General Infirmary.—Ophth. and Aur. H.S. £50. Res. M.O. £60.

Two H.S.'s and Two H.P.'s.

Leeds Public Dispensary, North-street.—Res. M.O. £200.

Leyton U.D.C. Education Committee.—Asst. M.O. £350.

Liverpool, David Lewis Northern Hospital.—Three S.'s and Two P.'s.

£150.

Liverpool Hospital for Consumption, &c.—Vacancies on Hon. Med Staff.

Liverpool School of Tropical Medicine.—Tropical Research, Brazil.

£300.

Manchester, Ancoats Hospital.—Res. S.O. £200.

Manchester, Baguley Sanatorium for Tuberculosis.—Three M.O.'s.

£400, £350, and £300 respectively.

Manchester, Mosaic Fever Hospital.—First Med. Asst. £350. Second

Med. Asst. £300.

Manchester Royal Infirmary.—Med. and Surg. Registrars. £75.

Surg. Tutor. £30. Also H.S.'s. £25.

Manchester, St. Mary's Hospitals for Women and Children.—Res.

Obst. S. and Res. Surg. O. £250 each.

Melbourne University.—Lecturer in Pathology. £600.

National Hospital for Diseases of the Heart, Westminster-street, W.—

Res. and Non-Res. M.O.'s. £100 and £50.

Nelson, Lancs.—M.O.H. and Sch. M.O. £700.

Newark Hospital and Dispensary.—Res. H.S.

Newcastle-upon-Tyne, Hospital for Sick Children.—Sen. Res. M.O. £200.

Newcastle-upon-Tyne Poor-law Infirmary.—Second Res. M.O. (Female).

£250.

Newport Borough Asylum, Caerleon, Mon.—Asst. M.O. £300.



Northampton General Hospital.—Two H.S.'s. £200 each.  
 Northamptonshire C.C. Education Committee.—Sch. Dentist. £350.  
 Nottingham, Notts Education Committee.—Asst. School M.O. £425.  
 Prince of Wales's General Hospital, Tottenham.—Hon. Asst. P. and Hon. Asst. O. H.S. Also Clin. Asst.'s.  
 Putney Hospital, S.W.—Res. M.O. £150.  
 Queen's Hospital for Children, Hackney road, Bethnal Green, E.—H.S. and Cas. H.S. £100 each.  
 Rochester, Kent, St. Bartholomew's Hospital.—Jun. Res. M.O. £150.  
 Rochdale Infirmary and Dispensary.—Sen. H.S. £200. Also Jun. H.S. £100.  
 Royal National Orthopaedic Hospital, London, W.—Hon. P.  
 Royal Society, Burlington House, London.—Two Foulerton Studentships. £400 each.  
 St. George's Hospital, S.W.—Two Cas. Officers. £200.  
 St. Helen's Education Committee.—Whole-time Dentist. £450.  
 St. Mary's Hospital Medical School, Paddington, W.—Lecturer on Chemistry. £300.  
 Sheffield Royal Infirmary.—H.S. £150.  
 Shelland—Tingwell, Whithens, and Weisdale.—M.O. and Pub. Vac. £45.  
 Southampton, Free Eye Hospital.—H.S. £150.  
 Swansea General and Eye Hospital.—Res. M.O. £200.  
 Taunton and Somerset Hospital.—Res. Asst. H.S. £80.  
 Notice is given of a vacancy for a Specialist Medical Referee for Cases of Industrial Disease, in County Court Circuits Nos. 23, 28, 30, 31, and 54. Applications should be addressed to the Private Secretary, Home Office, not later than Sept. 4th.  
 Notice is given of a vacancy for a Medical Referee under the Workmen's Compensation Act for the Sheriffdom of the Lothians and Peebles, and also for Circuit No. 11 (Bradford, Kelghley, Otley, and Skipton County Courts). Applications should be addressed, respectively, to the Private Secretary, Scottish Office and Home Office, Whitehall, London, S.W. 1, not later than Sept. 4th.  
 The post of Medical Adviser at Liverpool, under the Colonial Office, is vacant. Application for particulars should be made to the Colonial Office, London, S.W.  
 The Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Abertillery, Bishop's Castle, Borrisoleigh, Darlington, Staveley, and Tallow.

## Births, Marriages, and Deaths.

### BIRTHS.

HILL.—On August 7th, at "Dalestead," Caterham Valley, Surrey, the wife of Fred. T. Hill, M.R.C.S., L.R.C.P., of a son (Anthony).  
 JEFFREYS.—On August 5th, at Brookvale-road, Southampton, the wife of Walter M. Jeffreys, M.B., of a daughter.  
 JOLY.—On August 10th, at Watford, the wife of James Moncrieff Joly, M.B., B.S. Lond., of Doo Doo Doo, Assam, of a son.  
 WHITNEY.—On August 7th, at High View, Maldon, Essex, the wife of C. Underwood Whitney, L.R.C.P., M.R.C.S. (late Captain, R.A.M.C.), of a son.

### DEATHS.

KNIGHT.—On August 7th, at his residence, Swansea, Frederick Knight, M.D. Lond., M.R.C.S., aged 59.  
 N.B.—A fee of 6s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

## Communications, Letters, &c., to the Editor have been received from—

A.—Mr. P. A. Agutter, Wellingborough; Mr. R. J. Albery, Lond.; Sir R. Armstrong-Jones, Carnarvon; Mr. J. E. Arams, Lond.; Mrs. V. B. Alvarez, New York.  
 B.—Lieut. Col. Sir J. Barrett, Melbourne; Mr. J. B. Burke, Kingston Hill, British Dental Association, Lond., Sec. of; Dr. G. J. Branson, Birmingham; Mr. J. P. Buckley, Manchester; Mrs. C. Brereton, Lond.; Dr. W. A. Berry, Lond.; British Thomson-Houston Co., Lond.; Dr. E. A. Barton, Lond.; Surg. Commdr. W. Bastian, B.N.  
 C.—Dr. J. B. Crozier, Lond.; Dr. J. B. Christopherson, Lond.; Dr. F. G. Crookshank, Lond.; Dr. J. C. Clayton, Lond.; Colonial Office, Lond., Asst. Private Sec.; Dr. C. R. Corfield, Manchester.  
 D.—Dr. L. S. Dudgeon, Lond.; Sir D. Duckworth, Bt., Lond.  
 E.—Evelina Hospital, Lond., Sec. of.  
 F.—Food Education Society, Lond.; Dr. A. R. Fraser, Aberdeen; Factories, Chief Inspector of Lond.  
 G.—Major W. R. Galwey; Dr. A. L. Grant, Burghhead; Prof. G. Galli, Rome; Dr. H. L. Gordon, Lond.; Dr. R. G. Gordon, Bath; Mr. W. R. Gurden, Lond.  
 H.—Fleet-Surg. W. E. Home, R.N.; Dr. J. H. Hood, Truro; Dr. H.

Head, Chateau de la Mimerolle; Capt. H. A. Haig, R.A.M.C.  
 K.—Dr. H. C. Kidd, Bromsgrove; Dr. R. Knox, Lond.; Mrs. V. M. Kirkwood, Lond.  
 L.—Dr. C. E. Lakin, Lond.; Dr. W. J. Le Grand, Blackwell; Dr. G. C. Low, Lond.; Mr. E. M. Little, Lond.  
 M.—Manchester, School Medical Officer of; Dr. J. B. Mennell, Lond.; Mr. E. Miles, Lond.; Major P. Manson-Bahr, D.S.O., R.A.M.C.; Ministry of Health, Lond.  
 N.—National Association for the Prevention of Tuberculosis, Lond.; Dr. A. Napier, Glasgow.  
 P.—Mr. V. G. Piarr, Lond.; Mr. T. D. Pryce, Nottingham.  
 Q.—Queen Charlotte's Hospital, Lond., Sec. of.  
 S.—Dr. A. G. Shera, Eastbourne; Stoke Newington, Medical Officer of Health of; Dr. R. I. Spriggs, Banff; Mr. D. M. Shaw, Cheddar; Dr. E. B. Sherlock, Darenth; Student; Mr. S. Stephenson, Lond.  
 T.—Dr. A. H. Thompson, Lond.; Dr. J. Tatham, Oxted.  
 U.—University of Liverpool, Dean of Faculty of Medicine of.  
 W.—Dr. L. A. Weatherly, Bournemouth; Dr. F. J. Wethered, Falmouth; Mr. H. Wiltshire, Lond.  
 Y.—Mr. P. Yates, Manchester.

Communications relating to editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C. 2.

## Notes, Short Comments, and Answers to Correspondents.

### AN EMERGENCY CASES HOSPITAL IN THE MEUSE.

BY J. A. CAIRNS FORSYTH, M.Sc., M.B., F.R.C.S.,

SURGEON TO THE FRENCH HOSPITAL.

(Concluded from p. 272.)

#### The Defence of Verdun.

On Feb. 23rd, 1916, wounded began to arrive from Verdun. They were in a bad way, and very "jumpy," having suffered much during the terrible bombardment, which they described as something quite extraordinary in the way of shell fire. Certainly some of the shells which fell around Verdun were of uncommon size.

The first fortnight of that historic battle will always live in our memories. Work was at the highest pressure on account of the constant stream of wounded that flowed through Bar-le-Duc. How the staff of the Evacuating Hospital stood the strain I do not know, but they went about their work uncomplaining, their bodies limp with fatigue and their eyes heavy from want of sleep.

The battle was practically directed from Bar-le-Duc, which soon became a very busy place. You will all have read of the wonderful motor transport service that was so quickly organised to assist the railway transport, for the only railway to Verdun that was of any service was a narrow gauge line, and much time was lost in transferring material from broad gauge wagons to narrow gauge. 24,000 motor lorries made the tour to Verdun and back, each day and night. Bar-le-Duc was so policed that no civilian vehicles of any kind were allowed in, and even military vehicles had to enter by one way and leave by another. Stopping or turning in the main streets was prohibited. On the roads to Verdun traffic was as well managed, and each class of troop and transport had its different route, according to the speed of its travelling.

With the opening of the battle there hurried to the Verdun front numerous British ambulance sections belonging to the British Ambulance Committee, the British Red Cross, and the British Committee of the French Red Cross. All of them got arduous and dangerous work transporting wounded from the "postes de secours."

#### Shell Wounds and Gas Gangrene.

The wounds received around Verdun were in quite another class from those of the Argonne fighting in 1915. They were practically all shell wounds, horrible tearing smashes, and the proportion of fractures was very high. Of the 3000 wounded that came to us in 1916 over 1000 had compound fractures, many of them multiple. Gas gangrene was also very rife, and we had 266 cases of gross gas infection, gas that could be detected by the senses. Of these 266 cases 179 were of the local type, and the majority remained so. Only eight of these patients died. The remaining 87 were cases of the fulminating type, where a whole limb or a large area such as the shoulder, back, or buttock was involved. 59 of the 87 died. Included in this series are eight cases of that curious condition, "white gangrene" of the lower limb. The limb then had the appearance of a gigantic phlegmasia alba dolens, and the toxæmia was especially profound. In seven of the eight cases the whole limb was affected and all died. The remaining case was atypical, for the condition extended up only to the knee. That case got well.

#### French Colonials.

As the battle continued we were brought more and more into touch with the Colonial troops of France—Arabs from North Africa, blacks from Senegal, Somaliland, and the French Soudan, Annamites from French Indo-China. In the French hospitals there was no separation of the coloured men from the white—they were treated just like the others, except that in the case of the Arabs and certain blacks their food had to be in accordance with their religious laws. Many of the blacks partook of anything that was going, but the Arabs were most particular in their diet.

Of all these men of colour we were specially attached to the primitive black. They were a most well-behaved, polite lot of men, who showed an almost dog-like devotion to those who ministered to their wants. Some of them were men of huge stature, yet they were among the gentlest patients that ever entered the hospital. One gathered from their officers that they were terrible fellows in the fight, giving no quarter and asking for none. At times they were difficult to hold, especially under heavy shell fire, but once launched at the attack they proved their mettle. Then they were prone to



throw away their rifles, and they entered battle armed only with this fearsome knife, "coup coup" as they called it, that deals a blow akin to that of the Gurkha kukri. One can imagine the effect on the Bosche when he saw a regiment of these ebony giants coming on, brandishing such weapons.

#### *The Nightly Alerte:*

In the autumn of 1917 there commenced a long period of bombing of the Meuse district, no doubt in response to the bombing of German territory by the British Independent Air Force. It was an anxious time, especially during the month of September, when we got the "alerte" every night. Bar-le-Duc suffered badly, one corner of it being blown away. The Credit Lyonnais was burned to the ground, and the civil hospital had to be evacuated. Revigny suffered in like manner, especially round the railway station and the artillery park. We soon realised, however, after the first few nights that the Bosche did not intend to harm our hospital. When they had finished bombing Revigny they crossed the ridge and made for our lake as a rallying point. Keeping well down so as to be safe from the guns, which could not fire low on account of the ridge, they passed over us at a height of about 100 yards. With our wards plainly visible in the moonlight, our unit must have been an excellent target, but they left us alone.

#### *British Wounded from Champagne.*

In the spring of 1918 the great German offensive commenced, and among the wounded who came to us from the Champagne were many British. They had been badly knocked about, and we were glad to see them. A few weeks later and the wounded Highlanders of the 51st Division arrived, but now things had got the turn and the Bosche was being pushed back. These were the days of open warfare and bullet wounds, and it was quite a pleasure to treat bullet wounds after the shell wounds of Verdun, for few of them suppurated.

Summer saw the advent of the American Army to Verdun and the Argonne, and the gradual replacement of the French by their troops. We now had to rely entirely on the army of the Champagne for patients, and many came to us from that army of Colonial regiments. Our hospital had quite a "café au lait" appearance, and our only regret was that we did not speak Arabic.

#### *A Long Farewell.*

With the signing of the Armistice, we got leave to return to England, so we packed up our tents and stole away. Our last patients went into the interior or "en permission," vowing undying friendship, and the hospital was then rapidly dismantled. The bulk of our equipment was sent to a château near Paris, recently purchased by the British Committee of the Croix Rouge, and presented to the French as a sanatorium for consumptives.

We said good-bye to our many friends in the district, and took a sad and long farewell of Faux Miroir. It had been our home for over three years and we were loth to leave it, but we came away with the pardonable feeling that we had been of some assistance to a nation in the hour of her sorest need. Verdun now is but "a tale that is told" in comparison with the more recent glories of the Western front, but to us there will ever remain the memory of that great defence and the sacrifice it entailed. The part that our unit played may have been small and unimportant, but perhaps it may be that the equal treatment of all the specimens of humanity of the French world, the fair division of kindly gifts and comforts from home, the little sprees and sing-songs, have done something towards that real kinship of nations—kinship in human suffering.

#### THE ILL-EFFECTS OF THE AMOURS OF OLD MEN.

At a recent meeting of the Académie de Médecine of Paris M. Armaingaud, the author of a remarkable book entitled "L'Homme vers la Fin de sa Vie," discussed an important subject which seems to have escaped systematic treatment—the ill-effects of the amours of old men. Individual observations on the point must have been made from time to time in general practice, but their interpretation, being doubtful, they have not been thought worth recording, though they have given rise to a general impression. Having practised for 35 years in a very large French town and enjoyed both the confidence and the friendship of an important clientèle, M. Armaingaud has had special opportunities for investigating the subject. In many families the old men preserved all their faculties and remained vigorous until an advanced age. But there were others who fell into idleness and suffered from ennui. They were rich business men aged 50 to 65 years or more, who had retired after making their fortunes. Though in good health and intelligent, their moral and their physical strength declined sensibly in one or two years and their characters changed. Their wives often took M. Armaingaud into their confidence, and

said that the old man, formerly charming and benevolent, loving his grandchildren much and taking them on his knee, became indifferent. He often became depressed, bad-tempered, and exacting. If not told it, M. Armaingaud quickly divined that he had a mistress of 20 to 35 years. From the earliest period of his career his observations tended to convince him that genital excesses were often the cause of apoplexy, cerebral congestion and softening, heart affections, and rapid decline of intelligence and power in men of 60 to 70 years. He resolved to study the question as soon as he had the cases which would enable him to do so. When such a case arrived his view was confirmed. He told the anxious wife to send her husband to him as soon as he complained of the slightest malaise. Questioning led the patient to admit that he had a mistress, generally young. M. Armaingaud pointed out the ill-results, reminding him of the death of a contemporary, which was due not to age but to excess, absolute or relative, and after 60 or 65 years very little indulgence might constitute excess. He added that it was to old men especially that the saying applied, "*Post coitum omne animal triste*." In 38 cases 12 patients would not give up the mistress, 7 did so for a few years and then relapsed, 19 did so permanently. The 12 who did not were from 62 to 66 years of age (average 63). They died at an average age of 73 years. They lost on the average four years of life, for the expectancy of life, according to the tables of French insurance companies, for 63 years is 14 years. The 7 who partially followed the advice were aged 60 to 69 years (average 65). According to the tables, their average expectancy was 13 years, bringing the average age at death to 78. But 6 died at an average age of 75; 1 was an exception and lived till 80. The 19 who did take the advice were aged from 63 to 69 years (average 66). Three, who were exceptions, lived until 68, 70, and 72 years; but the 16 others, who had an average expectancy of life of 12 years—that is, to 78 years—lived until an average age of 86 years, 13 years more than the first class and 11 than the second. The Arab proverb quoted by Professor Lacassagne in his book, "The worst things for an old man are a good cook and young woman," expresses a great truth.

#### "DIADEM" TALCUM POWDER.

It is well known that talc provides an excellent dry lubricant for toilet purposes. Its curious greasy or soapy feel is a remarkable characteristic. In "Diadem" powder a particularly fine impalpable talc is selected as a basis, agreeably perfumed with unirritating agents. In addition there is present a well-known antiseptic powder also in a finely divided state. Altogether this toilet powder reaches a very good standard, having regard to the purposes for which such preparations are employed. The specimen was submitted by Messrs. Robartes, Ltd., Dyer's Buildings, Holborn Bars, London, E.C.

#### MOTHERCRAFT.<sup>1</sup>

THIS useful little text-book is somewhat incorrectly described as a "new edition," for, apart from the many new chapters, some of those under the old titles are by new authors, and many of the original chapters are omitted. Among the most useful of the new chapters is one by Dr. J. S. Fairbairn on "Pregnancy as Affected by Maternal Disease," in which he describes and discusses the common diseases which are associated with pregnancy, and those caused by the pregnancy itself—chiefly the toxæmias of pregnancy.

Dr. Eardley Holland contributes a particularly useful chapter on "Venereal Disease in Relation to Dead Birth and Infant Mortality." An account is given of the nature and course of syphilis, its effect on the fetus, its mode of transmission, and the methods of treatment. He points out the importance of syphilis as a cause of antenatal mortality, and urges the necessity for the examination of every macerated fetus by an expert for evidence of this disease.

One of the most important and useful additions is the chapter by Dr. Henry Kenwood on "Child Welfare and Cow's Milk: Our Duty." So far the public demand for clean milk has met with little or no response, but we can only hope with Dr. Kenwood that this will not always be so. He condemns in no uncertain language the milk which is at present sold, and which is so frequently used as a food for infants. He says that "much of the milk which is sold is dangerously dirty, and this dirt in milk is responsible for much infant sickness and mortality, especially in the summer months. From 5 to 10 per cent. of all the samples of cow's milk examined have contained the cow germ of consumption, and in young children nearly half the fatal cases of abdominal tuberculosis are due to this germ. Occasionally milk infected

<sup>1</sup> Mothercraft. A Selection from Courses of Lectures on Infant Care delivered under the auspices of the National Association for the Prevention of Infant Mortality. Third edition, revised and enlarged. London: John Bale, Sons, and Danielsson, Ltd. 1919. Pp. 320. 5s. net.



by human agencies causes epidemics of diphtheria, enteric fever, scarlet fever, &c.; 10 per cent. of all the samples of milk taken under the Sale of Food and Drugs Acts in England and Wales and submitted to the public analyst are found to be adulterated." Simple tests which can be applied by any intelligent person are given for the content of cream, and the presence of dirt or sourness. It is impossible to mention in detail the subjects which are dealt with so helpfully, but those which will be found of great use include Causes, Recognition and Prevention of Dental Defects, by Mr. C. Peyton Baly; Diseases of the Skin in Infancy, by Dr. H. G. Adamson; and the Law Relating to Maternity and Child Welfare, by Dr. T. Shadick Higgins. In the appendix is given a selection of the best answers to questions on infant care which have been set by the National Association for the Prevention of Infant Mortality at the examination held at the conclusion of each course of lectures. The answers are reproduced as a guide to other students, and will, with the examiner's note, be of great assistance to health visitors and others who intend to present themselves as candidates at future examinations.

#### A MEDICAL REFORMER.

IN its "News, Notes, and Queries," the *Liverpool Post* appositely remarks that Parliament would be much the better these days if it could boast a Joseph Hume, who set himself to check Ministerial extravagance and abuses wherever he could detect them, and maintained a small staff, at his own expense, for ferreting out and exposing everything prejudicial to the public purse. So formidable did he prove that Ministers framed their estimates in fear of him. Joseph Hume was born on Jan. 22nd, 1777, and was the son of a Montrose shipmaster. On the death of his father, his mother was forced to sell crockery in the market-place, but managed to send her son to school, and in 1790 he was apprenticed to a local surgeon. Subsequently, he studied medicine at Aberdeen, Edinburgh, and London, and entered as a surgeon in the sea service of the East India Company. He was afterwards transferred to the land service of the Company, and having mastered Hindustani and Persian was employed in political duties. In 1801 he joined the army at Bundelcund as a surgeon, and during the Mahratta war rendered the Government important services, including a means of drying the stock gunpowder which had become wet. Leaving the army, having somehow amassed £40,000, he spent some time in travel and study, publishing in 1812 a translation in blank verse of the *Inferno* of Dante. His political career at home began in the same year, and he was represented at different times Weymouth, the Border burghs, Aberdeen, Middlesex, Kilkenny, and Montrose. Like his personal and political friend, the Founder of THE LANCET, the late Thomas Wakley, he urged the abolition of flogging in the army. He was a Privy Councillor, a Fellow of the Royal Society, and twice Lord Rector of Aberdeen University. He died in 1855.

#### PREGNANCY AND CHILD BIRTH AMONG SIBERIAN ABORIGINES.

Miss M. A. Czaplicka, a Russian lady who lived for some years in Siberia among the primitive people, has shed a good deal of light on the mode of life, habits, customs, and superstitious practices in a book entitled "Aboriginal Siberia, a Study in Social Anthropology" (Clarendon Press, 14s. net). Among other things she has collected data relating to pregnancy and childbirth, some of the more interesting of which are here given with the names of the tribes concerned:—

*The Kamchadal*.—According to Krashenninnikoff, an eighteenth-century traveller, a woman gave birth to a child kneeling and in the presence of all the villagers without regard to sex or age. The newly born child was wiped with and wrapped in a species of grass called *touchitch*; a stone knife was used to cut the umbilical cord, and the placenta was thrown to the dogs. A woman who wished to become pregnant had to eat spiders; some women for this purpose would eat the umbilical cord together with a grass called *kiperi*. On the other hand, if a child was not desired there was a widespread custom of causing abortion by shock, or by killing *in utero*. The old women "specialists" who carried out the operation frequently caused the death of the mother. In order to induce sterility concoctions made from certain grasses were taken.

*The Yukaghir*.—All cases of childbirth among the Yukaghir were very difficult, and the barbarous practices attendant on them produced nervous diseases and premature age in the mothers. The foundation of these practices is the belief that difficult labour and unfortunate birth are caused by the entry of an evil spirit into the woman. Difficult labour is also attributed either to the failure of the mother to observe certain taboos or to the ill-will of the child itself. Therefore two pregnant women are not allowed to live in the same house in case the two unborn children should communicate and decide which mother should die. Sometimes the husband helps his wife who is in difficult labour by placing his arm around her abdomen. The taboos connected with childbirth affect not only the mother, but also the rest of the household. Some of these taboos are: the pregnant woman must not eat the fat of the cow or reindeer, or larch-wood, as these things are believed to "freeze" or thicken in the stomach and to fasten the child to the inside of the uterus; but butter of the cow or horse's fat may be eaten. She ought not only to be active and

energetic during the puerperium, but ought, in walking, to raise her feet high and also to kick away stones or lumps of earth in her path, thus symbolising the removal of obstructions at childbirth. At the first attack of labour-pains not only the wife, but the husband and midwife, must loosen all their garments, so that the child may not be hampered in any way.

*The Chukchee*.—This tribe is one of the most prolific in North-East Asia, and the women are delivered with little trouble. Custom forbids the mother receiving any help at childbirth—help may only be given in cases of absolute necessity. She must not groan, and has to attend to her own needs as well as to those of the new-born infant. She cuts the cord (with a stone skin-scrapers) and pulls away the placenta. Accordingly, a large pelvis—because it eases delivery—is considered one of the chief features of womanly beauty.

*The Gilyak*.—The Gilyak woman never dares to give birth to a child at home; she must, in spite of the severity of the weather, go out of the hut for this purpose. In late fall or winter a special hut is built for the woman, but it is a very uncomfortable affair, so that mother and child suffer from exposure to cold and wind. To help the woman in labour a wooden figure is carved, representing a woman in the act of delivery, and to it are sacrificed different kinds of foods, with a view to placate the evil influences which are at work. Special knives are used to cut the cord. The woman returns home on the eighth or ninth day. A woman who wishes to have a child wears various amulets, such as a dog's tooth, &c.

*The Buryat*.—Among the Buryat of Alarsk during delivery the women of the family are gathered near the mother and take the child and drop it in a horizontal position on the floor, which has been made soft for the purpose, after which it is washed and wrapped up. Two or three days later a feast is held at which the ceremony of wrapping up the child begins. A boy or girl present is chosen to reply to questions put by a temporary "mother," who holds in her hands an arrow and a right haunch of bone of an animal. After the questions have been asked and answered three times a name is given to the child. The feast ends with the making of a fire in the place where the birth occurred; the guests, including the father, surround the fire and squirt into it from their mouths a mixture made from meal and oil, all in one voice exclaiming "Give more happiness! Give a son!"—repeated three times. General excitement prevails and they vie with each other in smearing their friends' faces and clothes with oil, ashes, and fresh animal excrement.

*The Yakut*.—Yakut marriages are generally fruitful, averaging ten children to one woman, but becoming less so towards the northern districts, although the Yakut are everywhere more prolific than the Tungus. The lack of children is ascribed solely to the woman. According to the explorer Jochelson, women from the north have very difficult delivery. The Yakut regard the pangs of childbirth as sickness caused by evil spirits, and therefore if the assistance of a midwife or the goddess of fertility, Aylsit, is of no avail, a shaman is called in to fight the spirit. A Yakut woman is always delivered on the bare earth, for the Yakut believe that the "earth-soul" is communicated to the infant from the earth at the moment of birth. No consideration is shown to mother or child, for women possessed of evil spirits are regarded as no less perilous to society than those infected with epidemic disease. This accounts for the cruelty manifested by the Yakut towards women suffering the pains of labour. Cases have been known where the woman has died as a result of such cruelty. To hasten delivery two posts are driven into the ground and a third one is fastened across the top of them. The woman kneels and places her arms over the cross-piece far enough to bring the latter under the arm-pits. One man from behind holds her shoulders and another in front holds her hands to prevent any possibility of her resisting the operations of the midwife. The latter kneels in front of the patient and presses upon her abdomen, at the same time imploring the aid of the benevolent goddess, Aylsit, who is believed to be present at childbirth and to assist the patient. Certain food taboos are observed before childbirth: the expectant mother must eat neither swan's flesh nor wild birds' eggs, because the child might otherwise be deaf and imbecile.

The customs collected by Miss Czaplicka are found among aborigines more or less all over the world. The custom mentioned as existing among the Yukaghir of the spectators loosening their garments is in one form or other very old. It was a belief of ancient Roman and Greek folklore that the goddess of delivery, Lucina or Ilithyia, could hinder delivery according to the attitude which she took up, a belief referred to by Herrick, who says, "At thy birth Lucina cross-legged sat."

#### REDUCING A DISLOCATION.

Retired Major, R.A.M.C., asks:—"What are the chances of successfully reducing a backward dislocation of both bones of the forearm in a boy of 12 years, five weeks after its occurrence? What is the latest time after which such an injury has been reduced?"

#### BOOKS, ETC., RECEIVED.

- LEPPINCOTT (J. B.) COMPANY, London and Philadelphia.  
Text-book of Ophthalmology. By H. E. Fuchs. Translated by A. Duane, M.D. 6th ed. Pp. 1058. 30s.  
LONGMAN, GREEN, AND CO., London.  
Dental Surgery and Pathology. By J. F. Colyer, F.R.C.S. 4th ed. Pp. 900. 32s.  
Essentials of Physiology. By F. A. Bainbridge, F.R.S., M.D., and J. A. Menzies, M.D. 3rd ed. Pp. 434. 12s. 6d.  
MACMILLAN AND CO., London.  
Lectures on Sex and Heredity, delivered in Glasgow, 1917-1918, by F. O. Bower, J. Graham Kerr, and W. E. Agar. Pp. 120. 5s.  
MALOINE, A. ET FILS, Paris.  
Le Lait Condensé. By Dr. P. Lassablière. Pp. 110.  
UNIVERSITY OF LONDON PRESS, London.  
Mental Diseases. By R. H. Cole, M.D. 2nd ed. Pp. 351. 15s.



## Methods of Treatment

OF

## FRACTURES OF THE FEMUR.

BY JAMES DRIBERG, M.C., F.R.C.S.,

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IN no branch of surgery has the present war done more to modify treatment than in that of fractures of the femur, and not only to modify but also to simplify the treatment. Whereas in pre-war days a different splint was regarded as more or less specific for each variety of fracture, the present method is to treat all forms of fracture of the femur, and even of the whole leg, in a Thomas knee-splint.

By this means every sort of deformity can be entirely overcome and an ideal result obtained, whereas it is to be remembered that in the pre-war days shortening of from one to two inches was common with a simple fracture, and the results of compound fractures often hopeless.

It is true that in many cases of war wounds with gross destruction of bone and tissue the ideal has been impossible to attain; but these war wounds are, we hope, things of the past, and the object of this paper is to apply the methods learnt and studied in the war to civil practice, in which, happily, compound fractured femurs are rare, and seldom do we see the ghastly shattering of a limb as may be caused by a high-explosive shell.

It is not difficult to see why the treatment of fractured femurs should have improved to so great an extent. In civil hospitals before the war there would seldom be more than 15 to 20 fractures in the same hospital at the same time, and these under the care of various surgeons and house surgeons, all working independently. Whereas during the last two or three years it has been possible to go to any military fractured femur centre and see anywhere up to 500 cases, all under the care of the same surgeon (with, of course, adequate assistants). The treatment of these large numbers of fractured femurs has been systematised—team work has been introduced, and it has been possible to compare results on a scale which has never before been practicable. The natural outcome of this is that the treatment of fractured femurs has been vastly improved.

The treatment of fractured femurs falls automatically into two main groups: (1) the surgical; and (2) the mechanical. They are both important, but it must not be forgotten that the surgical is the life-saving treatment, and therefore must always take precedence, when necessary, of the mechanical.

## I. SURGICAL TREATMENT.

This naturally confines itself to compound fractures—and whereas in war-time the greater percentage of fractured femurs were compound, in civil practice the reverse holds good. In war wounds energetic surgical treatment had to be adopted—the wounds widely excised, damaged tissue excised, muscle cut away till healthy, bleeding, contractile fibres are reached, all fragments of metal and clothing extracted—because of the great dangers of infection partly by ordinary pyogenic organisms and partly by specific gas-forming bacilli, which were so disastrous to life and limb before adequate surgical treatment was adopted. The wound should not be stitched, but should be packed with gauze soaked in flavine, brilliant green, or some form of antiseptic; this dressing should not be changed, and the wound should be closed by delayed primary suture on the third day, with a rubber drain inserted at the lower end for 24–48 hours.

In civil practice if there is any suspicion of gross infection, such as in badly lacerated railway or other accidents, these same surgical measures should undoubtedly be carried out, and so eliminate the sepsis that used to be so common and disastrous. If there is extreme shock this has to be treated by the usual methods—the application of heat and the injection of morphia, or strychnine, or of some other stimulant. There is also no doubt that in cases of shock, especially if associated with hæmorrhage, blood transfusion is of great value. When the patient is fit for operation the depressing effects of chloroform and ether may be obviated by administering gas and oxygen anæsthetic.

In most cases it will be found that these compound wounds heal well, and with little trouble. But if sepsis supervenes

dependent drainage is essential. If drainage is not satisfactory the pus tracks up the thigh towards the hip-joint, especially along the adductor and ham-string muscles, and along the sheath of the sciatic nerve. The temperature chart taken on a "septic" character, the pulse-rate rises, the tongue is dry and dirty, an intractable diarrhoea may set in, there is risk of secondary hæmorrhage, and if adequate drainage is not supplied both limb and life are in danger.

*Secondary hæmorrhage.*—Secondary hæmorrhage, which used to be the bugbear of military surgeons, is now, fortunately, becoming more uncommon. It is treated by tying the bleeding point; if this is not possible the main artery may have to be ligated, but this only too often ends in gangrene and subsequent loss of the limb. If a severe hæmorrhage has taken place intravenous transfusion of normal saline gum solution or blood may be necessary.

*Tetanus.*—Another condition in compound fractured femur which may require surgical treatment is tetanus. In every case where dirt has entered the wound it is advisable to give a prophylactic dose of antitetanic serum of 1500 units, followed eight days later by a smaller dose. If tetanus supervenes any drastic treatment, such as amputation, is contra-indicated. Various sedatives have been used, but experience has shown that the best is morphia—in  $\frac{1}{4}$  gr. doses, given four-hourly, or as often as is necessary to control the spasms. Large doses of antitetanic serum (10,000–12,000 units a day) should be given intramuscularly. Intrathecal injections have not been found to give better results, and have been more or less universally discarded. The severe spasms of the thigh muscles in the "local" form of tetanus may interfere with the extension and position of the bone fragments, but they are usually amenable to treatment. In one case, under Major E. C. Lindsay, R.A.M.C., and operated on by Colonel Percy Sargent, D.S.O., the spasm of the adductors was so severe and uncontrollable that eventually the obturator nerve had to be exposed and crushed, with a satisfactory result.

## II. MECHANICAL TREATMENT.

This consists of (a) fixation of the limb; (b) extension of the limb; (c) suspension of the limb.

Before proceeding to the consideration of these three it is necessary to say a few words about the bed. Any hospital or other bed with an iron framework will suffice, and it is not necessary to have a special mattress with a movable segment for dressings; for, by the method presently to be described, it is easy for the patient to raise his body well clear of the bed for dressings, bed-pan, and other nursing necessities.

Attached to the bed is a wooden framework for the purpose of extension and suspension of the limb, and this should be as simple as possible; there should be two upright bars at the foot of the bed, one at each corner, reaching about 5 feet above the level of the bedclothes. These are joined by a cross-bar at the top and a cross-bar about 2 feet lower down; this lower cross-bar can be extended outwards on either side if the fracture is in the upper one-third and abduction is required. At the head end of the bed are two similar upright bars, but these are clamped on in the centre of the bed about 4 inches apart. From the top of each of these is a longitudinal bar running to the upper cross-bar at the foot of the bed, placed in position for either leg with the requisite amount of abduction. Each of these longitudinal bars has four pulleys on it, one at the foot end, one in the middle about the level of the patient's pelvis, and two at the head end.

Having dealt with the bed and the framework, and having got the patient into bed, it is now possible to consider the fractured limb.

## (A) FIXATION.

By fixation is meant the application of a splint to the fractured leg and the retention of the leg to, or in, that splint. Many splints have been used, the best known being Liston's, Macintyre's, Hodgen's, and the Thomas knee-splint. Gradually every form of splint has been discarded by the majority of surgeons in favour of the Thomas knee-splint or one of its modifications, and this is the only splint whose method of application need be described. There may be a few forms of fracture, especially of the upper one-third, which are more easily treated in a Hodgen's splint; but there is no type of fractured femur which cannot be treated adequately in a Thomas knee-splint.

Before the splint is actually applied the leg has to be prepared in some way so that it may be fixed in the splint. To do this a general anæsthetic should be given, unless



contra-indicated by the general condition of the patient or some concomitant disease, such as Bright's, diabetes, &c. All manipulation of the leg is painful, and an anæsthetic helps both the patient and the surgeon. The various methods of fixing the leg are:—

#### 1. Methods which Obtain Traction from the Skin Surface.

(a) *Adhesive strapping.*—This is probably the best in all cases where traction is applied directly to the skin surface. The method of application is so well known that it is unnecessary to describe it, except to say that it need not be applied above the knee. The skin of the leg need not be shaved beforehand. The purpose of shaving was to make removal of the strapping more comfortable, but by the time the strapping is ready to come off the hairs will all have grown again. And, in any case, strapping can be painlessly removed with ether or turpentine.

(b) *Glue.*—This was first introduced by Major M. Sinclair, C.M.G., of the R.A.M.C. It consists of commercial glue made up according to the following formula: glue, 50 parts; water, 50 parts; glycerine, 2 parts; calcium chloride, 1 part; thymol, 1 part.

Two strips of gauze, 8-fold thick and 5 inches wide, are cut long enough to reach from the knee to 6 inches below the bottom of the Thomas splint. The leg is then washed with a solution of sodium bicarbonate (3i. ad Oi.) in order to remove all grease from the skin. The glue, heated to melting point, is then applied to the skin of the leg between the ankle and the knee as evenly as possible. It is preferable to apply this with the hand and not with a brush, for with the hand it can be applied more evenly; and also this method ensures that the glue is not too hot for the patient's skin. The two strips of gauze are then placed evenly on the glue, one on either side of the leg, and about as high up as the tuberosity of the tibia. The whole leg from just above the ankle to just below the knee is bandaged firmly, but evenly, with a 3-inch cotton bandage. It is essential that the bandage and gauze should be evenly applied, for any unevenness is bound to cause blistering of the skin. If, after the glue has dried, the bandage is too tight, it can be snipped with a pair of scissors. A common place for blistering is over the tendo Achillis, and here, if necessary, the bandage can be cut for an inch or two without harm.

The glue takes about ten minutes to dry, and the chief advantage is the ease and speed with which it is applied. Its disadvantages are that it has to be renewed more frequently than strapping and is rather apt to blister the skin, causing pain and discomfort to the patient.

(c) *Mastisol.*—This is a rubber solution which is applied in exactly the same manner as glue. It dries more rapidly, but is rather more apt to blister the skin.

#### 2. Methods which Obtain Traction Directly from the Bone.

(a) *Fixation by calipers.*—This is the ideal method, as it gives direct control of the lower fragment of bone, and in careful hands no sepsis or ill-results ensue. The calipers are shaped like ordinary ice-tongs, the ends being pointed, and, when opened at the angle at which they will be applied, in the same straight line with each other. The first calipers to be used were ordinary commercial carpenter's calipers, the ends being curved and bent in. Since then various types have been devised, the latest and best being that of Major M. G. Pearson, S.A.M.C., which has in the handles a screw adjustment which prevents any further penetration of the bone once the calipers are fixed in position.

There are two methods of applying the calipers. In the first slight penetration of the bone is aimed at, and this method is adopted if fixed extension is afterwards going to be applied, for otherwise any movement on the part of the patient which eases the extension momentarily might cause the calipers to slip. In the second method the calipers are introduced down to, but not penetrating, the bone. With weight and pulley extensions there is a constant pull at all times, so there is no tendency for the calipers to slip. The points of the calipers get a perfect grip on the bone, which is maintained by the pull of the weight; the screw adjustment in the handles of the calipers prevent penetration of the bone, and the extension cord attached to the handles prevents the points of the calipers coming apart.

The technique of applying the calipers is simple, but all due antiseptic and aseptic precautions must be taken.

The skin round the knee having been shaved and prepared for operation, and the patient having been given a general anæsthetic (gas and oxygen is usually quite sufficient), an incision is made with a scalpel down to the bone on each

side immediately above the thickest and most prominent portion of the condyles of the femur. Each incision should be half an inch long. If the incision is too short pressure sepsis may result in the skin and cause considerable pain. The sterilised calipers are then taken and the points inserted down to the bone, one in each incision. If penetration of the bone is desired the points are hammered in with a mallet to a distance of from  $\frac{1}{2}$  to  $\frac{3}{4}$  in., and the screw in the handle of the calipers adjusted till the handles just touch each other. In no case is it necessary to drill a hole in the bone beforehand. If penetration of the bone is not desired the same steps are carried out, except that the points of the calipers are not hammered in. The handles of the calipers are then tied together to prevent separation of the points. A piece of cord about 3 ft. long is then tied to each handle. To keep the incisions over the condyles clean it is merely necessary to apply to each a piece of gauze soaked in iodine or flavine or some other antiseptic; this piece of gauze need never be removed, but every two or three days a few drops of the antiseptic should be poured on to it.

Calipers are contra-indicated in fractures of the lower one-third actually involving the knee-joint if there is distension of the synovial membrane, because of the danger of damage to the membrane; also in lower one-third compound fractures with T-shaped fracture into the knee-joint, for then the pressure of the calipers may cause pocketing and accumulation of pus between the fragments.

General diseases, such as diabetes, &c., are no contra-indication, for the calipers may be applied under gas and oxygen or local anæsthetic. The same is true of a septic wound over the condyles, for the introduction of calipers actually into a septic wound neither increases the sepsis nor inhibits healing, provided the calipers are only applied down to the bone and there is no penetration.

Occasionally, in spite of careful technique, a slight, though painful, skin sepsis may arise, or the calipers may slip owing to an orderly or nurse relieving the extension by lifting the attached weight (a thing which they should strictly be warned not to do); in these cases the calipers should be removed and reinserted at a somewhat higher level.

The patient usually suffers a little pain and discomfort for 24 hours, sufficient to warrant the injection of morphia gr.  $\frac{1}{2}$  before the anæsthetic.

The two risks of calipers are bone sepsis and penetration of the knee-joint; with careful technique neither of these ought ever to occur.

(b) *Ankle calipers.*—They are similar to, though smaller than, the femur calipers. They are applied in exactly the same way, and with the same precautions, into the thickest part of the malleoli. They are useful in those cases where, owing to the involvement of the knee-joint, &c., femur calipers are contra-indicated; and especially so if there should also be a fracture of the tibia or fibula.

(c) *Hey Groves's transfixation pin* is a steel rod which is driven through the lower end of the femur just above the thickest part of the condyles—traction being maintained from either end of the rod. This has to pass through the cancellous and easily infected portion of the bone, and in removing the pin one end—which has been exposed, has possibly become septic and is difficult to re-sterilise—has to be pulled through the bone, and infection may result.

(d) *Tibial screws.*—These are two silver screws, 2 in. long, which are screwed  $1\frac{1}{2}$  in. into the tibia about 6 in. below the knee-joint. A cord or tape is attached to each screw so as to maintain traction. They have no particular advantage, but may be useful if the skin of the leg blisters badly with strapping or glue.

(e) *Schutro's stirrup.*—This consists of a short, narrow steel rod, which is inserted between the tendo-Achillis and the bone, and rests against the os calcis. Traction is maintained from each end of the rod. This method, too, has no marked advantage over others; and in unskilled hands the steel rod has been known to cut through the tendo-Achillis—a most unfortunate accident.

#### Strapping and Calipers.

The next consideration is which of these eight methods to apply. Except in special cases it is probable that only one of two methods will be adopted; these two are strapping and calipers. There is no doubt that the best results are obtained with calipers. Having a direct control on the lower fragment ensures more accurate correction of any displacement. With this method the period of convalescence is decreased; for, as massage and passive move-



ments of the joints can be applied from the very beginning, the patient, when union has taken place, is able to walk with a good, strong, muscular, well-nourished leg. Moreover the increased nutrition, due to massage, &c., very probably has a beneficial effect on, and hastens, union; for it is a fact that patients who have calipers applied do get union somewhat sooner than those who have some other form of fixation.

There are certain cases, which have already been discussed, where calipers are contra-indicated. In these cases strapping should be used. Also, where aseptic and anti-septic conditions cannot be guaranteed the caliper method, perhaps, should be discarded; for any sepsis round the caliper points, though not necessarily of surgical import, causes great pain and necessitates the removal of the calipers. And, finally, the personal equation of the medical attendant and the facilities at hand for operative treatment have to be taken into consideration.

#### *Application of the Splint.*

The leg having been prepared in one of these methods for fixation, the next step is the application of the splint. Some surgeons prefer a Thomas splint with a large ring, but most use one with a small ring, on the grounds that it is more comfortable for the patient and allows less lateral movement at the seat of fracture.

Having chosen a well-fitting Thomas knee-splint, it is passed on to the leg. An assistant should throughout apply traction on the leg from the ankle, in order to limit as far as possible movement of the bone fragments and consequent damage to the tissue of the thigh. The leg is then supported in the splint by slings. These are short lengths of 3-inch flannel bandage. Each one is looped over the inner bar of the Thomas splint, the doubled bandage is then passed under the thigh and fixed in position over the outer bar by safety-pins or by 3-inch paper clips, which are much more convenient and easy to use. The sling under the upper end of the lower fragment should be pulled tight and should always be kept tight, for this sling corrects the backward displacement of the lower fragment. By having this sling tight the lower fragment is pulled forward into position with the upper, and the anterior arch of the femur is restored. Malunion of the femur with backward displacement of the lower fragment is the most disabling form of malunion known. The other slings merely form a trough for the leg, and are slackened or tightened according to the comfort of the patient.

The ring of the splint should fit snugly against the tuber ischii, the cord from the strapping or the calipers or the gauze from the "glue method" is tied firmly to the end of the splint, and the leg is now "fixed" in the splint.

If strapping has been used it is advisable to bend the Thomas splint to an angle of about  $15^\circ$  at the level of the knee-joint. This, of course, is done before the Thomas splint is put on to the leg. By doing this the knee is slightly bent and the gastrocnemii muscles are relaxed, so helping to correct the backward displacement of the lower fragment.

If calipers have been applied a straight splint should be used and a "knee-flexion splint" applied.

The "knee-flexion splint," introduced by Major M. G. Pearson, consists of the lower part of an ordinary Thomas knee-splint cut off to a length of  $2\frac{1}{2}$  ft. At each upper free end is a joint and a thumb-screw. The knee-flexion splint is fixed to the under surface of the Thomas knee-splint by the thumb-screws, which should be opposite the knee-joint. The flannel slings below the knee are now transferred from the Thomas to the knee-flexion splint, and the leg below the knee is allowed to hang in the knee-flexion splint. This it will do by its own weight, for it must be remembered that when calipers are applied the whole of the leg below the knee is free. By means of the joint between the upper end of the knee-flexion splint and the thumb-screw the splint can be moved up and down, and so passive movement given to the knee-joint daily throughout the whole time that the patient is under treatment. This is the greatest advantage of the caliper method, for it obviates any stiffness of the knee-joint, which is so common with other forms of fixation and which is nearly as crippling as malposition of the femur. The lower end of the knee-flexion splint is tied to the lower end of the Thomas splint by a hook and chain, and can be adjusted to any angle.

To prevent "foot-drop" a small, rectangular wire foot-piece is strapped on either to the Thomas or the knee-flexion splint, and the foot fastened to this in correct position. The most convenient way is to take a strip of gauze, fix one end to the sole of the foot with glue, and tie the other end to the

top of the foot-piece. This leaves the dorsum of the foot free for massage, and also allows of a certain amount of passive movement of the ankle-joint.

#### (B) EXTENSION.

There are two main methods of extension—fixed extension and "weight-and-pulley" extension. It must be remembered that fixing the leg in the splint does not provide extension. It may appear to do so temporarily, but if no further measures are adopted the leg very soon lies quite loose in the splint, partly due to stretching of the gauze or the cord, and partly due to relaxation of the muscles of the thigh.

If fixed extension is to be used the bottom end of the Thomas splint is tied firmly to the lower of the two wooden cross-bars at the foot of the bed, and the foot of the bed is raised 12 inches on blocks. The patient is only allowed one pillow under his head. This method of extension is very simple.

The leg is fixed in the splint, the splint is fixed to the foot of the bed, which is raised on blocks, and the body weight continually slipping away forms a counter-extension and pulls the leg out. If several pillows are allowed the patient puts them under his shoulder, and this immediately releases the extension. In most cases of recently fractured femurs, the leg can be pulled out to its correct length in 24 hours or even less. When this result has been obtained, and that can only be determined by careful measurements and by the X ray, the patient can be allowed an extra pillow, but this may have to be taken away again if the leg shortens at all; it is most important to keep up full extension for the first three to four weeks. The patient may complain of discomfort for the first day or two—it is usually due to the unaccustomed position—but he very soon gets used to it and becomes happy and comfortable. It is unusual for there to be any pain in the seat of fracture once extension has been applied. There may be pain in the thigh due to trauma received at the time of injury, but this is usually relieved by small doses of aspirin.

If "weight and pulley" extension is employed, the lower end of the splint is again tied to the cross-bar at the foot of the bed; but the cord from the strapping or calipers, instead of being tied to the bottom of the splint, is attached to a weight and passes over a pulley which is screwed into the cross-bar opposite the lower end of the splint. The foot of the bed is not raised on blocks. A weight of 7-10 lb. is usually quite sufficient, and it is seldom necessary to use more than 15 lb. In fractures several weeks' old with some union in malposition it may be necessary to have a heavier weight. It must be remembered that when the calipers do not penetrate the bone they are kept in position chiefly by the pull of the extension weight. Consequently, anyone in charge of the patient, such as nurses, orderlies, &c., must be carefully warned never to lift the weight; for this immediately relaxes the extension and the calipers are then liable to slip. In order to ensure against this accident occurring it may be as well to have a small wire cage fitted to the foot end of the bed, inside which the weight may hang. The cage will not only remind the staff that the weight is not to be disturbed, but it will also prevent the weight from being knocked by passers by.

The advantage of the "weight and pulley" method is that the foot of the bed need not be raised and the patient can be propped up as much as is desired by pillows, bed-rest, &c., which in elderly or bronchitic patients greatly reduces the danger of hypostatic pneumonia. With the "weight and pulley" extension the patient sometimes complains of pressure pain over the tuber ischii, and occasionally a definite sore appears. With fixed extension this never happens, for the body weight pulls the upper end of the thigh out of the ring of the Thomas splint.

But apart from these there is nothing to choose between the two methods. Equally good results are obtained with both, and after the first day or two the patients are equally comfortable in either position.

The other methods of extension are not so satisfactory, and need only be shortly described.

*Spring extension.*—The cord of the strapping or calipers is tied either to a powerful elastic or a strong steel spring, which in turn is fixed to the lower end of the splint. With this the amount of extension is difficult to gauge and regulate.

*Screw extension.*—As in the Wallace-Maybury splint.

The patient's leg is fastened to a wooden foot-piece, which is pulled away by an adjustable screw. This is not a very comfortable method for the patient, nor is it very accurate, though it is sometimes useful for purposes of transport.



## (C) SUSPENSION.

The object of suspending the limb is three-fold: (1) it enables the patient to move about comfortably in bed; (2) the necessary rotation of the lower fragment may be obtained so as to correspond with any outward rotation of the upper fragment; (3) in the "weight-and-pulley" method of extension the ring of the splint can be kept close up against the tuber ischii and prevented from slipping over that bone, thus ensuring satisfactory counter-extension from the tuber ischii.

In order to suspend the leg four lengths of cord and four weights of about 5 lb. each are necessary.

The cords are attached to the splint, two at the foot and two at the upper end just below the ring—one on the inner and one on the outer side. They are then passed through the pulleys which have been fixed to the two longitudinal bars of the wooden framework, and finally the weights are attached to the free ends of the cord and hang down behind the patient's head. The two cords from the foot end pass through the two pulleys at the foot end of the bed and then through two of the four pulleys at the head end. The two cords from the upper end of the splint pass first through the two pulleys midway along the longitudinal wooden bars and then through the remaining two pulleys at the head end.

In order to get outward rotation of the leg and lower fragment it is merely necessary for the weights attached to the two inner suspension cords to be slightly heavier than those attached to the two outer suspension cords.

With this suspension method the patient can lift himself off the bed with the greatest ease. He should, of course, have a rope with a wooden handle above his head by which he pulls himself up, at the same time assisting by bending up his sound leg and levering himself off the bed with his heel. The whole weight of the fractured leg is taken by the four suspension weights and the patient has practically only the weight of his trunk to support. Most patients can easily raise themselves 12–18 inches off the bed, and remain in that position long enough for purpose of dressing, nursing, &c.

If the patient is very weak and debilitated another method can be used for keeping him raised up.

A strong piece of flannel, 2 ft. long by 10 in. wide, is passed under the patient's back. Each end of the flannel is looped and through each loop is passed a narrow bar of iron (the bar of a Thomas splint, cut down, answers the purpose very well); each bar is fixed from its centre to the longitudinal wooden bars of the framework by a hook and chain. The flannel binder can be adjusted to any height and the patient remains raised comfortably for as long as is necessary.

Five pounds is the average weight necessary for each suspension cord, but this varies, and can be adjusted to the size and weight of the patient; and, as already mentioned, outward rotation of the leg may be obtained by increasing the weight attached to the inner two cords.

To recapitulate, the steps in "putting up" a fractured femur are: 1. The wooden framework is clamped on to the bed. 2. Some method of traction is applied to the leg. And of all the methods it is probable that only one of two will be adopted—either strapping or calipers. 3. The splint is put on; the slings applied and the leg firmly fixed in the splint; knee-flexion splint adjusted if it is used. 4. Extension (fixed or "weight and pulley") is applied. 5. The leg is suspended. This is the procedure in every case of fractured femur. Variations in the treatment of individual cases will be considered later on.

So far nothing has been said about fixing the bone fragments by direct control at the seat of fracture—i.e., by plating, wiring, or screwing. The plating of fractures is a large subject and quite beyond the scope of this article. Moreover, one of the objects of this article is to show that perfect results may be obtained by other methods. Plating, in the hands of experts, may give excellent results, but in inexperienced hands may have most disastrous consequences. Furthermore, plating does not diminish the length of time the patient has to remain in bed, nor does it shorten the period of convalescence. It is merely a method of internal, as opposed to external, splinting. And as equally good results may be obtained by other methods, it seems unnecessary to expose the patient to the risk of a lengthy anæsthetic and a severe operation. There is a small percentage of cases in which plating may be necessary; these will be considered later on amongst the complications of fractured femur. In no case of compound fracture should plating be even suggested.

## VARIETIES OF FRACTURE.

The next step to consider is the varieties of fractured femur, the position of the fracture, and the bony displacements. The varieties of fracture—transverse, oblique, spiral, comminuted, &c.—have been so often and ably described in text-books that they need not be discussed here, especially as they each require identically the same treatment. Their only importance is with regard to the length of time extension should be maintained, and they will be considered later on under that heading.

Of much greater importance is the situation of the fracture. Of late it seems to be the fashion to divide the femur into fourths, but this has absolutely no advantage over the previous system of division into thirds.

1. *Fracture of the Upper Third.*

(a) *Intra-capsular fractures of the neck of the femur* show little displacement, and merely require fixation, slight extension, and extreme abduction until union is complete.

(b) *In extra-capsular fractures of the neck* shortening is the main displacement to be overcome; this requires considerable extension and usually slight abduction. The result has to be accurately checked by X ray and the tape measure.

(c) *Fracture of the upper one-third of the shaft.*—The usual situation is just below the small trochanter, and the displacement is typical and very general. The displacement of the upper fragment is three-fold—flexion, abduction, and external rotation. Flexion is caused by the upward pull of the iliopsoas muscle; abduction is caused by the glutei; and outward rotation by the external rotators of the hip—obturator, pyriformis, quadratus, and gemelli. Consequently the lower fragment has to be similarly displaced in order to bring it in line with the upper. External rotation is obtained by increasing the weights attached to the two inner suspension cords; abduction, by prolonging outwards as far as necessary the lower cross-bar to which the lower end of the Thomas splint is fixed, and flexion is already provided for by raising the lower end of the splint up to the level of the lower cross-bar.

It has been stated that in order to get true abduction both legs should be abducted, otherwise the patient twists himself round in bed, tilts his pelvis, and false abduction occurs. This is not correct. For the abduction that is applied in order to bring the fragments into line takes place at the seat of fracture and not at the hip-joint, and there is no inducement for the patient to tilt his pelvis; for this position, which restores the natural alignment of the leg, is the position of greatest comfort and rest. That this is so can be proved by examining the anterior superior iliac spines of a patient with one leg abducted; it will be found that the spines are at the same level. In this the treatment of upper-third fractures varies from that of tubercular disease of the hip-joint, in which double abduction is necessary. An exception to this is also found in intra-capsular fractures of the neck of the femur, where extreme abduction is desired, and it is advisable widely to abduct both legs. In upper-third fractures the lower fragment is pulled up by the hamstrings and inwards by the adductors; this is corrected by extension. In fractures above the small trochanter the only difference in displacement is that the upper fragment is not pulled forward by the iliopsoas.

2. *Fractures of the Middle Third.*

The upper fragment is very slightly abducted and externally rotated; the lower fragment is displaced upwards and inwards. This displacement is usually easy to correct; the shortening is reduced by extension, and any "sagging" or backward displacement by tightening the supporting slings. It is essential to keep these slings firm in order to restore the anterior curve of the femur.

3. *Fractures of the Lower Third.*

In these the lower fragment is always pulled back by the gastrocnemii, and usually adducted and slightly rotated outwards by the adductor magnus. The lower fragment is also pulled up by action of all the thigh muscles.

Shortening is corrected by extension; and the backward displacement by tightening the sling under the lower fragment, and by flexing the knee, which relaxes the gastrocnemii muscles. Flexion of the knee is easily obtained by using the knee-flexion splint, already described. The use of calipers is more essential in this than in any other type of fracture, for often it is the only possible method of controlling



the short and easily displaced lower fragment, and of allowing the full amount of knee flexion that is so essential.

In all fractures backward displacement is more or less easy to correct by tightening the supporting slings. Lateral displacement can be similarly corrected. If, for example, the lower fragment is displaced inwards and is not corrected by extension, a flannel sling is passed round the thigh at the level of the upper end of the lower fragment and pinned securely to the outer side bar of the splint. This will pull the lower fragment out, and the sling can be further tightened daily until good position is obtained and maintained.

Of the various fractures those of the upper third usually require more extension than those of the middle or lower. That shortening and displacement have been correctly reduced is decided by inspection, palpation, measurement, and radiography. Inspection and palpation will show whether the limb looks normal as regards size and shape, and whether the anterior and outward curve of the femur has been correctly restored, but the only true and satisfactory tests are measurement and radiography.

Transverse fractures of the femur are rather more difficult to get into perfect position than the other varieties, but once in position their natural tendency is to keep in that position. Oblique, spiral, and comminuted fractures are very liable to "telescope" if good extension is not kept up.

In all varieties of fracture, except the transverse, it is desirable to apply sufficient extension to obtain 1 cm. lengthening; the reason for this is that as soon as the patient starts to walk there is a tendency for the callus to contract and the limb to shorten up just a trifle. This is more particularly marked in cases where there has been a prolonged sepsis and the callus is "sticky."

Both legs should be measured daily for the first week or ten days in order to be certain that sufficient extension is being applied; after that it is only necessary to measure the legs every few days. Sometimes, especially in compound comminuted fractures with much laceration of the thigh muscles, there is over-correction with lengthening of the limb. In this case the amount of extension is reduced, in one method by decreasing the amount of the weight attached, and in the other by allowing the patient more pillows or by putting the foot end of the bed on lower blocks. The legs should be measured in centimetres, which decreases the margin of error, and can be carried out either with a tape measure from the tip of the anterior superior iliac spine to the internal malleolus or with a wooden measure from the under-surface of the anterior superior spine to the upper border of the patella.

It is convenient to chart the length of the leg each time. It is measured on a special chart drawn out in centimetres. The normal line is the length of the sound leg, and the amount of shortening or lengthening is charted above and below this line respectively.

#### *Radiography Essential.*

Radiography is absolutely essential if good results are to be obtained.

The patient is photographed in bed with a portable X ray apparatus. Either two views, antero-posterior and lateral, are taken, or the leg is photographed stereoscopically from the anterior view. If the position of the bone is not satisfactory an attempt is made to correct the deformity by the methods described and a further radiograph taken. Once the position and length are satisfactory it is only necessary to radiograph the leg every two or three weeks in order to be certain that the correct position is being maintained. It is convenient and useful, though not always possible, to have small reduced prints of these radiographs pasted on a board and hung by the patient's bedside.

During the entire time that the patient is in the splint massage of the whole limb and (if calipers have been used) passive movements of the joints should be carried out; it is also advisable to have massage of the sound leg, so that when the patient starts to walk all his muscles are strong, and he is able to stand up and retain his balance. Passive movement of the knee-joint of the broken leg is obtained by daily alteration in the level, and movement of the knee-flexion splint; this should at first be done very carefully and for the first two or three weeks, at any rate, by the medical attendant himself, for in the early stages any careless movement might cause some alteration in the position of the fracture, and will certainly cause pain.

#### *Length of Time during which the Leg should be Left in the Splint.*

This varies to a certain extent, but, on an average, the splint can usually be dispensed with at the end of the tenth or eleventh week. Fractures of the lower third, probably because of the excellent blood-supply, seem to unite rather quicker than those of the upper and middle thirds. Oblique, spiral, and comminuted fractures should be kept in the splint, with extension, for a week or ten days longer than transverse fractures. For in transverse fractures, provided the position of the fragments is good, the interlocking of the two ends prevents any shortening, bowing, or sagging.

The only real method of judging whether the leg is fit to come out of the splint is by palpation and the X ray. By firm palpation it is possible to estimate whether the union is firm, and whether there is any mobility at the seat of fracture. Any tenderness, on pressure, in the fracture, means that the callus is not yet firm enough. X rays at this stage are very important. They demonstrate the amount and density of the callus. The presence of callus first appears in a radiograph about the end of the fourth week as a very faint haze; this gradually increases in extent and intensity, till about the tenth or eleventh week it appears as a dense homogeneous mass, firmly knitting all the bone fragments together. In compound fractures, if there has been marked sepsis, the callus may present a honeycombed appearance. Such callus is weak and points to the need of further treatment in the splint.

Having decided, about the tenth week, that the leg may soon come out of the splint, the extension can be removed and the leg left merely fixed in the splint and suspended. In the "weight-and-pulley" method, the weight is removed and the cord tied to the end of the splint, which is loosened from the cross-bar. In the fixed extension method the bed is taken off the blocks, the patient is allowed as many pillows as he desires, and the splint loosened from the cross-bar; it will be found that the patient has slipped out of the splint for an inch or two, and it is necessary to readjust the splint so that the ring fits snugly against the tuber ischii; the cord is then fastened firmly to the lower end of the splint.

This may be called the second position and it is continued for a week or ten days. During this period the patient is encouraged to move about as much as possible in bed, in order to exercise thoroughly all his muscles preparatory to walking. It is possible and desirable for the patient to get out of bed and sit in a chair by the bedside, his broken leg being suspended the whole time.

During this period, too, massage is actively continued. And, by suspending the leg higher in the bed, the knee-flexion splint can be further dropped till the knee bends to an angle of 90°. If strapping has been used instead of calipers the leg can be taken out of the splint daily under supervision of the medical attendant and knee movements started.

About the eleventh week the leg is taken out of the splint permanently. The patient should be able to lift the leg clear of the bed, if his muscles have been kept in good tone by massage, &c., and there should also be appreciable active movement of the knee-joint. He is kept like this for a further three or four days, the leg being supported on a pillow. The leg must be carefully watched lest any bowing or sagging takes place, in which case the splint must be reapplied at once, for it means that union is not sufficiently firm.

Union being firm enough and the patient being used to freedom from the splint, he is now allowed to walk; but for at least another three months he is not allowed to put any weight on the heel, for the callus is not firm enough to take the body weight. This difficulty is overcome by the use of what are called "walking calipers" or "caliper boots." These consist of a Thomas knee-splint with the lower end cut off and the loose points turned in and fitted into a hole drilled through the heel of the boot.

#### *Measurements.*

The measurements required by the splint-maker are:—

- (1) The circumference of the thigh at the level of the tuber ischii; (2) the length from the tuber ischii to  $\frac{1}{2}$  in. below the sole of the foot.

The splint-maker chooses a splint with a neatly padded well-fitting ring, cuts the lower end of the splint off and fits the two loose ends with a sliding screw adjustment 6 in. long. With this the length of the splint can be varied, so as to be accurately adjusted to the leg. Each of the screw



pieces has a transverse steel rod attached to the lower end  $1\frac{1}{2}$  in. long, which fits into a hole in the heel of the boot. The outer bar of the splint should fix into the heel of the boot 1 inch in front of the inner bar, so that when the bars are level the boot is turned out and corresponds to the natural eversion of the foot in walking. If this is not done considerable discomfort will be caused.

When the splint is on the leg and fixed into the patient's boot the heel should not touch the bottom of the boot. If it does touch the splint should be lengthened by a few turns of the screw adjustment. If the heel touches the boot the weight of the body is transmitted through the fracture and may cause bending. If the heel does not touch all the weight is taken by the tuber ischii. In a correctly fitting splint very little weight should be taken by the great trochanter or the pubic bone.

Provided both legs are of the same length, the good leg should be raised by a 1-inch patten on the boot; this is to enable the bad leg to swing clear of the ground in walking, for, of course, while in the walking splint it is impossible for the knee to bend.

At first the patient will have to be assisted and supported in walking, but usually he very soon can walk alone. It is purely a matter of self-confidence and balance; even if he were to fall down he would not fracture his leg while it was in the walking splint. Crutches are not necessary and are to be discouraged; one, or sometimes two, walking sticks may be used, but the patient quickly learns to walk without any form of support at all.

Every morning before putting on the walking splint massage and passive movement should be given; and two or three times during the day the splint should be freed from the boot and knee movements actively exercised.

The caliper boots should be worn until at least six months have elapsed since the date of fracture; by that time the splint can be discarded and the patient walk naturally and with a perfectly movable knee-joint. Here, again, an X ray is of great value. If the callus is very dense and bone canaliculi can be discovered, then the callus has been converted into true bone and can only be broken by trauma, such as would be needed to fracture any sound, healthy femur.

On first getting up the patient may find that his leg swells considerably. This will gradually disappear as his muscular and vaso-motor systems regain their normal tone. As the muscles of the thigh grow bigger it may be necessary to have a fresh splint with a larger ring.

#### SOME COMPLICATIONS OF FRACTURED FEMURS WHICH MAY OCCUR.

(1) *Mal-union*.—In early cases—that is, in simple fracture up to about six or seven weeks and in compound fractures up to the end of the twelfth week—it is usually possible to break down the union by hand and apply satisfactory extension. In later cases osteotomy will be required if the deformity and disability are sufficient to warrant it.

(2) *Delayed union and non-union* may be caused by (a) sepsis with formation of a large sequestrum; after sequestrectomy with satisfactory drainage the bone usually unites rapidly; (b) gross destruction of bone, so that when extension is applied the ends of the bone are too far apart for union to take place. This may be treated either by bone-grafting or by deciding to allow some shortening and relaxing the extension, so as to permit of the ends of the bone coming together. When union is taking place, but while the callus is still "sticky," increased extension will probably cause a little more lengthening without interfering with union.

Delayed union may be caused by general disease, such as debility, malnutrition, anemia, cachexia from malignant disease, tabes dorsalis, rickets in childhood, &c. The treatment of the disease is the treatment of the delayed union; but assistance may be given by some form of passive congestion of the limb, such as Bier's treatment.

In spite of treatment a few cases of fractured femur will not unite; occasionally this may be due to pieces of muscle fascia or other tissue which have been caught between the bone ends; but usually the reason is obscure. No fractured femur should be diagnosed as a case of non-union till at least 12 months from the date of injury; and then if there is still no union, surgical treatment may be considered. It is doubtful if plating will ever help if the ends of the bone are already in good position; in these cases it is probably better to adopt some form of bone-grafting. Even when the bone has been plated the freshening of the bone ends during operation, and the increased supply of blood brought to the parts during

the healing of the operation wounds probably play as big a part as the plate itself in stimulating the bone to callus formation.

(3) *Tetanus* has already been discussed.

(4) *Nerve lesions* form a subject for treatment beyond the scope of this article. It is sufficient here to say that if "foot-drop" is present an uplifting toe-spring can be easily attached to the walking caliper splint.

(5) *Neuralgic pain along the dorsum of the foot* is not very uncommon. Its cause is obscure. It cannot be entirely due to a neuritis of the sciatic nerve as it is met with both in simple and compound fractures. It may be treated (often without marked success) by drugs such as aspirin, bromide, phenacetin, &c., or by local applications—heat; cold; ointments, such as ung. methyl salicylate, 2 per cent.; formalin solution; blisters; antiplogistine, &c. Sometimes a rubber bandage firmly applied gives relief. Unfortunately the pain is always worse at night and is often sufficiently severe to keep the patient awake. The pain, though not very amenable to treatment, usually decreases and disappears after a few weeks.

(6) *Stiffness of the knee* due to adhesions in the thigh between muscle, fascia, and bone. This is, of course, much more common in compound fracture, especially where there has been marked sepsis. The worst cases, and most difficult to treat, are when the extensors of the thigh are bound down to the bone by scar tissue. The scar may be loosened by massage and forcible flexion under an anæsthetic. Sometimes the scar can be separated from the bone by the introduction of a tenotome. If these methods fail excision of the scar will be necessary.

#### CONCLUSION.

In conclusion it may be said that by the methods that have been described a perfect result can be obtained in the vast majority of fractured femurs. But, like everything else, a fractured femur requires constant care and attention to detail. The adjustment of the slings, the maintenance of extension, the movements of the knee-joint, the correct suspension with slight eversion of the limb, the prevention of foot-drop, massage, and the upkeep of general health and nutrition of the patient—each of these plays its allotted part in the attainment of perfection; and if anyone is neglected the seeker after perfection is apt to be disappointed.

### PERVERTED "FUNCTIONAL" ACTIVITY IN THE PRODUCTION OF JAW DEFORMITIES.

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THE "perverted" or non-normal activities which it is desired here to draw attention to are "functional" only in so far as they are excited and exhibited in the oral preparation of alimentary substances. The "jaw deformities" that it is hoped to throw some additional light upon are those occurring among children, and chiefly recognised and estimated (in occlusion) as irregularities or abnormalities in the position of teeth, the teeth themselves emerging structurally sound and normal in shape. The various dental units are constructed faultlessly and are ready (we may assume) to time. They are then potentially available for building into a machine which is highly efficient as a food-preparing mechanism when the units are normally arranged, and which then also, when normally exercised, is adapted to maintain the health and integrity of its various parts and investing tissues. But in the abnormalities frequently seen the functional efficiency is greatly depreciated; the specific shapes that in man have for ages remained morphologically constant are there present, but the teeth are thrown together in such disorder as to more or less abort their utility, and the normal *rhythmical* activity in mastication becomes impossible. It will be agreed, and without touching at all upon the many other consequences involved, that this is a somewhat poor beginning for that part of the alimentary processes over which we could safely exercise the most direct and most knowledgeable control:



*The "Soft Food" Theory.*

Any references to current theories of causation will here be closely restricted to what may seem helpful in bringing my proposition into reasonably clear view. Absence or insufficiency of the harder foodstuffs has long been held to be a dominant cause of malocclusion. The "soft food" theory and the indicated remedy have been insistently kept in the forefront by several accepted authorities, and in the general lay and professional mind there is, at any rate, a pious if not a very active belief in the soundness of that view. While no one seeks to deny that by lack of functional exercise the jaws may fail to attain their full development, there are yet large groups of malocclusion cases (involving protrusions, retrusions, contracted arches, spread arches, and excessive anterior overlap) wherein this explanation has been rejected by the majority of those interested in the subject. The limb muscles of different children undergo widely differing amounts of exercise; in many individuals the exercise may be deficient in amount, but no concomitant bone deformity ensues.

Professor A. Keith, whose suggestion that the "sensitising" action of the pituitary secretion may be at fault was so finely lit up by the searching beam he cast into the less-explored field of comparative odontology, is at the same time in entire agreement that one should also give exhaustive attention to those "grosser" agencies which are known to alter and regulate growth—"the mechanical impulses which arise from the natural use of parts."

Quite a number of alternative explanations have been offered with varying degrees of confidence and support. The difficulty and low solubility of the problem being illustrated by the emergence, for example, of theories of causation, some of which are diametrically opposed—viz., the theory held by Dr. Sim Wallace and Sir Arbuthnot Lane that contracted or narrow jaws are caused by a feeble musculature of the tongue resulting mostly from the use of *soft food*, and the explanation advanced by Professor H. P. Pickerill that narrow jaws are due to the use of food that is too *hard or tough*. Again, in regard to defects or wrong use of the respiratory ports as a factor in jaw deformities, although the vitiating physical or mechanical conditions that exist during *free mouth breathing* are distinctly different to the conditions during *obstructed nasal breathing*, and therefore the effects directly due to the former must differ markedly from those due to the latter cause, yet in articles and discussions those important differences are usually either glossed over or ignored.

*The Existence of Positive Factors.*

Whether or no in modern times a harmful change has taken place in the kind of food given to children, the number of meals per day has probably not lessened and the total time given to eating may be taken as not less now than was customary among children in the near or more distant past. Therefore, as the mouth is in *some* kind of activity during that time, inquiry into the effects or defects arising should not be confined to consideration of the merely passive or negative factors. The absence of positive factors cannot be assumed, and they should be searched for and their value as far as possible ascertained by close and persistent observation of the *machine at work* in large numbers of children. For some years past I have missed no opportunity (and have artfully created a good many) of observing the different ways in which the mouths of children deal with food.

A direct view of what is going on in the mouth is, of course, very much cut off and masked by the cheeks and lips, but this drawback is in some degree compensated for by the fact that watchful observation of those same moving curtains will often betray what is happening behind the scenes. Correct interpretation of the mouth and jaw movements which take place and of the probable results of the various efforts in manipulating food will, it is reasonable to believe, be favoured a good deal by previous close study of the chewing mechanism in children and adults, and not only in normal but also in abnormal, crippled, and mutilated dentitions. The small amount of interest up to the present taken in the physiological morphology does not warrant however, the entering into details, "tedious" details that are in reality essential in this as in any other mechanism. The following is a rough summary of the results of observation of many groups of children.

1. There is in many cases an excessive amount of manipulation of food *by the tongue*. The tongue movements vary from very languid to very energetic, sweetened foods usually exciting the tongue to the greater activity, especially in upward pressure.

2. The normal work of fine reduction *by the cheek teeth* is only partially carried out, and is often not performed at all. Morsels are merely rolled about in the mouth, with an occasional squeeze from tongue or teeth, and what are in reality remarkable feats of food-bolting pass quite unnoticed. The performances of some of these juvenile, yet often well-mannered, "bolters" are so mysterious and *finished* that it is almost impossible to understand how it is done.

3. Certain foodstuffs which constitute a large proportion of the daily intake (including cereals and breadstuffs permeable and softened by saliva, sweetened puddings, &c., porridge, sweets, jam, and confectionary) are manipulated and "mashed" by the tongue *against the anterior surface of the palate*, partly to break up their consistency and partly to develop and extend the gustatory enjoyment. Sucking actions are often involved, and among the several reflex actions excited by very sweet substances is a frequent strong pressure of the anterior dorsal surface of the tongue against the front of the palate. In these various movements the muscular pressure exerted by the tongue is *many times greater* than that required either for the successive liftings of portions of food into position between the cheek teeth or for moving food from one part of the mouth to the other. Here we have a kind of "tongue mastication" (*vide* Mr. J. G. Turner) which, while admittedly falling within the limits of normal function when performed occasionally, becomes *abnormal* or perverted when exercised frequently and to the extent of in large part supplanting normal mastication by the cheek teeth.

4. In some children—more usually of the "vigorous mouth and hearty eater" type—the reduction of *tough morsels* is to an abnormal extent effected *by the anterior teeth* instead of by the cheek teeth, which latter teeth may either be absent or crippled by caries, or, if present, they are thrown out of effective shearing alignment by a malocclusion already established. In this type the cutting edges of the anterior teeth are found to be more worn—and to an undue or abnormal extent—than those of the posterior teeth. Later on one may often observe premolars and molars that have been fully erupted for several years and yet show not a trace of intermaxillary attrition or of food abrasion. Now, when for any reason fine (or moderately fine) reduction of tough food is attempted by the incisors alone, the tongue has to exert considerable upward and forward pressure in order to *hold the small morsels in proper position* for each successive shearing stroke (Fig. 1.) This work of reduction (which by the arithmetical increase of the divided fragments must constitute by far the greater part of the total masticating effort) is effected normally by the multi-bladed cheek teeth, in which the rows of lingual cusps automatically, as it were, hold and support the fragments in position, and without calling for more than the very lightest use or pressure of the tongue.<sup>1</sup>

*Some Predominant Features in Malocclusion.*

The bearing of the above-mentioned perverted activities of the tongue upon jaw deformities may here be best brought out by a short consideration of certain features that are often found associated in various classes of malocclusion.

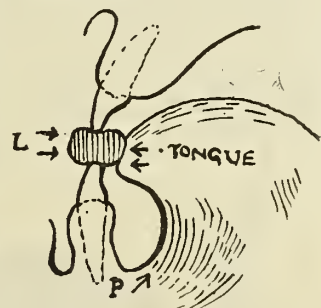


FIG. 1.—Strong forward pressure of the tongue is always exerted when *small* tough morsels are reduced by the incisors, and is required in order to hold the morsels in proper position for shearing. Externally the small morsel is held by the lips, as indicated at L. This action may become abnormal in frequency when the cheek teeth are lost, or crippled by caries, &c. It always involves an upward and backward pull upon the inner surface of the mandible, as at P.

<sup>1</sup> "Mechanism of Mastication in Man." Trans. Sixth Internat. Dental Congress, p. 63 et seq. "Form and Function of Teeth," Journ. Anat. vol. lili., October, 1917.



Twenty years ago (1899) the adjourned discussion of a paper on "The Treatment of Superior Protrusion," read by Mr. J. F. Colyer at the Odontological Society of Great Britain, included a full and interesting contribution from Mr. E. Lloyd-Williams on the aetiology of that deformity. In the discussion following—deservedly a "classic" upon the particular subject—all the known explanations were in turn advanced, excepting perhaps only the ductless gland theory and the antenatal and parturition theories. Yet, as one of the speakers very moderately expressed it, "there was still something missing in all the hints which had been thrown out with regard to causation."

There was general agreement upon the points mentioned by Mr. W. Hern and Mr. Lloyd-Williams as to the

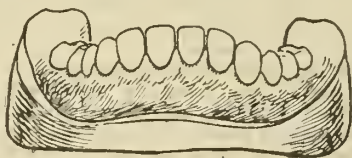


FIG. 2.—High level of incisors, without "crowding" of crowns.

following three or four abnormalities found associated in the majority of superior protrusion cases: (1) The high level attained by the alveolar anterior border of the mandible; (2) shortening of the body of the mandible; (3) the increased depth or low level of the premolar and molar region in both maxilla and mandible; (4) some narrowing of the arches; (5) a backward "bite" of all, or nearly all, the mandibular teeth. (Figs. 2, 3, and 4.)

#### *Significance of the Abnormal Vertical Overlap.*

The high level or uprising of the incisive border of the mandible involves, ipso facto (excepting only in cases of "open bite") an abnormal degree of vertical overlap in the occlusal relationship of the incisors, the opposed incisors quite often overlapping one another to the full length of their crowns—that is, from two to three times more than the normal amount. Now it is a remarkable and perhaps hardly recognised fact that if and when—from whatever cause—this excessive overlap is in any particular case once established, the several other abnormalities set out above must then of mechanical necessity be concomitant, if not

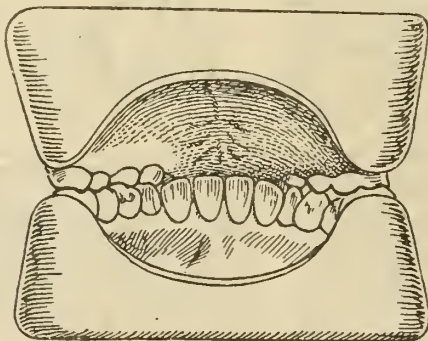


FIG. 4.—The excessive anterior overlap, seen from behind.

actually consequent, features. This statement requires qualifying in regard to the fourth abnormal feature, inasmuch as the arch in some cases does not undergo a general narrowing. But excessive overlap must in most cases involve a narrowing of, at any rate, the anterior portion of the mandibular arch, because the lower anterior teeth are shifted to a smaller "circle" (shorter tract) within or behind the lingual walls of the upper ones; the only two alternatives possible being a broadening (anteriorly) of the upper arch, or an excessive retrusion of the lower one. Excessive overlap is a feature of many cases other than those of superior protrusion, and the search for its origin—as probably the master-key to the causal explanation of many jaw deformities—has always made a fascinating appeal to the writer.

#### *Perverted Activity of the Tongue Produces Deforming Strains in the Tooth-bearing Tissues.*

The diagram in Fig. 5 shows the position of the tongue and the muscles chiefly concerned in its upward and forward thrust, a kind of activity that in many young children has been observed, as above stated, to constitute an abnormally large share of the total effort expended in the oral preparation of food. The tongue is drawn forward and pressed against the lingual walls of the upper anterior teeth and anterior surface of the palate chiefly or almost entirely by

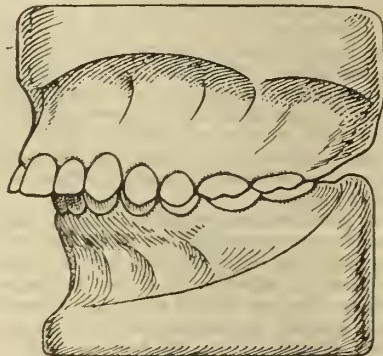


FIG. 3.—"Superior protrusion," with the several other abnormalities that are nearly always found associated with that deformity.

the contraction of the genioglossal muscle. Although theoretical consideration of the normal anatomy and physiology of the parts might bar out any dispute upon that point, it may be well to mention in addition the following demonstrable evidence: 1. Subjective experiments by the writer and some others in whom the lower premolars were missing. By inserting a hooked finger at the angle of the mouth the strong contraction of the genioglossal muscle could be distinctly felt whenever the tongue was thrust upward and forward as described. 2. Experiments upon two subjects in whom the symphyseal portion of the mandible had been removed, and as a consequence the tongue (sound and about normal in size) could not be protruded beyond the lips, and even when the tongue was kept inside the mouth no forward pressure could be exerted with it.

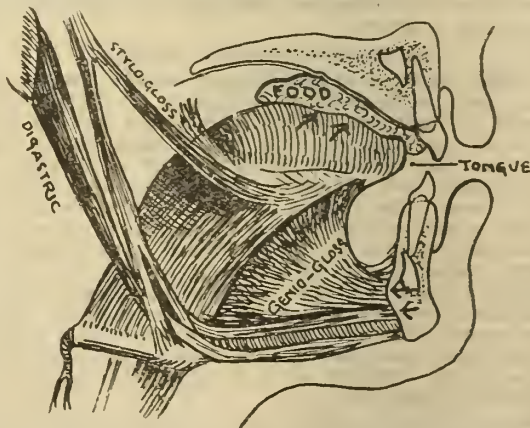


FIG. 5.—Diagrammatic vertical section, showing the chief muscles contracted or called into play during the tongue's perverted activity in food "mashing," sucking, &c., and by the reflex pressure incited by sweet (also "sharp," sour, &c.) substances. A backward traction on the mandible takes place and falls upon the frail bony tissues during the "reconstruction" period.

It is clear, then, that by the contraction of the genioglossal muscle the lower jaw is subjected to a backward pull at and about the region of the genial tubercles, which backward traction is abnormal just in proportion as the forward thrust of the tongue is abnormal in force and frequency of action. This backward pull is in daily operation during the four or five years' reign of the deciduous dentition, and, in addition, throughout the period of change to the permanent dentition. During most of that time the horizontal U-shaped cortical tube of a child's mandible is a



frail box almost "cram full" of teeth. Moreover, the strut-and-stay system of trabeculae, the tooth crypts, and to some extent even the cortical bone of the main beam, are undergoing a constant process of breaking down and reconstruction; the alveoli, too, are in turn "swept away"—as Sir C. S. Tomes describes it—and rebuilt. Even in the completed jaw bone of the adult the long-continued action of abnormal stresses brings about bending and shearing strains that in time appear as obvious deformities; the striking deformity observed (in the horizontal branch of the mandible) in some cases of ankylosis has been attributed by Dr. M. H. Cryer to the abnormal action of the depressor muscles, the power of which is, nevertheless, thought to be fractionally small compared with that of the elevator muscles. The more readily, then, will one admit that during the growing and reconstruction period the reaction of the mandible to abnormal stresses may take effect both in inhibiting and disorganising growth and producing durable strains (deforming changes of shape) whenever the stresses exceed certain limits of force and time (or frequency) of action. These limits are known to be low for young children; in the routine practice of orthodontics they are purposely overpassed by the artificial application of very small forces.

I have estimated quantitatively the force of the tongue's upward and forward thrust, and although my measuring apparatus is too crude and imperfect to warrant presenting figures, I am quite satisfied that this force is many times greater in amount than that effectively used by dentists to move teeth and alveoli—often, too, in the permanent dentition.

Those who regard with some doubt the various explanations that the mandibular retrusion is due to "want of development," "heredity," "small tongue," and other

suggested factors that are ill-defined and mostly negative, will be glad to turn to the consideration of a positive factor that can be seen in action, that acts in the precise direction required to produce the observed phenomena, and the more hidden results of which in changing the normal disposition of the bony tissues can be further investigated by X ray examination and also in the dissecting room.

In some cases it may be that the backward or centripetal pull of the genioglossal and "sublingual" muscles produces retrusion of the mandible solely or mainly by inhibiting or restraining its development. But to deny or exclude the possibility of actual deforming strains (that is, slow yielding of the bony tissues) occurring, would be to make a unique exception of a particular part of the jaw and to endow it with an unknown super-resistant quality. And if growth-inhibition or yielding from backward traction did in point of fact occur, the resulting deformities would be exactly like those that confront us daily and with increasing frequency, and that, in this country alone, must affect many thousands of children in whom the handicapping disorder will not be treated or ever right itself.

I turn now to the *excessive overlap* or (what is practically the same thing) abnormally high level of the incisive border of the mandible. The majority of observers are agreed that the causes of this very common deformity, by no means confined to superior protrusion cases, "remain shrouded in sphynx-like mystery." Explanations such as "pressure of the lower lip," "eruptive pressure of the canines" have been somewhat waveringly offered, and in application to but a few cases only; the explanation I here advance applies to a wide range of cases, possibly to nearly all cases of excessive overlap.

The diagrams, Figs. 1, 5, and 6, help to show that the part of the tongue whereat (during eating, sucking, &c.) pressure is applied against the palate and anterior upper teeth lies at a *higher level* than the bony area of attachment of the genioglossal muscle. There-

fore in the resistant pull of this muscle upon the tongue there must be a *downward* as well as a backward component, the general substance of the tongue being at the same time stiffened to a quasi-rigidity by a number of other muscles, the coördinated actions of which it is needless at present to analyse. When holding the raised tongue against the resistance offered on or at the anterior maxillary surfaces, the genioglossal fibres are perforce inclined markedly upward, so that (reaction being equal and opposite) their contraction must exert an obliquely *upward* and backward pull upon their place of origin on the mandible. The existence and the strength of this upward pull can be felt and realised when (under the conditions described), with an inserted finger, an

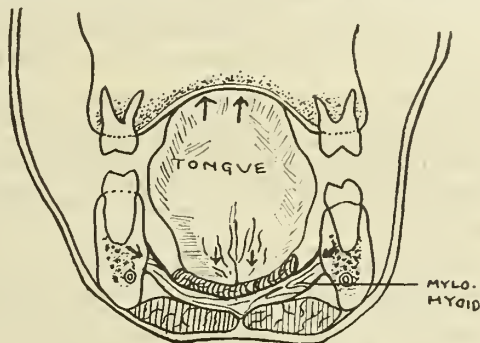


FIG. 7.—Diagram showing that the resistive reaction to the upward thrust of the muscle-stiffened tongue must involve a downward pressure upon the mylohyoid, thus causing a downward and (narrowing) centripetal pull upon the inner surfaces of the mandible.

attempt is made to press or keep the converging anterior part of the muscle down. Under this upward tensional stress the young "unready" bone is strained and very slowly and gradually yields in an upward direction. The force of the pull is distributed on and about just that very region where the apices of the milk anterior teeth and the crypts of the permanent ones lie, so that it would undoubtedly tend to produce the unexplained variety of phenomena found associated with uprising of the alveolar border—"apical crowding" and anterior "crowding" with or without spacing of the crowns, the "fan" arrangement, and the (hitherto) completely puzzling type mentioned by Sir Harry Baldwin, wherein the lower incisors "were jumbled together into two lines."

And the "low level" of the mandibular post-canine teeth is a further and almost inevitable consequence ensuing from the downward component of the tongue's pressure upon the diaphragmatic floor of the mouth, whereon the base of the muscle-stiffened tongue finds the necessary resistance to its own upward thrust. The digastric and geniohyoid muscles play a considerable part in supporting the upward thrusting tongue, but certainly the mylohyoid "slings" upon which the tongue is seated must exert a downward pull upon those inner surfaces of the mandible from which they are hung. (Fig. 7.) Experimental trial (subjective and objective) readily shows that in reaction to the tongue's upward thrust the downward bulge of the oral floor is both seen and felt to be lowest or most prominent in the region of the lower premolars and first molars, where, as it happens, the "low level" of the alveolar border or teeth is found to be the most marked. It is worth noting, too, in view of the downward traction internally, that the mandibular cheek teeth often have an abnormally inward tilt.

The pull of the mylohyoid (under the tongue's perverted activity) will of course vary in strength and direction with the individual, and with the varying proportional development of the different tissues, including the tongue itself. So that when the tongue is (constitutionally?) small and narrow, the supporting mylohyoid sheet may attain a more nearly horizontal plane and its pull will then be the more directly *inward*, tending to draw the two sides of the mandible together. Thus if a tongue small or subnormal in volume is found associated with a narrow arch, the usual explanation that the small tongue (negatively or by its passivity) causes the narrow arch may be wrong, and is based too much upon assumption. The significance, if any, of the association can be more instructively interpreted by taking into account the more horizontal direction of the

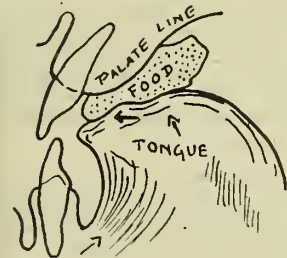


FIG. 6.—To illustrate, in simpler diagram, the conditions detailed in Fig. 5.



contractile pull of the mylohyoid upon the mandible. A large tongue will, on the other hand, the more deeply bulge into and fill the oral floor-space, partly overcoming the resistance of the mylohyoid sheet and causing its pull upon the mandible to be more downward and less inward. In regard to the inward traction the following observation may be significant.

During the routine examination of many thousands of occluded plaster casts, I observed that in a proportion of those in which the occlusion of molars might be reckoned as good mesio-distally the occlusion bucco-lingually would have been better or more normal if the mandibular molars were moved buccally or wider apart—that is to say, the mandibular arch was a little too narrow at the first molars for the normal occlusion of these teeth with their maxillary opponents. This in itself suggests the possibility that in some cases the *lower jaw leads the way* in the contraction of both arches.

In conclusion, it is urged that what I have called (in short phrase) “perverted activity of the tongue” is harmfully frequent among children, and is incited chiefly in the oral manipulation of foods a *preponderant* amount of which is of a sweet, soft, or glutinous nature; and also less frequently by the crippling or (from whatever reason) insufficient use of the cheek teeth.

At the same time it is possible to go to the other extreme by encouraging young children to masticate well an unduly large proportion of tough food, so that the anterior teeth are to an undue extent called upon to relieve the overworked cheek teeth in the extra labour of fine reduction; the forward-thrusting and holding action of the tongue is thus brought into too frequent use, and the mandible is subjected to an upward and backward traction. In several reported cases (including children of dentists) where the precepts of vigorous mastication were faithfully and conscientiously put into practice, the deciduous arches were seen to be broad and fine, and the teeth individually were in every way satisfactory; nevertheless, the puzzling excessive overlap was there, as well as some degree of post-normal occlusion.

That the forward thrust of the tongue during its perverted activity must, in some cases, induce protrusion of the *upper* teeth is so evident a proposition that I omitted any explicit statement on the point, and detailed discussion is here barred out from want of space. But what I regard as remarkable and important in my discovery (about five years ago) of the tongue's abnormal activity, is its unsuspected yet inevitable reaction on the mandible. The tongue exerts a *centrifugal pressure on the maxilla* anteriorly, and the main resistance and reaction to the tongue's thrust takes effect as a *centripetal traction on the mandible*, the one being in effect the reciprocal of the other.

The great majority of superior protrusion cases are associated with inferior retrusion, as stated by Mr. Norman G. Bennett when reporting (March, 1912) to the British Society for the Study of Orthodontics, for the Committee on Orthodontic Classification. The degree of superior protrusion actually produced during functional activity must depend upon the greater or less amount of counteracting restraint and inward pressure from the upper lip, which effective centripetal pressure varies, I think, not so much or so entirely with the length, thickness, or “poise” of the lip as with the “temperamental” and muscular *motility* in the particular individual. This line of investigation may seem too obscure to bring out anything helpful, but in point of fact striking differences in the functional labial movements of different individuals are made evident merely by visual observation. More important, however, and more directly bearing upon my present thesis concerning the identification of primary causes and the actions they evoke, is the marked influence of *reflex* movement and pressure, here just touched upon as follows:—

#### *Gustatory Reflexes.*

Among the oral *reflexes* incited by sweetened food and sweet substances, as well as substances with an acid or a “sharp” taste, there are certain labial and buccal muscular actions which very probably play a part in the contraction of the upper arch. Discussion of this would be quite relevant, but must be deferred.

I propose in a future communication to show that perverted activity of the tongue may also bear a causal relationship to two other deformities of the jaw—namely, (1) inferior protrusion or “underhung” bite; and (2) open bite.

## I.—THE ANTISCORBUTIC AND GROWTH-PROMOTING VALUE OF CANNED VEGETABLES.

BY MABEL E. D. CAMPBELL AND HARRIETTE CHICK.

(From the Lister Institute, Department of Experimental Pathology.)

THE experimental work described below was undertaken in August, 1918, at the request of the Controller of Horticulture, Food Production Department, and Miss Campbell, of that department, was detailed to work upon this problem at the Lister Institute. It forms one of a series of researches on experimental scurvy carried out at this Institute. The aim was to ascertain what changes take place in the nutritive value of vegetables during the process of canning, with special reference to vitamin-c content.

It was to be presumed, from the information already available as to the destructive effect of heat upon the antiscorbutic factor in cabbage leaves (Delf, 1918), that canned vegetables would suffer considerable deterioration in antiscorbutic value owing to the high temperature to which they are exposed in the process of preparation. The present work was directed to obtaining an accurate estimate of what that loss might be. (Cabbage and green (runner) bean pods were selected as suitable vegetables for the experiment.) Cabbage was chosen because many data as to its antiscorbutic value, both in the raw and cooked condition, were already available from the researches of Dr. Marion Delf (1918) at the Lister Institute; green runner beans because they are a good example of a vegetable frequently chosen by the public for preservation by canning.)

The experiments consisted essentially in estimating and comparing the minimal amounts of these vegetables—(a) when raw, and (b) after canning—which must be added daily to a basal scurvy-producing diet in order to protect young guinea-pigs from scurvy over a period of three months. These results are set out in the accompanying table, in which data obtained with other foodstuffs are included for purposes of comparison.

#### *Method of Experiment.*

The method of experiment was the same as that adopted generally in the series of researches on experimental scurvy published from this Institute.<sup>3-10</sup> It is based on that employed by Holst and Fröhlich,<sup>12</sup> who chose the guinea-pig as experimental animal and grain of various kinds with water as the basal “scurvy diet.” On such a diet young guinea-pigs are found to sicken and die of scurvy in from three to four weeks with great loss of weight.

In a study of the anti-scurvy value of foodstuffs the aim is to devise a diet which shall afford abundance of all necessary factors except the antiscorbutic factor. This basal diet must contain suitable proportions of (a) carbohydrate and (b) fat, the right kind and amount of (c) mineral salts and (d) protein, and in addition an adequate quantity of the two so-called growth accessory factors described by McCollum and his co-workers as (e) “fat-soluble” growth factor and (f) “water-soluble” or antineuritic (antiberi-beri) factor. In the diet of oats, bran and water which we have employed in many cases (a), (b) and (f) are provided in sufficient quantity and probably in the mixture of the two grains, oats and wheat (c) and (d), are also adequate for the nutrition of the guinea-pig. The diet is, however, deficient in both the anti-scurvy factor and the “fat-soluble” growth factor. (It has therefore been our practice in many experiments to supply the latter by means of a daily ration (60 c.cm.) of milk heated for one hour to 120°C. to destroy its original antiscorbutic properties. This addition also affords an extra supply of protein of a highly nutritious character, and upon this “scurvy diet” the animals grow well until loss of weight sets in with the occurrence of scurvy symptoms. Death from scurvy occurs in from four to six weeks.)

By addition to the basal diet of various weighed daily rations of (a) raw beans and canned beans, (b) raw cabbage and canned cabbage, the minimal amounts required to protect from scurvy were estimated. On comparison of these values the degree of destruction experienced by the antiscorbutic factor during the process of canning and storage could be approximately determined.



weighed amounts of the vegetables (cut into small pieces) were offered to the animals daily. Usually the ration was consumed greedily, but any residue noted on the next day was weighed (after soaking in water) and the amount deducted from the original weight given. If a residue was found on several succeeding days the animal was rejected, as hand-feeding of soft vegetables is too laborious and inaccurate a procedure. While animals were developing scurvy, hand-feeding of milk with a glass syringe was frequently resorted to in order to maintain an average consumption of 60 c.cm. daily.

namely, 2-3 months. All canned samples were drained and turned out into a dish immediately on opening the can. The residue not used for the day's ration was kept in cold store. It was rarely used later than two days after opening.

**Cabbage**—(1) *Antiscorbutic value*.—In this case the experiments were arranged to test the canned material as fresh as possible; it was never more than three weeks old, and the average age was two weeks. Previous results obtained by Dr. Marion Delf (1918) showed that 1.5 g. of raw cabbage added to a diet of oats, bran and autoclaved milk sufficed to prevent scurvy in young guinea-pigs, but that

Diet.			No. of animals.	Length of experiment.	Result as regards—		Observer.
Special ration.	Amount (grams).	Basal.			Growth.	Occurrence of Scurvy.	
<b>Cabbage leaves—</b>							
(1) Raw ... ..	5.0	Oats, bran, autoclaved milk.	3	Days. 90	Good.	Protection.	Delf, 1918.
	2.5		5	90	Fair.	"	"
	1.5		6	70-90	"	"	"
	0.5		4	67-90	Very little.	Scurvy, but some degree of protection.	"
(2) Cooked in steam—							
(a) 60 min. 90° C. ...	5.0		4	21-50	"	Severe scurvy.	"
(b) 20 min. 100° C. ...	5.0		4	90	Fair.	Protection almost complete.	"
(3) Canned—60 min. 90-100° C.	7.5		3	90-95	Very good.	Protection.	Campbell and Chick.
" "	5.0		3	33-90	Good in 2 cases.	Scurvy, but some degree of protection in 2 cases.	" "
(4) Raw ... ..	15.0	Oats, bran, water.	4	90	Very good.	Protection.	Delf, 1918.
(5) Cooked in steam—							
60 min. 100° C. ...	15.0		3	90	"	"	"
(6) Canned—60 min. 90-100° C.	15.0		3	66-93	Very poor.	"	Campbell and Chick.
" "	15.0	+ 20 c.cm. liquor from cans.	3	90	Fair.	"	" "
<b>Runner beans—</b>							
(1) Raw ... ..	5.0	Oats, bran, autoclaved milk.	3	84-91	Good.	"	" "
	2.5		3	59-64	Very little.	Scurvy.	" "
	1.5		4	48-61	"	"	" "
	0.5		3	28-40	"	"	" "
(2) Canned—140 min. 100° C.	20.0		1	28	None.	"	" "
	10.0						
Carrot juice. Raw. ...	20.0		3	75-95	Fair.	Protection.	Chick and Rhodes, 1918.
Swede " " ...	2.5		4	90-100	Good.	"	"
Lemon " " ...	1.5		4	90	"	"	Chick, Hume, Skelton and Smith, 1918, and unpublished experiments.
Fresh milk ... ..	100-150	Oats, bran, water.	2	90-113	"	"	Chick, Hume and Skelton, 1918, I., and unpublished experiments.
Germinating peas ... ..	5.0	Oats, bran, autoclaved milk.	5	87-97	"	"	Chick and Delf, 1919.
Dried cabbage* ... ..	5.0	Oats, bran, water.	6	66-134	None.	Protection in some cases.	Delf and Skelton, 1918.

\* Equivalent to 50 g. fresh cabbage.

#### Methods Employed in Canning.

**Cabbage**.—The methods used were those advocated by the Food Production Department in their pamphlet No. 34. Fresh green outer leaves were chosen. These were washed in cold water, blanched, and cold-dipped (i.e., exposed to boiling water containing a little sodium bicarbonate for 3 minutes, then plunged into cold water), and packed into lacquered cans. These were filled with boiling water to within  $\frac{1}{4}$  inch of the top, and at once hermetically sealed by soldering the lids. Sterilisation was effected by exposure of the cans to steam at 100° C. for 1½ hours in a closed boiler. After cooling by plunging into cold water the cans were stored at laboratory temperature (60-65° F.). Experiments with control tins in which the lids were replaced by corks carrying thermometers showed that this process of canning involved the exposure of the cabbage in the cans to a temperature of 90-100° C. for 1 hour. The average proportion of cabbage to water in the cans was found to be 1.6 to 1.0 by weight and the water content of the drained cabbage as fed to the animals, 90-92 per cent., was approximately the same as that of fresh cabbage. The approximate mean age when tested was two weeks after canning.

**Beans**.—Young crisp runner bean pods were selected where possible. The method in outline resembled that used with cabbage, with the difference that the blanching lasted 4 minutes, and the sterilising was done intermittently—i.e., for 1½ hours on one day and 1 hour on the succeeding day. Control experiments showed that the contents of the cans were exposed to a temperature of 100° C. for a total period of approximately 2 hours 20 minutes. The proportion of beans to water was approximately 1.7 to 1.0, and the water content of the canned samples 94-96 per cent. The time of storage at laboratory temperature before testing of the canned beans was longer than was the case with the canned cabbage,

0.5 g. daily was insufficient for that purpose. With 7.5 g. daily of canned cabbage growth was well maintained in three animals, and there were no symptoms of scurvy during life or post mortem. With a 5 g. ration daily, good health was enjoyed by two animals out of three, but in these cases distinct signs of scurvy were shown by soreness of the limbs and characteristic hæmorrhages post mortem. The third animal developed severe scurvy during life and showed the usual signs at post-mortem examination. Although these animals showed good health in two cases out of three the degree of protection from scurvy was less than that enjoyed upon a 1.5 g. ration of raw cabbage; it was, however, distinctly greater than upon a 0.5 g. ration. The loss of antiscorbutic value during canning would, therefore, appear to be about 70 per cent.—i.e., an antiscorbutic value of 5 g. raw cabbage was reduced to that of about 1.5 g. raw cabbage.

(2) *Growth-promoting value*.—In a further set of experiments an attempt was made to trace the fate during canning of the growth-promoting "fat-soluble" accessory factor known to be present in green leaves (McCullum, Simmonds, and Pitz, 1916). The ration was much increased—viz., to 15 g. daily—and autoclaved milk, which provided the "fat soluble" growth factor in the preceding experiments, was omitted from the dietary, which consisted therefore of oats and bran alone. Delf (loc. cit.) has shown that a diet of oats and bran and 15 g. of raw cabbage is sufficient to promote good growth and provide ample protection from scurvy. This ration of fresh green leaves provides a large excess of the antiscorbutic factor, and is evidently also large enough to afford the necessary fat-soluble growth factor and to supplement any defect in the nature of the proteins in oats and bran, if such exists. After heating in steam for 1-2 hours at 100° C., Delf found the same ration, 15 g., adequate for



the purpose; the animals were maintained in good health, and in one case healthy young were born.

In the case of canned cabbage, also employing a 15 g. ration, the result was otherwise. Scurvy was certainly prevented, but the animals showed little or no growth during the three months of the experiment. In the case of one animal autoclaved milk was provided from the sixty-fourth day, and growth immediately began. This result suggests that during heating and storing in water the growth-promoting vitamin originally present in the green leaves was either (1) destroyed to a large extent, or (2) had escaped into the water in which they had been immersed (the proportion of cabbage to water by weight in the cans was approximately 3:2). A series of further experiments was made in which the water in the tins was fed to the animals, together with the canned cabbage; much better growth was obtained, a result which seems to support the second view.

In the experiments described in the preceding section with smaller rations of canned cabbage, 5 to 7.5 g., the "fat-soluble" growth-promoting factor was provided in the ration of autoclaved milk.

**Beans.—Antiscorbutic value.**—There are no quantitative data available as to the antiscorbutic value of the raw runner bean pods in comparison with other vegetables. Special experiments had therefore to be made in order to determine the minimum amount which must be fed daily to guinea-pigs on a scurvy diet in order to prevent onset of the disease. They showed that a 5 g. ration may be taken as the minimum amount giving protection from scurvy. With 2.5 g. and less all animals developed the disease, and with 5 g. and over all escaped. After canning, however, a daily ration of 20 g. was found inadequate, and severe scurvy was developed in every case. *By the process of canning, therefore, the antiscorbutic value of 20 g. raw bean pods was reduced to less than that of 5 g., and was not superior to 1.5 or 2.5 g. raw bean pods—in other words, 75 per cent. to 90 per cent. had been destroyed.*

#### Conclusion.

1. In the process of canning vegetables the greater part of the original antiscorbutic value of the raw vegetable is destroyed. In the case of runner bean pods the loss is estimated at about 90 per cent. of the original value; in the case of cabbage at about 70 per cent. of the original value. The process of canning cabbage included heating in water for about one hour at 90° to 100° C., and for beans the process was repeated on the day following.

2. This loss is primarily due to the destruction of antiscorbutic material occurring during the heating involved in the process of canning. A further loss may be expected to take place during the period of storage. The canned cabbage was examined two weeks after preparation and the canned beans three months after.

3. In the case of green-leaf vegetables which possess, in addition to the antiscorbutic vitamin, the "fat-soluble" growth-promoting accessory factor, the latter substance is also lacking in the canned material unless the liquor be also taken.

4. The value of canned vegetables as regard antiscorbutic and growth-promoting properties must be regarded as negligible.

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## II.—THE ANTISCORBUTIC VALUE OF SOME INDIAN DRIED FRUITS:

(a) TAMARIND, (b) COCUM, AND (c) MANGO ("AMCHUR").

BY HARRIETTE CHICK, E. MARGARET HUME, AND RUTH F. SKELTON.

(From the Lister Institute, Department of Experimental Pathology.)

THE experimental investigation of these dried fruits was undertaken early in 1917, at a period in the war when scurvy was still proving a serious menace to our native troops in Asia. These and similar materials have long been esteemed as antiscorbutics by the native population of India,

and instances are to be found in the literature and elsewhere in which the prevention and cure of human scurvy has been attributed to their agency. For example, MacNab<sup>1</sup> (1837) relates how an outbreak of Scurvy at Nassirabad, Rajputana, in 1833-34 was treated with good results by an infusion made from "anola," the dried fruits of *Phyllanthus emblica*. This product was commonly bought and sold in the native bazaars and considered to possess great antiscorbutic virtue. The dose taken amounted to ½ oz. (14 g.) daily, calculated on the original dry material.

Major-General Sir Havelock Charles,<sup>2</sup> who was attached as medical officer to the Afghan Boundary Commission in 1884-86, ascribes the freedom from scurvy of the native troops accompanying this expedition to the regular consumption of "amchur," or dried mango, whenever fresh fruits or vegetables were unavailable. It was at his suggestion that we undertook the following experimental study, and the samples of tamarind, cocum, and amchur investigated were obtained from India with his assistance. Of these, the two first-named are commonly included in the native soldiers' ration.

The method adopted for studying the antiscorbutic value of these fruits was as follows. Guinea-pigs were used as experimental animals, following in principle the methods employed by Holst and Fröhlich<sup>3</sup> as modified by Chick and Hume.<sup>4</sup> If greenstuff is removed from their normal diet of grain and green leaves these animals sicken and die of scurvy in 3-6 weeks. In the present experiments the basal "scurvy" diet consisted of oats and bran *ad libitum*, together with a daily ration of 60 c.cm. of milk, heated to 120° C., for one hour to destroy its original antiscorbutic value. This diet is satisfactory for the nourishment of these animals in every respect save only that it lacks the antiscorbutic vitamin. Good growth is made until the onset of scurvy. The antiscorbutic value of any foodstuff is determined by observing the effect of adding measured daily rations to the basal diet and estimating the average minimum daily addition necessary to prevent scurvy.

*Antiscorbutic Value of Dried Tamarind, Cocum and Amchur, compared with other Fruits and Vegetables in the Fresh Condition, based on Experimental Work with Guinea-pigs.*

Basal diet: Oats and bran *ad libitum*; autoclaved milk, 60 c.cm. daily.

Antiscorbutic material.	Dose.	No. of animals.	Time of experiment.	Result.
None.	—	4	days.	Death from scurvy in 4-6 weeks.
Tamarind	3.5 g.	4	34-40	Scurvy, but some protection, life prolonged.
Cocum.	4 g.	4	38-91	Scurvy, but some protection, life prolonged in some cases.
"Amchur."	4.5 g.	4	50-71	Scurvy, but some protection.
Fresh meat juice, raw.	20 c.cm.	4	29-66	Scurvy, slight protection in some cases, life prolonged to 9 weeks in 1 case.
Beetroot juice, raw.	20 c.cm.	2	67-88	Scurvy, slight protection only.
* Carrot juice, raw.	20 c.cm.	4	53-95	Protection from scurvy.
* Swede "	2.5 c.cm.	4	90-100	
* Cabbage leaves.	1.5 g.	6	70-90	
* Germinated peas.	5 g.	5	87-97	
* Green bean-pods (scarlet runner).	5 g.	3	84-91	
* Fresh lemon juice.	1.5 c.cm.	4	90	
*† Fresh lime juice.	10 c.cm.	2	61-93	Protection from scurvy.
* Potato, cooked.	20 c.cm.	3	73-92	

\* Minimum doses required for prevention of scurvy.

† Sour lime, West Indian.

The investigation of these dried fruits presented great technical difficulty, as the animals could not be induced to eat them in the dry condition. It was necessary to make decoctions by soaking in water and squeezing the pulp through muslin and hand-feeding the thick liquor obtained to the animals by means of a syringe. Even so it was distasteful, and there was a limit to the amount that could be tolerated. The daily doses shown in the accompanying table, 3 to 5 g., are calculated in terms of the original dry material, and represent the largest amounts it was found possible to administer.



With these doses there was evidence of a small but distinct protective action. This action was not complete, and scurvy occurred invariably, but a fair measure of health and growth was apparent, and in some cases life was prolonged for as long as three months. Animals surviving this period were killed by chloroform and post-mortem examinations were made.

In absence of any addition to the "scurvy" diet, death from severe scurvy took place in 30-40 days, and there is little doubt that had it been possible to administer larger amounts a more complete protection from scurvy would have been obtained.

In the accompanying table are given also the minimum amounts of other foodstuffs required to prevent scurvy under similar conditions for purposes of comparison. It will be seen that the value of these dried fruits is much inferior to that of many vegetables and fruits (cabbages, swedes, germinated pulses, oranges, lemons); is equal or superior to others (carrots, beetroot), and to meat juice.

#### Conclusion.

Dry tamarind, cocum, and mango possess a definite but small antiscorbutic value. This value is greatly inferior to that of raw cabbages, swedes, germinated pulses, orange juice, lemon juice, but equal or superior to that of carrots, beetroots, cooked potatoes, raw meat juice, reckoned weight for weight in the natural condition.

*Bibliography.*—1. MacNab: Quart. Journ. Calcutta Medical and Physical Society, 1837, vol. i. 2. Afghan Boundary Commission Report, 1884-1886. 3. Holst and Fröhlich: Zeitschrift für Hygiene, 1912, vol. lxxii, p. 1. 4. Chick and Hume: Trans. Soc. Trop. Med. and Hyg., 1917, vol. x.

### III.—A COMPARISON BETWEEN THE ANTISCORBUTIC PROPERTIES OF FRESH, HEATED, AND DRIED COW'S MILK.

By ROSAMUND E. BARNES AND E. MARGARET HUME.

(From the Lister Institute, Department of Experimental Pathology.)

In previous communications, one of us (E. M. H.), in conjunction with Chick and Skelton (1918, I. and II.), has shown that raw cow's milk must be classed among the less valuable foodstuffs as regards its antiscorbutic properties. Whereas in the case of many raw fruits and vegetables, amounts varying from 1.5 to 10 g. daily will prevent scurvy in guinea-pigs upon a diet otherwise devoid of antiscorbutic material, 100 to 150 c.cm. of raw cow's milk is required. The present work, which will shortly be published in greater detail in the *Biochemical Journal*, consists of an attempt to make a direct comparison between the antiscorbutic value of dried and raw milk, in order to ascertain to what extent, if any, the former is inferior.

#### Inferiority of Dried Milk.

Two series of experiments were made, one series with guinea-pigs and the second with monkeys, young growing animals being selected in both instances. In each series the same result was obtained, showing the marked inferiority of

the dried milk for the prevention of scurvy. The dried milk used was a well-known commercial brand manufactured by the Just Hatmaker process. Two sets of samples were tested: Sample A was delivered regularly immediately after manufacture and was less than three weeks old when used for experiment; Sample B was 6 to 12 months old when tested. The fresh milk used for comparison was very pure, specially delivered, country milk, obtained from a model dairy. The methods adopted in the experiments were the same as those previously described by Chick, Hume, and Skelton (1918, II.).

The results obtained with raw milk confirm those of the earlier work, 100 to 150 c.cm. daily being found necessary to prevent scurvy in animals of 300 to 500 g. weight. In case of the dried milk these amounts proved inadequate, and every animal developed the disease after periods of time varying from 20 to 30 days. These experiments with guinea-pigs are extremely difficult to carry out, as comparatively few animals of this size are able to tolerate these large amounts of fluid without digestive disturbance. For this reason the animals receiving dried milk were at an advantage, because it could be given in a concentration greater than that of ordinary milk and the quantity of fluid taken could thus be lessened. The results of these experiments are summarised in the table (A).

The monkeys used in the second series of experiments were a varied collection. In all 8 animals were used, including the following genera: macacus, 2 species; cercopithecus, 2 species; cercocebus, 1 species, of weight varying from 2 to 3 kilograms. The results are summarised in the table (B) and completely confirm those obtained with guinea-pigs. In case of raw milk a ration of 125 to 175 c.cm. daily was found adequate to maintain health and to prevent scurvy; but with dried milk severe scurvy was developed on daily amounts equivalent to 200 c.cm. and a ration of about 250 to 300 c.cm. was found necessary for safety. The dried milk used in these experiments was all taken from Sample A, and fed less than three weeks after manufacture.

With animals so few and so various there was danger of drawing erroneous conclusions due to idiosyncrasy of individuals, but this was avoided by observing the effect of fresh and dried milk upon the same animal. Thus monkey No. 6 in the table (B), which acquired severe scurvy on a daily ration of dried milk equivalent to 175 c.cm., was cured completely when a daily average of 175 c.cm. fresh milk was substituted for the dried milk ration. In fact, this animal remained in good health during a long subsequent period, when this amount was cut down to 125 c.cm. daily.

#### Value of "Scalded" Fresh Milk.

Monkey No. 7 had developed severe scurvy when receiving a daily ration of dried milk equivalent to 200 c.cm., and had shown no improvement, but grew progressively worse when this was increased to 300 c.cm. daily. The milk ration was then changed to 200 c.cm. daily of "scalded" milk—i.e., milk brought rapidly to the boil in a saucepan over a gas-

TABLE SHOWING ANTISCORBUTIC VALUE OF COW'S MILK, FRESH AND DRIED AND HEATED.

#### (A) Experiments with Guinea-pigs.

(The Diet Consisted Otherwise of 10-21 g. Oats and Bran.)

(1) No. of animals used. (2) Average amount consumed daily (c.cm.). (3) Time of experiment (days).

Description of milk.	(1)	(2)	(3)	Result.
Fresh milk, full cream or separated.	6	113	36-111	Death from scurvy in 1 case. Death from other diseases in 2 cases, one showing slight traces. Scurvy post-mortem. Good health in 3 cases.
Dried milk, full cream, 1-2 weeks after manufacture.	5	108*	25-48	Scurvy in all cases, very severe in 4 cases.
Dried milk, full cream 6-12 months after manufacture.	5	97	33-72	Scurvy in all cases, severe in 4 cases.

#### (B) Experiments with Monkeys.

(The Diet Consisted Otherwise of Boiled, Polished Rice, Wheat Germ, Pea Nuts, Dried Peas.)

(4) No. of monkey. (5) Average daily ration milk (c.cm.). (6) Time of experiment (days). (7) Time after which onset scurvy observed (days).

	(4)	Wt. (g.).	(5)	(6)	(7)	Result.
Fresh raw milk.	1	2089	50 (maximum)	150	66	Scurvy.
	2	2770	75	143	119	Scurvy, cured with 10 g. daily raw germinated peas. Good health.
	3	1940	125	182	—	Inconclusive result.
	4	2770	150	184	115†	Good health.
	5	2230	200	225	—	Good health.
Dried milk, less than 3 weeks after date of manufacture.	6	2090	175	142	105	Severe scurvy; cure obtained with 175 c.cm. fresh milk daily, consolidated on 125 c.cm.
	7	2470	200-300	104	87	Severe scurvy, cured by 200 c.cm. daily of "scalded" raw milk.
	8	2740	250	161	117†	Inconclusive result.

\* Average taken up to time of onset of scurvy.

† Scurvy symptoms noted, improvement later without alteration of diet, coincident with time of year when cows leave winter stalls for the open pasture.



burner, and then immediately set to cool. This procedure was arranged to imitate, as far as possible, a common household method of boiling milk before feeding to infants, and one that may be relied upon to destroy the tubercle bacillus and other infective disease germs. Measurements of temperature were made, and it was ascertained that during this process the milk was exposed to a temperature between 70° and 100° C. for 1½ minutes during the heating, and 4 minutes during the cooling.

Milk so treated was found to possess an antiscorbutic value much in excess of that possessed by dried milk. A rapid cure was the result of substituting 200 c.cm. of this "scalded" milk for the dried milk ration in case of monkey No. 7. The day after the change was made the animal showed a very slight improvement, and in a week was markedly better; in 16 days he had regained the use of his hind limbs and loss of weight had ceased, and satisfactory growth became established. Two experiments in the table (B) are described as yielding an inconclusive result. In both cases symptoms of scurvy developing on a certain ration of milk, raw in one case and dried in the other, disappeared later without any intentional change in diet. The experiments were started in the winter and scurvy was detected about four months later, in April-May, but soon afterwards the symptoms began to clear up. This we attribute to the change in the cow's diet about this time of year—i.e., from the hay, roots, oil-cake, and cereals of the winter feed to the fresh grass of the open pasture. In consequence of the great increase of antiscorbutic material in the cow's diet, one would expect a corresponding increase in the antiscorbutic value of the milk given:

#### *Summary and Conclusions.*

1. The antiscorbutic value of cow's milk, fresh, heated, and dried, was determined by means of quantitative nutritional experiments with guinea-pigs and monkeys. Cow's milk, even when fresh, was found to be a foodstuff comparatively poor in antiscorbutic properties, and large daily rations, 100 to 150 c.cm. daily for guinea-pigs and 125 to 175 c.cm. daily for monkeys, were needed to protect these animals from scurvy, when upon a diet otherwise devoid of antiscorbutic material. Dried milk was found inferior to raw milk in this respect. Even with material of quite recent manufacture we were unable to protect guinea-pigs from scurvy with any amounts that it was found possible to administer. In case of monkeys the minimum protective dose was found to be approximately from 250 to 300 c.cm. daily; in other words, about half the original antiscorbutic value of the fresh milk had been destroyed in the process of drying. "Scalded" milk was found distinctly superior to dried milk.

2. These facts form a strong argument for the desirability of adding an extra antiscorbutic to the diet of infants nourished on dried milk. The most suitable substances for this purpose are raw orange juice, raw swede juice (Chick and Rhodes, 1918), or juice of tomatoes, raw or canned (Hess and Unger, 1919). Grape juice and carrot juice are also useful but less valuable, as, being inferior in potency, correspondingly larger doses are required. Potatoes cooked and mashed can be employed in cases where starchy foods are not considered unsuitable (Hess and Fish, 1914).

3. Some evidence was obtained showing that winter milk is inferior to summer milk in antiscorbutic properties, corresponding to the differences in the cow's diet at these different seasons. In this connexion the suggestion is made that the value of winter milk in this respect might be raised if swedes were employed for winter feeding in place of mangolds, where possible. In the investigation of Chick and Rhodes alluded to above, the raw juice of beetroot, to which plant the mangold is nearly related botanically, was found to be much inferior to that of swede as an antiscorbutic.

4. No significant difference was detected in the growth-promoting properties of raw and dried milk respectively, and this was true with both guinea-pigs and monkeys. In both cases growth declined with onset of scurvy symptoms, but until this occurred the growth made upon diets containing dried milk was equal to that obtaining when equal rations of fresh milk were substituted.

*References.*—Chick, Hume, and Skelton (1918): *L. THE LANCET*, Jan. 5th; *II.*, Biochemical Journal, xli., p. 132. Chick and Rhodes (1918): *THE LANCET*, Dec. 7th. Hess and Fish (1914): *American Journal of Diseases of Children*, viii., p. 386. Hess and Unger (1918): *Proceedings of the Society of Experimental Biology and Medicine*, xvi., p. 1.

#### A NOTE ON

### IMMUNISED SKIN-GRAFTS.

BY ARTHUR L. YATES, M.C., M.D. LOND., F.R.C.S. EDIN.

CERTAIN German writers during the war described a process of rendering the skin immune to the toxins present in the wound for which the skin-graft was intended, and claimed that if skin immunised in this way was employed for skin-grafts the growth of epithelium was quicker and more certain than if the usual methods were followed.

#### *Description of the Process.*

The method consists of placing the dressing which has been in contact with the surface of the wound it is intended to treat, and which is therefore soaked in the discharges of the wound, upon an area of skin suitable for obtaining grafts by the Thiersch method and allowing this dressing to remain in position for 24 hours, after which it is replaced by another dressing removed from contact with the wound.

It was found necessary to moisten dressings on which the discharges had dried and to mark out the skin selected for yielding the graft by means of nitrate of silver.

Applied with these precautions, the skin to which the wound discharges were brought into contact was found to redden and to show on the third day of the application a slight prominence of the papillæ. It was necessary to watch the skin carefully at this point in the treatment, as it is of considerable importance to guard against the occurrence of a violent reaction. When the skin showed a marked elevation of the papillæ and slight reddening the treatment of the area was stopped for a day, but in most cases it was possible to treat the skin in this way for a period of seven days, after which the graft was ready for removal.

It was found that the severity of the reaction varied within rather wide limits, and that it was necessary to guard against a violent reaction. In two or three cases no reaction occurred. This was thought to indicate that the skin already possessed immunity to the organisms of the wound, and to a certain extent this view was borne out by the fact that the graft "took" readily in these cases.

#### *Technique.*

I found that the following technique gave the most satisfactory results.

The granulations of the wound were rubbed with dry unmedicated gauze and the graft removed by the method of Thiersch, applied to these granulations, and well pressed down. The graft was then covered with a piece of waterproof tissue, in which a number of holes of about one-eighth of an inch diameter had been cut, and the opposite edges of this waterproof tissue were fixed to the skin with adhesive plaster. This was then covered with unmedicated gauze and wool, and bandaged in position. The wound was examined every second or third day and any discharge removed by gently syringing through the holes in the waterproof tissue, which was not otherwise disturbed.

#### *Results.*

Applied in this way, I have not seen a case of failure by this method, although up till now I have only treated 27 cases, and of these only three were cases that had failed to give a successful result by the ordinary methods. Of these 27 cases, 10 were cases of ecthyma, where deep ulcers had developed and which had resisted treatment for several weeks previously to the grafting, 13 were cases of infected lacerations, where healing was delayed for several weeks, and 4 were cases of chronic ulcer, which had resisted treatment for a long time. In several cases a certain amount of movement of the limb was allowed, and all the cases in which walking with a fresh graft applied to some part of the lower limb was permitted, the graft took without any difficulty.

Local anaesthesia was employed in all the cases, and in the case of ulcers with thickened bases the ulcer also was anaesthetised and the thickened base punctured with a needle in numerous places after the method originally described by Tubby for freeing contracted scar tissue.



Although the character and small numbers of the cases in which I have made use of this method does not permit of any definite conclusion as to the superiority of this method over any previously employed, the method appeared to me to be based on such logical principles and, in the limited number of cases in which it has been tried, to have been so successful that I have ventured to bring it to the notice of those practitioners who did not have an opportunity of seeing the résumé of the original article, which appeared in the "Summary of the Foreign Press" issued to certain medical units of the Army. I regret that I have been unable to obtain the names of the German authors, but the impossibility of obtaining the literature must be my excuse.

Lincoln.

## MUCUS DEPOSIT OF URINE.

By S. G. BILLINGTON, M.B., B.S. LOND.,

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If a sample of this deposit in a febrile or convalescent urine be pipetted up from about the junction of the upper and second fourths it will show on direct examination an interlacing mass of strands, many resembling gigantic flagella. These structures are very dim and indefinite, and no satisfactory impression of their form can be obtained except under the low power and with the light, preferably daylight, almost entirely shut off.

If the deposit is washed with filtered water to remove the soluble constituents of the urine the same structures will still be dimly seen; but they at once stand out clearly on adding one drop of 10 per cent. tannic acid to the fluid film, and they will be seen lying in the midst of a coagulated homogeneous material. The structures also take up added watery stains at this stage, although they would not do so before the addition of the tannic acid. If the fluid-stained film obtained in this way is dried while under observation all the structures will be seen to disintegrate as the evaporating line crosses the field of vision.

When fixed and stained the structures show a most extraordinary variation in size and form, and resemble somewhat an interlacing mass of worms. They may be straight, curved, or wavy; some resemble gigantic spirochaetes, others resemble more or less closely enormous trypanosomes or



FIG. 1.—Mucus deposit of urine. Flagellate-like structures lying in masses of coagulated matrix. Stained with methylene-blue.

Leishman-Donovan bodies. Bodies resembling miniature tadpoles with an apparent vacuole at the blunt end are also frequently seen. With the Romanowski stains the blue only is taken up. With Indian ink the general morphology is brought out more distinctly than in stained films, especially as regards the perfect fine flagellate-like extremities and processes.

Under the higher powers these structures appear to be made up of enormous numbers of filamentous strands

Some show darker centres, probably due to contained minute granules, and the forms resembling trypanosomes frequently contain one or more deeply staining bodies about the size of a red blood cell.

### *The Origin of the Deposit.*

As far as I am aware, the mode and site of origin, the significance and the reasons for variation in amount of this substance, are shrouded in obscurity. There are, however, two points of interest. 1. When there is an actual excretion of organisms, as in bacilluria, and a catarrhal condition of the urinary tract may be presumed, the mucus deposit is slight or absent. 2. From chemical examination we are told that this substance in many cases is not true mucin, probably a nucleo-protein. 3. The structures described as being present in mucus deposits vary in size and texture much as in the case of casts. They are much larger and coarser in the urine from a case of febrile or post-febrile trench fever than in the case of influenza.

A year ago the urines of 300 men were examined with regard to the mucus deposit. 200 were patients in hospital

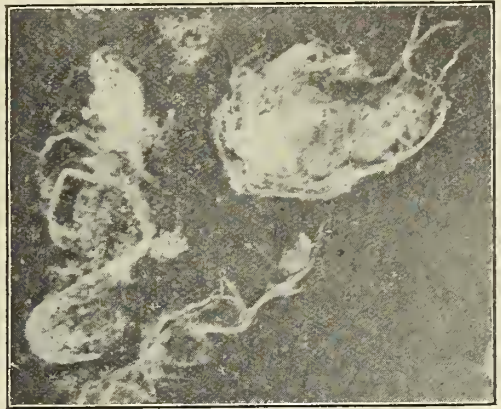


FIG. 2.—Masses of structures in the mucus deposit of urine resembling spirochaetes. Stained with Indian ink.

and 100 were the staff of a medical unit. The urines of the 200 patients all showed a pronounced deposit, and the structures described could be readily seen with the lower power on direct examination. Over 70 per cent. of the controls showed a varying amount of deposit with similar structures. The difference in the bulk of deposit, however, in the two series was extraordinary, and would never have been realised unless series of 20 urines, 10 from patients and 10 from controls, had been placed in line. It may also be added that quite 50 per cent. of the controls had been marked for base duty on account of previous or existing disease of various kinds.

These examinations demonstrated that active disease produces a pronounced increase in the mucus deposit in the urine. In the absence of any definite knowledge as to the origin or significance of the mucus, knowing that the kidneys are the natural filters of the body and the urine the filtrate containing undesirable excreted products, it would not appear to be illogical to suspect that the addition to the deposit represents some form of the infecting agent after excretion.

The presence of spirochaetes in the urine in trench fever and also in normal urine has been recorded on several occasions. One source of these spirochaetes has been found by Japanese workers to be the urethral mucous membrane, and as to that source no comments can be made. The origin of morphologically perfect spirochaetes from the deposit of urine, however, can be directly watched under the microscope. The mucus deposit is washed once, and to a sample on a slide a drop of tannic acid and watery stain are added, as previously described. The film is then gently dried, and as the evaporating zone crosses the field under observation all the large structures mentioned will disintegrate. It will be seen, however, that here and there one of the fine spirochaetal-like processes apparently project beyond the hygroscopic surrounding matrix, and these will be left in the debris as morphological spirochaetes.



## FIVE CASES OF SPONTANEOUS FRACTURE OCCURRING IN SERVING SOLDIERS.

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THE following cases of spontaneous fractures were admitted to the Norfolk War Hospital between November, 1916, and February, 1919. They illustrate some of the most important causes of pathological fractures of bones. They all occurred in serving soldiers. The information with regard to the diagnosis and treatment of spontaneous fractures to be obtained from the ordinary text-books on surgery is extremely brief and scanty. A study of these cases shows how important it is to make a most complete and careful examination of a patient suffering with a fractured bone.

### *Osteomyelitis Fibrosa (Medullary Fibromatosis) of the Right Humerus; Spontaneous Fracture; Union of the Fracture.*

CASE 1.—W. G. J., a private, aged 19, was transferred to the Norfolk War Hospital on Jan. 28th, 1916, complaining of an injury to the right arm. The history of the patient's present condition was as follows. He stated that he had always been a healthy youth, and had suffered with no previous illness, except that he had twice previously met with slight injuries to the right arm, which had resulted in fractures. The arm was "set" by a doctor, and on both occasions after rest in splints it united. The first fracture occurred at the age of 14, and resulted from throwing a cricket-ball. A year later he again broke the same arm by falling off a bicycle. In December, 1915, at the age of 19, his arm was again broken while driving a horse and cart, a sudden jerk of the reins causing the fracture. As far as he was able to judge all the other bones of his body were natural and quite strong. No other members of his family, as far as he could tell, had ever suffered with repeated fractures. His father and mother were both quite healthy.

*Condition on admission.*—The patient was a well-developed healthy youth; temperature normal; pulse-rate 80 per minute. Pupils equal and reacted normally to light and accommodation; teeth good and quite clean; no discharge from ears. Chest, heart, and lungs natural; abdomen natural.

The muscles of the upper arm and forearm were wasted, but the hand muscles were natural. There was a slight angular deformity and swelling in middle third of upper arm. The elbow could not be completely flexed or extended. On palpation there was a well-marked thickening in the middle third of the humerus; the swelling was tender to touch, hard, and felt bony, and could not be distinguished by palpation from callus formed around a uniting fracture. Crepitus could not be obtained, but there was abnormal mobility to be felt in middle third of humerus. There was half an inch of shortening of the right upper arm. The axillary glands were not enlarged. The sensation of the arm and hand was not impaired.

X ray examination showed a fracture through middle third of right humerus. In this situation there was a spindle-shaped enlargement of the bone. In the interior of the bone the osseous tissue had been replaced by clear areas which, from their even contour, sharp definition, and translucency, suggested the presence of cysts. X ray examination of the other bones of the body did not reveal anything abnormal. Wassermann reaction was negative.

*Treatment.*—The fracture was treated by the usual method of splinting protection and massage. It united rather slowly, but except for rather an excessive amount of pain, felt especially at night, at the seat of injury the broken bone did not behave in any abnormal way, in spite of the disease at the site of fracture.

*Remarks.*—The two main factors for consideration in this case were, firstly, the diagnosis and, secondly, the correct treatment. In considering the diagnosis, the points of importance are the age of the patient and the long duration of the disease—five years almost excludes the possibility of malignant disease.

"The diagnosis from other chronic affections of bone was readily made with the assistance of skiagrams. These showed that the contour and architecture of the bones were greatly altered; there was a localised increase in the girth; the surface of the bone was uneven, and in the interior the osseous tissue had almost disappeared, and there were clear

areas which, from their even contour, sharp definition, and translucency, suggested the presence of cysts." (Thomson and Miles.)

With regard to treatment the affected bones should be protected from injury. If fractures should occur every attempt must be made to prevent deformity, and to fix the parts by the aid of splints for a considerable time. Union will generally take place, but will be slow, and repeated fractures are likely to occur. It is improbable that any operative procedure on the fracture will meet with good result, but scraping away the disease from the interior of the bone where there has been no fracture may sometimes be followed with good results.

### *Multiple Gummata of the Bones of the Left Foot; Spontaneous Fractures; Improvement.*

CASE 2.—J. C., aged 41, was admitted to the Norfolk War Hospital on Nov. 29th, 1917, complaining of swelling of the left foot. The history of the present condition was as follows. The patient had been in his usual health until about two months ago, when he noticed swelling of the left foot. This was increased by exercise, and he was unable to march. He had been serving in the Army for three months before he noticed the disability. The condition of the foot had caused him little pain, but he had noticed sharp pains shooting down both legs for the last three or four months. He had contracted syphilis 19 years ago, for which he was treated.

*Condition on admission.*—The patient was a fairly healthy looking man. Temp. 98.4°. Special senses, such as hearing, smelling, tasting, and seeing, normal. Pupils unequal, the right did not react to light and left pupil sluggish, but a faint reaction to light could be obtained. No nystagmus. Disc normal; no squint on narrowing of palpebral fissure. Nothing abnormal discovered on examination of remaining cranial nerves. No paralysis or spasm of any of the muscles of arms or legs and no incoördination. Dullness of sensation over both legs and feet, but no absolute loss of sensation. Sensation to heat and cold normal. Knee-jerks present, but no ankle clonus and no Babinski sign. No wasting of muscles of arms or legs. No loss of control over sphincters. Memory and mental power apparently normal. Chest, heart, and lungs natural; abdomen natural.

*Local condition.*—The skin over the left foot looked natural, but the foot was swollen and pitted on pressure. Well-marked flat foot. The dorsum of the foot looked unduly prominent. There was little or no pain on manipulation of the foot. The bony point could not be easily palpated, owing to swelling and thickening of tissues. No crepitus could be obtained.

X ray examination showed the bones of the foot rarefied. All metatarsal bones were fractured at their base. There was some evidence of new bone formation around seat of fracture. Wassermann reaction was negative.

*Treatment.*—The patient was put on a course of potassium iodide and mercury, given by the mouth. The fractures were treated by the application of splints, rest, massage, and electrical treatment. Great benefit followed these lines of treatment. There was great improvement in the general condition of the patient. Locally the condition of the foot improved and the fractures united.

CASE 3.—J. M., a private, aged 38, was admitted to the Norfolk War Hospital complaining of swelling of the left foot. The history of the present condition was as follows. The patient stated that he was quite well until early in September, 1918; he then twisted his foot on parade and noticed that when he removed his boot the same evening the foot was swollen. He was unable to get his boot on next morning and the foot remained painful for four or five days. He also experienced shooting pains in the left leg as far as the knee. Walking increased the pain in the leg and discomfort in the foot. The swelling gradually subsided, but some deformity and swelling still persisted.

*Previous history.*—The patient said that he suffered with gonorrhoea in 1901, whilst he was stationed in Ireland. He was treated successfully for several weeks. In 1915 he trod on a nail. It entered the sole of the foot in the situation of the head of the fifth metatarsal bone. The wound suppurated, and an operation was performed to drain an abscess. After the operation the wound healed well, and he recovered with complete use of the foot. He stated that he had never suffered from syphilis.

*Condition on admission.*—The patient was a healthy-looking, well-nourished, and muscular man. Temp. 98°; pulse 80. He answered questions with intelligence. The special senses appeared normal. Eyes: pupils unequal, right dilated, left contracted, both reacted sluggishly to light and accommodation. No squint and no nystagmus, fundus was natural, tongue protruded straight, tremulous, and furred; fauces natural. The remaining cranial nerves were normal.



No paralysis or spasm of any of the muscles of arms or legs and no incoordination. Dullness of sensation over both legs and feet, but no loss of sensation to heat and cold. Knee-jerks exaggerated, especially on left side. Babinski's sign well marked in left foot and present, but less well marked, in right; no ankle clonus.

*Examination of left foot.*—The skin over the left foot looked natural, but the foot was swollen and oedematous, the dorsum being unduly prominent. The normal arch of the foot had disappeared, and there was well-marked flat foot. There was little or no pain on palpation. The bony points of the foot could not be easily felt owing to swelling and thickening of tissues. On deep palpation in the region of the base of the first metatarsal bone crepitus could be obtained, but manipulation produced very little, if any, pain.

On X ray examination of the left foot the tarsal bones were found to be rarified. There was a fracture in the situation of the base of the first metatarsal bone. In the situation of the fracture there was marked destruction and absorption of bone, and around the fracture some evidence of new bone formation. There was also a fracture of the second and fifth metatarsal bone, with marked absorption of bone. Wassermann reaction (blood) was positive.

*Treatment.*—The patient was given a course of potassium iodide—20 gr. three times daily for six weeks—and mercury by the mouth. The fractures were treated by splints, rest, massage, and electrical treatment. Great benefit was derived from the treatment, both generally and locally. The fractured bones united.

*Remarks on Case 2 and 3.*—Case 2: There was a definite history of syphilis, but the Wassermann reaction was negative. Case 3: Syphilis was denied, but the Wassermann reaction was positive, and the signs and symptoms of the case were such as to justify a diagnosis of syphilis. A diagnosis of gummata osteitis was considered to be the condition from which both patients were suffering. Both showed symptoms and signs of tertiary syphilis, and both showed marked signs of improvement on the administration of active syphilitic treatment.

*Chronic Suppurative Otitis Media; Abscess of the Thigh; Bony Swelling of the Right Femur; Spontaneous Fracture of the Second Metatarsal Bone of the Left Foot.*

CASE 4.—A. R., a private, aged 19, was admitted to the Norfolk War Hospital on Nov. 22nd, 1918, complaining of a painful swelling in the right thigh and swelling of the left foot. The history of the present condition was as follows. The patient said that he was quite well ten days previously. For the last week he had had pain and swelling of the right thigh. This had gradually got worse—he could not account for the swelling, as there had been no injury. The left foot became swollen three days previously, when he reported sick, and since then had been painful. Had had discharging ears as long as he could remember.

*Condition on admission.*—The patient was an ill-developed and badly nourished youth, who looked ill and pale. Temp. 99°; pulse 80. Very deaf, profuse discharge from both ears, no mastoid tenderness. Eyes natural, teeth very bad, many carious. Chest, heart, and lungs natural. Abdomen natural. On the outer side of the middle third of the right thigh there was a well-marked swelling which extended from 2 inches below the great trochanter to within 1 inch of the knee joint. The skin over the swelling was not red or discoloured, but on palpation it felt hotter than the skin of the opposite side. The swelling had fairly well-defined margins, was painful to touch, and fluctuated at its centre. The femur felt thickened and irregular in its middle third.

X ray examination of left femur showed on anterior aspect of middle third a localised bony swelling attached to the bone and tapering at both ends into its substance. Outline of shaft of femur natural. The appearance shown in the X ray photograph is indistinguishable from the condition described as traumatic myositis ossificans. Over the dorsum of the right foot the skin was reddened and inflamed, hot to touch, and rather painful, but there was not so much pain on manipulation as might be expected from the appearance of the part. There was no fluctuation. X ray examination of the foot showed a fracture of the shaft of the second metatarsal bone. The other bones of the foot appeared natural.

*Treatment.*—An operation was performed on Nov. 24th under chloroform. An incision was made into the swelling on outer side of left thigh and a considerable quantity of purulent matter evacuated. The swelling appeared to be a breaking down hæmatoma. The abscess was drained. Bacteriological examination of the pus showed presence of staphylococci.

*Progress and remarks.*—There are three conditions for diagnosis in this case: (1) Abscess of the thigh; (2) bony swelling of femur; and (3) spontaneous fracture of the

second metatarsal bone. With regard to the thigh condition the X ray appearance strongly suggests the condition known as traumatic myositis ossificans, but in the presence of an abscess it is difficult to exclude the possibility of chronic inflammation as the cause of the bony swelling; in other words, the condition may be a chronic pyæmic abscess with inflammatory thickening of the underlying bone.

The reason for the spontaneous fracture of the metatarsal bone does not appear clear unless the cause could be one of general debility and toxæmia associated with excessive absorption of septic material from the ears and teeth. The abscess of the thigh healed well. The fracture of the second metatarsal bone of the foot gave little trouble. It was treated by splints, rest, and massage. At the end of a month the patient could walk without pain.

*Periosteal Sarcoma of the Lower Third of the Right Thigh; Spontaneous Fracture; Amputation of the Thigh.*

CASE 5.—A. McI., a private, aged 19, was transferred to the Norfolk War Hospital on Jan. 20th, 1919, complaining of swelling of the right knee. The history of the present condition was as follows. The patient stated that he was quite well until May, 1918. He then noticed slight pain in his right knee, perhaps caused by a twist. It was not severe, but gradually got worse, although it did not cause him enough trouble to report sick before Oct. 2nd, 1918. He was passed through a field ambulance, a casualty clearing station, and a general hospital, the condition being then diagnosed on his field medical card as synovitis of the right knee. On Oct. 8th he was evacuated to England. Since October, in spite of treatment, the knee had gradually got worse. It had become more swollen and he had been unable to move it without pain, which had been especially severe at night, often keeping him awake for many hours. He had noticed that in spite of increasing swelling of the knee the muscles of the leg had become very wasted. He had lost weight rapidly; he had no cough.

*Condition on admission (20-1-19).*—The patient was a pale, ill-nourished youth; obviously in pain. Temp. 98°4; had occasionally been 99° at night during the last month. Pulse 80; respiration 20. Eyes: pupils equal, react to light and accommodation. Tongue clean; teeth fair, some caries. No scars at angle of mouth. Ears; no discharge. No enlarged lymphatic glands felt in neck or axilla. Chest wall poorly covered. Skin dry; little subcutaneous fat. Heart and lungs natural. Abdominal wall very thin, nothing abnormal discovered in abdomen. No enlarged or palpable iliac glands. Inguinal glands palpable, both not markedly enlarged.

*Local condition.*—The patient lay with the right knee flexed, unable to extend or move the joint without severe pain. There was marked swelling of right knee-joint, the swelling having the characteristic form of distension of the synovial cavity, except that the swelling was especially prominent on the inner side of the joint just above the internal condyle. The skin over the joint looked natural; no enlarged veins over the swelling. Marked wasting of muscles of thigh and calf. On palpation the skin over the joint felt hot, the joint being very tender to touch, so that any attempt at movement caused great pain. An irregular, ill-defined swelling could be felt over and above the internal condyle. The upper margin of the swelling could be palpated 1 inch above the condyle, but no lower margin could be palpated. The swelling did not fluctuate. The lower end of the femur felt enlarged and there was abnormal mobility to be made out. The situation of the bony points was natural; no riding of the patella. There was 1½ inches of wasting in the thigh and calf of right leg. The circumference of right knee-joint was 1½ inches greater than that of left. There was no loss of sensation and reflexes were natural. Wassermann reaction was negative.

X ray examination showed very extensive destruction of bone at the lower end of the femur. At one situation the destruction had been so great that the bone appeared to have been "eaten" through. There was no evidence of any new bone formation. Microscopic examination of a sector removed from the growth showed that the growth was a spindle-celled sarcoma.

*Treatment.*—Amputation of the thigh.

*Remarks.*—This case illustrates a not unusual mistake in diagnosis, the case being first diagnosed as synovitis of the knee. The importance of an X ray examination in all cases where there is any suspicion of disease of a joint cannot be over-estimated. It is probable that this case would have shown changes in the bone had an X ray been taken when the case was first seen. The second point of interest is the X ray appearance, the destruction of bone being very considerable and the appearance being not unlike that exhibited by a case of advanced necrosis.



## Clinical Notes :

### MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

#### THE EFFECTS OF EXPOSURE UPON THE TERMINALS OF HANDS AND FEET.

By F. JEEVES, L.R.C.P. & S. EDIN., L.R.F.P.S. GLASG.,  
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AND

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THE following case illustrates the different effects of exposure to (1) alternating extremes of temperature, (2) prolonged low temperature:—

Corporal W. B., aged 39, a monumental mason in civilian life, came out to North Russia on Oct. 1st, 1918. He had since been employed at the base. He gives a history of having been rejected for the Army in 1914—he believes on account of his teeth. He was in France from January, 1917, to October, 1917, where he was gassed, but did not suffer from trench-feet or frost-bite.

From Oct. 20th to Dec. 16th, 1918, he was employed in building stoves. As is customary among Russian masons, a mortar was used composed of clay and sand. The workmen use this with their hands instead of with a trowel, as in England, and they dip their hands at frequent intervals in extremely hot water to prevent the mortar sticking to them. He did the same. The weather was very cold, and his hands were consequently being exposed to extremes of heat and cold alternately. His feet, on the contrary, were constantly wet and cold, for he was unable to wear his Shackleton boots, and his ordinary boots were wet through, as he was frequently standing in water. He was wearing these wet boots for many hours daily. The first parts affected were



FIG. 1.—Shows increased bone formation in the fingers.

his hands and left great toe; then the other foot. They swelled up and "the nails seemed to spread." He had pains of a stinging character, worse when the hands and feet were getting warm again and after he had stopped moving about. The pain in his toes at night kept him awake.

He continued to work in spite of the pain until Dec. 16th, 1918, when he went sick on account of the severity of the pain in his left great toe. He states that he had little blisters at the bases of his finger-nails, but that his feet were not blistered, although distinctly blue. He was admitted to the hospital ship on Dec. 19th.

I (E. R. H.) saw him for the first time some three weeks later. He was then recovering and was able to be up and about the ward. The terminal phalanges of all his fingers, his thumbs, and the toes of both feet were much enlarged, presenting the appearance of clubbed fingers and toes seen in cases of congenital heart disease, though without the discolouration usual in this condition. Sensation to pin-prick was very much diminished over the terminal phalanges of his right thumb and forefinger and middle finger. The

level of diminished sensation extended down to the middle of the second phalanx of the right ring finger and to the joint between the first and second phalanges of the right little finger behind, and to the metacarpo-phalangeal joint of the same finger in front. The left hand was less affected, but sensation was diminished over all the terminal phalanges. A very similar distribution of impaired sensibility was present over the toes of both feet. The knee-jerks were normal, but plantar reflexes only just obtainable. His pupils reacted to light. The lungs were normal. The first sound at the apex of the heart was reduplicated.



FIG. 2.—Shows erosion of the terminal phalanges of the toes.

The excellent skiagrams, for which I am indebted to Captain H. J. Cotter, M.C., R.A.M.C., show an interesting condition of the bones of the terminal phalanges of both hands and feet. In the fingers these bones show increased bone formation, whereas the terminal phalanges of the toes are eroded.

These different conditions illustrate remarkably the effects of alternating extremes of temperature as compared with that of prolonged exposure to cold only. The distribution of the sensory changes point to injury of the nerve endings and not to any peripheral neuritis. There was nothing to suggest a functional origin. The similarity of the sensory changes in both hands and feet suggests that the bone changes were caused by direct action of the temperature on the blood-vessels, and not primarily by interference with vaso-motor action through the damage to nerve-endings.

North Russia.

#### A CASE OF KERATODERMIA BLENNORRHAGICA.

By S. C. DYKE, M.B., B.Ch. OXON., D.P.H. OXON.,  
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As details have been published of comparatively few cases of keratoderma occurring in association with gonorrhoea, the following may be of interest:—

##### *The Case Described.*

Patient, a private in a Labour Company in France, who, throughout his illness denied having ever had any venereal disease, was taken ill with "pains in the joints" about the last week of April, 1918. On May 5th he was admitted to a C.C.S.; temperature was then 100.6° F. and the left knee was greatly swollen. A diagnosis of acute rheumatism was made. Salicylates were administered and 50 c.cm. of turbid fluid showing polymorphonuclear leucocytes was aspirated from the left knee. On May 23rd the notes record swelling of the joints of the right shoulder, wrist, and hand.

He was admitted to hospital in England at the beginning of June. The affected joints were all still swollen and tender, though not containing appreciable fluid. A soft systolic bruit was present at the apex which was in the fifth intercostal space, half inch internal to the vertical nipple line. Patient was weak and emaciated. There was still irregular pyrexia, up to about 100.5° F. at night. Salicylates gave no relief and were discontinued.

##### *Condition of the Patient's Feet.*

About the beginning of July the condition of the patient's feet began to attract attention. On admission the skin of the plantar surface was thick and calloused and showed a



tendency to come off in crusts. This is a state of affairs occasionally seen in men after they have been in bed some weeks, and no particular attention was paid to it until it was noticed that as the flakes separated they did not leave clean pink skin underneath; on the contrary, as the flakes of thickened epidermis came away new ones formed underneath them. This condition became rapidly aggravated until the whole plantar surface, the sides of the feet, and the dorsal surfaces of the ungual and, to a less degree, of the second phalanges were covered with a thick horny layer of desquamating epidermis. Cracks appeared in this



FIG. 1.—Feet before commencement of vaccine treatment.

desquamating layer, which was shed in fragments from the size of half-a-crown to a fine dust. As fast as the epidermis was thrown off further keratisation occurred in the underlying epithelium, which was later in its turn desquamated. The process went on underneath the nails, most of which in time separated and came away. Some traces of the same condition, in the shape of a branny desquamation around



FIG. 2.—Feet one month after commencement of vaccine treatment.

the finger-nails, occurred on the hands. The palms were not affected. No inflammatory reaction accompanied the process, which was almost painless.

On June 6th a little sugar was present in the urine; this was absent at the next examination a few days later and thereafter.

#### *Treatment with Gonorrhœal Vaccine.*

At the end of June the case came under my care. The association of an arthritis, not responding to salicylates, with hyperkeratosis aroused suspicions of gonorrhœa. On looking for it a scanty purulent urethral discharge was found, which on examination by the pathologist to the hospital, Major A. G. Gibson, R.A.M.C., was found to contain Gram-negative diplococci. Further investigation revealed similar cocci and prostatic threads in large quantities in the urine. The Wassermann reaction was negative.

On the strength of the pathological report a course of gonococcal vaccine was given from July 10th to August 10th. A start was made with a dose of 5 millions, the dose being worked up to 300 millions, and 850 millions being given in the course of the month. The improvement in the condition

of the feet was immediate and marked. After the first few doses the further keratisation beneath the already separating epidermis ceased, and at the end of the month most of the thickened skin had separated, leaving normal epidermis beneath. At the same time the pyrexia ceased. The joint condition, which, under radiant heat and massage, was improving before the commencement of the vaccine showed no marked change.

About the middle of August the patient was evacuated to an auxiliary hospital. His general health was then excellent. The condition of the skin was normal, but there were still considerable thickening and stiffness of the affected joints, particularly of those of the right hand. The urethral discharge had disappeared.

#### *Remarks.*

The points of interest in this case would seem to be:—

1. The association of the skin condition with what was evidently a very severe attack of gonorrhœal arthritis.
2. Its late appearance in the disease.
3. Its prompt disappearance under vaccine treatment.

Oxford.

### CRYPTOPODIA: AN UNDESCRIBED DISEASE.

By E. C. BOUSFIELD, L.R.C.P. LOND., M.R.C.S.,  
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CAMBERWELL AND HACKNEY.

THE remarkable case described below, unique, so far as I have been able to discover, came under my notice whilst taking a "busman's holiday" in charge of the practice of my friend, Dr. T. T. Brunyate, of Woodstock, by whose kind help I was able to get the patient to London for exhibition at a scientific meeting.

#### *History of the Case.*

The patient, a fresh-complexioned woman of 44, had never been out of the country. Enlargement of the feet was first noticed at the age of 15, coming on during the day and disappearing during sleep. In the following year it increased so much whilst she was in service that she sought advice as an out-patient at St. Bartholomew's Hospital, but attended once only, as she had to leave her situation. She appears

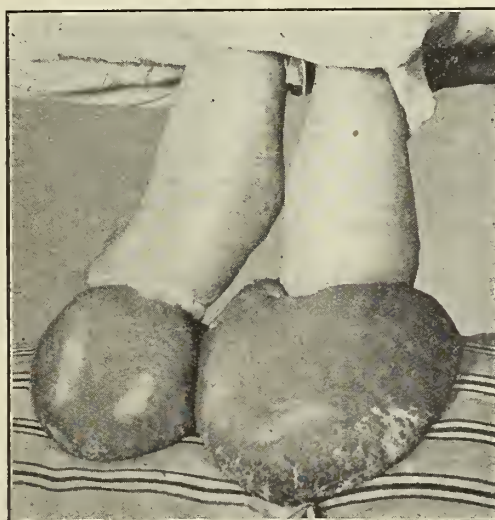


FIG. 1.—Dorsal aspect, showing the widely-separated hair follicles.

to have continued in service, though with increasing difficulty, until her twenty-fifth year, when she was attacked by rheumatoid arthritis, which left her hands crippled, and since then the feet have got steadily worse, so that for ten years she has not been able to walk.

The photographs which I took of her in the Woodstock Infirmary show the condition better than any description. At the first glance the suggestion is that of elephantiasis, but the fact that the toes are not involved in the tumour, and



the great separation of the hair-follicles, indicating distension, not hypertrophy, together with the translucency of the tumours, negative the idea of that disease.

The swelling extends from about three inches below the knees, and involves the whole of both legs and the dorsa of the feet, but stops absolutely short at the margins of the soles, or rather folds over about half an inch higher all

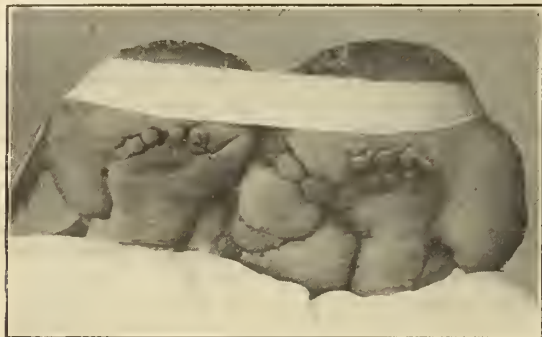


FIG. 2.—Plantar aspect, showing growth protruding between the toes.

round. Round each ankle there is a well-marked collar, with protuberances not coinciding with any anatomical structures. The skin pits deeply on pressure, but there is neither pain nor tenderness.

Heart, lungs, and kidneys are sound. A somewhat hasty blood count showed 32 per cent. polymorphonuclear leucocytes, 17 per cent. transitionals, 51 per cent. small lymphocytes, but neither large mononuclears nor eosinophiles. The red cells were very irregular in size, varying from 0.5 to 1.5 of the normal, but poikilocytes were few.

#### Remarks.

The condition of the blood seems to indicate profound myeloid or lymphatic changes, especially as there was marked leucopenia. No mechanical obstacle to the return flow of blood or lymph appears adequate to explain the peculiar features, the immunity of the feet for example. Numerous specimens of blood taken at night failed to show evidence of filaria. The only suggestion as to the nature of the case was that it might be a variant of Milroy's disease, but there is an entire absence of hereditary element.

*Note.*—Since the above was written my attention has been drawn by Colonel McAdam Eccles to a case which he published in the *St. Bartholomew's Hospital Journal* in April, 1906. He described it as a case of elephantiasis, and, as the toes appear to partake in the enlargement, this is probably correct, though I cannot pretend to decide in the absence of more exact details. My own case is now in the same hospital, under Dr. Morley Fletcher, and is improving greatly under thyroid treatment, though why it should be hard to say. The skin, as it contracts, is piling up into thick ridges, so that there has evidently been some hypertrophy.

De Crespigny Park, S.E.

**LITERARY INTELLIGENCE.**—Messrs. W. Heffer and Sons, Ltd., Cambridge, announce the early appearance of "Groundwork of Surgery for First Year Students," by Mr. Arthur Cooke. The book is intended for students just beginning clinical work in the wards or out-patient department.

**MR. WILLIAM LAUZUN BROWN.**—The death is announced of Mr. W. L. Brown, L.R.C.S. Edin., L.R.C.P. Glasg., who before qualifying as a medical man was attached to the editorial office of THE LANCET, first as a medical reporter and latterly as one of the sub-editors. He was a good shorthand writer and, having won a competition in stenography while a Scottish medical student, he attracted the attention of Sir William Gowers, at that time closely connected with the editorial staff of THE LANCET, and to Gowers Mr. Brown owed his start at this office. He did much useful work for THE LANCET for nearly five years, especially in taking charge of the reporting of various congresses and medical meetings. In 1894 he returned to Glasgow to complete his medical education, and on obtaining the Scottish diplomas went into general practice in London. He remained attached to journalism, and in papers and from platforms was the advocate of medical movements of various sorts. He was a member of the Finsbury Borough Council and Holborn Board of Guardians.

## Reviews and Notices of Books.

*Mortality Statistics of Insured Wage-earners and their Families in the United States and Canada.* By LOUIS I. DUBLIN, Ph.D., Statistician. With the collaboration of EDWIN W. KOPF, Assistant Statistician, and GEORGE H. VAN BUREN, Supervisor, Statistical Bureau. New York: Metropolitan Life Insurance Company. 1919. Pp. 397.

THIS publication presents the mortality statistics of the Industrial policy-holders of the Metropolitan Life Insurance Company for the six-year period 1911 to 1916, with a supplement for the year 1917. The statistics are essentially those of the wage-earning group of the population. In view of the circumstances and time covered, and the care exercised in gathering, editing, and tabulating the data, it is safe to say that these statistics constitute one of the best indices available of mortality and its causes among wage-earners and their families. Those working in mortality statistics, especially in connexion with life insurance, will find much to interest them. In order fully to appreciate the facts careful study is necessary, and many important matters are presented which are not to be found in works published in this country, such as the comparative mortality of the white and coloured races at the various age-periods. The comparative mortality from different diseases in the industrial population on the one hand, and in the general population on the other, forms an interesting study, and here the area covered by the data—it includes nearly all the states of the United States and the provinces of Canada—makes the investigation particularly valuable. The statistics, indeed, reflect the sanitary and social conditions prevailing throughout the industrial population of two great national units. The members of wage-earners' families are also accounted for in good measure, for a very large proportion of the total number of persons observed are the wives and children of wage workers.

The number of diseases dealt with is, of course, large, but attention may be usefully directed to certain maladies, such as tuberculosis, cancer, and syphilis, whose rates of incidence are especially interesting to official medicine. Taking first *pulmonary tuberculosis*, a total of 99,906 deaths is reported under this head, corresponding to a death-rate of 185.7 per 100,000 in the six years 1911 to 1916. A table is given showing the mortality from this disease, classified by colour, sex, and by age-period. The group of coloured persons in this experience displays a pulmonary tuberculosis death-rate at all ages between two and two and one-half times that of white persons. One interesting feature is the comparatively early age at which the maximum death-rate is found among the negroes—namely, between 20 and 24 years of age. Among white males the maximum is reached between 35 and 44 years, and among white females between 25 and 34 years. Further, the mortality from tuberculosis of the lungs among coloured males at the age-period 5 to 9 years is over ten times as great as among white males at that age. In discussing the comparative mortality from pulmonary tuberculosis among the industrial and general population respectively, it is shown that among insured white males, at all ages, the mortality is 31 per cent. higher than among all males of the general population. Females in the families of wage-earners showed an excess of only 13 per cent. Another point of interest brought out is that the children of wage-earners who reside in cities and are presumably more exposed to infection and to the hardships incident to their economic stratum, show no higher rates from pulmonary tuberculosis than children in the general population, of whom one-half reside in rural areas. Judging by the way in which children are housed in this country in country districts this experience is not so surprising as it appears at first sight.

Turning now to *cancer*, the statistics show that white males show emphatically higher cancer death-rates at every age period than were recorded for coloured males. Comparisons between the cancer death-rates of white and coloured females are practicable beginning with the age-period 25 to 34 years. Between 25 and 44 years the cancer death-rates of white females were decidedly lower than the rates for coloured females. Between 45 and 54 years the rates were practically the same. Beginning with the age-period 55 to 64



years and continuing to the highest age-period in the table, the cancer death-rates of white females were higher than the rates for coloured females.

In discussing the mortality from *syphilis* the authors remark that statistics are likely to be fallacious because of the tendency of medical men to conceal this disease in their reports of causes of death. But even the figures, defective as they are, serve to indicate some important relations (of syphilis mortality) in the several colour and sex classes. The death-rate among coloured lives is consistently higher than among whites. The rates are about 3 to 1. The rates are much higher for males than for females in each one of the colour groups.

The figures concerned with the mortality from other diseases are similarly considered, the whole work forming a valuable addition to our statistical knowledge of the causes of death in the varying conditions of race, age, and sex. The authors may be congratulated on the success of their endeavours in collecting and criticising an enormous mass of material, and the results will doubtless be received with the greatest interest by all concerned in the insurance world.

*Aids to Ophthalmology.* By N. BISHOP HARMAN, M.A., M.B. Cantab., F.R.C.S. Eng. Sixth edition. With 163 illustrations. 1919. London: Baillière, Tindall, and Cox. Pp. 226. 3s. 6d.

We can thoroughly recommend this little book to every student of ophthalmology. It is written in an easy, interesting style, and contains as much useful information in proportion to its size as any book we know. Moreover, it can be carried about in the pocket. The chapters on the external diseases of the eye include some elementary bacteriology of the conjunctiva. The different forms of cataract are clearly explained. The main facts about glaucoma are stated, while the controversies to which it has given rise are left on one side. The chapters on refraction and the fitting of glasses are practical and sufficient. When he comes to the ophthalmoscopic diagnosis of fundus disease the student will need to supplement what he finds here. There is, for instance, no mention of such a common disease as albuminuric retinitis. References are given, however, to ophthalmoscopic atlases, one of which would be found a most useful adjunct by the beginner.

The chapter on Ocular Therapeutics, while excellent so far as it goes, does not go very far. The advice, however, to use nitrate of silver in a solution of glycerine and to compare its action with that of the newer proprietary silver salts on patients who have both eyes affected with conjunctivitis is worth following. Of the additions in the sixth edition, compared with the fifth, we note a new chapter on Diseases of the Vitreous, and the inclusion in the final chapter on operations of a description of the author's reefing operation for the advancement of a muscle in cases of squint. This operation, in its originator's hands, has given good results and it does not entail the bandaging of both eyes and consequent confinement to the house or hospital; but it is a difficult one to perform. A chapter on Eye Conditions in School Children is of special value, embodying the author's experience of many years' work in connexion with the public elementary schools of London.

*Constipation and Allied Intestinal Disorders.* By ARTHUR F. HURST, M.A., M.D. Oxon., F.R.C.P., Physician and Neurologist to Guy's Hospital; formerly Consulting Physician, Salonica Army. Second edition. London: Henry Frowde, Hodder and Stoughton. 1919. Pp. 440. 16s.

The present volume, though described as a second edition of the book first published in 1909, is very largely a new publication. Much has been rewritten, and new chapters have been added on such subjects as methods of examination, intestinal adhesions, visceroptosis, stasis in the cæcum and ascending colon, and spa treatment. While the book presents the results of the author's own observations, it also embodies the more important facts relating to the subject to be found in the English, the American, the French, and the German literature. The subject-matter is divided into convenient sections. The first of these deals with the physiology of the intestinal movements and of defæcation, and includes an interesting account of "mass peristalsis,"

the term which is now usually employed to describe the movements of the colon. The next section deals with methods of examination. These include the usual physical examination; the giving of charcoal lozenges, by which device it is possible to estimate the total time taken in the passage of any particular meal through the alimentary canal; examination by X rays; the examination of faeces by physical, chemical, and bacteriological methods; and, finally, examination of the lower bowel by the sigmoidoscope. Section 3 treats of the causes of constipation: factors influencing the passage of intestinal contents along the colon are first considered and then the causes of "dyschezia" or defective defæcation are passed in review. The next section considers the symptoms of constipation in all their protean manifestations. Section 5 is concerned with treatment, and the importance of prophylaxis is duly emphasised. The majority of cases of constipation, as the author insistently teaches, can be cured without drugs if proper treatment is instituted at a sufficiently early stage. Indeed, in dyschezia purgatives are either absolutely useless or they only have an effect when fluid stools are produced, a considerable quantity of fluid and nutritive material being thereby wasted. Two further sections deal with the rather more special subjects of constipation in infants and in soldiers.

The book is illustrated by 56 figures, most of which are reproductions in black and white outline of bismuth meal investigations. It is seldom that the reader of medical monographs meets with an account of a subject so rationally set forth and in which the conclusions are so intimately based upon direct experiment and observation. The author is to be congratulated upon the scientific acumen which has shaped his labours.

*Heredity.* By J. ARTHUR THOMSON, M.A., LL.D., Professor of Natural History in the University of Aberdeen. Third edition. London: John Murray. 1919. Pp. 627. 15s.

A THIRD edition has just appeared of this valuable manual, published originally 12 years ago. During that time it has served, as it was intended to do, as an introduction to the study of heredity, and the fascinating interest of the subject and its great practical importance have been proved by the success of the manual. Professor Thomson has furnished a book which illustrates for the benefit of those who are not experts in biology the main views which are held in this sphere. He defines the terms in common employment, and discusses the accepted theories as to the physical basis of inheritance, showing how the tendency to breed true is subject to variations, fluctuations, and mutations. Disputed questions like telegony and the transmission of acquired characteristics are dealt with in comprehensible language; a long chapter on heredity in disease may be commended to all our readers, and the same may be said for the exposition of Mendelian law. The whole book is, as we have said before in much the same terms, fascinating and instructive, while apt illustrations and a full index add to its value.

*Manual of Anatomy, Systematic and Practical, including Embryology.* Originally written by the late A. M. BUCHANAN, M.A., M.D., C.M., F.R.F.P.S. Glasg. Fourth edition. With 677 illustrations. London: Baillière, Tindall, and Cox. 1919. Pp. xii. + 1743. 30s.

THE general arrangement of this edition remains as in the last, and the old terminology is still adhered to. The book is now in the hands of a committee of London anatomists, who have made only a few alterations in the text, and are clearly waiting for an increase in their number before dealing at all drastically with the revision of the whole work.

*Studies on Acari. No. 1, the Genus Demodex, Owen.* By STANLEY HIRST. London: Longmans, Green, and Co. 1919. Pp. 44 + xiii. 10s.

Mr. Hirst has carried out a very painstaking research into the distribution and morphology of the genus *Demodex*, and has discovered the parasite in certain mammals in which until now it has not been known to occur. His descriptions are careful and clear, and are admirably illustrated in 13 plates and four text-figures.



# FRENCH SUPPLEMENT TO THE LANCET

Under the Editorial Direction of

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## RADIOLOGICAL EXAMINATION OF PSEUD- ARTHROSES BEFORE AND AFTER OPERATIONS OF BONY GRAFTS.

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JUDGING from the reports of the last French Surgical Congress (Paris, Oct. 4th, 1918), the treatment of pseudarthroses is at present very much to the front. In this highly complex question of the reparation of pseudarthroses radiology can give the surgeon valuable indications—*before intervention*, in order to get an idea of the structure of the bony extremities, of their morphology, and of their mutual relationship; *after intervention*, in order to get an idea of the evolution of the graft, of the bony reparation of the extremities, and, above all, of secondary deviations which could invalidate the primary and immediate results of the operation.

Surgeons know how great the number of pseudarthroses is at present, and how much greater it will be by the huge number of wounded who now decline, but will demand intervention later. Our colleagues at the demobilisation centres estimate the number of wounded now declining any intervention in the case of pseudarthrosis as 8 out of 10. But if it is difficult to ascertain even approximately the number of wounded who will have to be sent to hospital and operated upon later on, one can at least compute the percentage of lesions in the case of wounded sent to the Centre for Surgery of Bones at Cannes. In a first series of 161 wounded, six humeri, five forearms, and four tibias are found to one femur. I would remind my readers that this centre was formed a year ago at the request of my teacher and friend B. Cuneo, *professeur agrégé* in the Medical Faculty of Paris, in order to study, experimentally on animals and clinically on men, the development of grafts in pseudarthroses, the losses of bony substances, and serious lesions in articulation.

### *The Surgeon and the Radiologist.*

Radiology plays such an important part in the study of pseudarthroses that one can say without exaggeration that there are few branches of surgery, recent fractures included, in which the close, constant, coördinated and methodical coöperation of the surgeon and the radiologist is more strictly demanded. To discuss the radiological side of pseudarthroses would therefore be equivalent to going to the bottom of the study of these lesions. Now, at the present time this is not possible, for "not a single chapter of this study can be looked upon as definitely closed" (B. Cuneo). Consequently the present article has no other aim than to show which are the problems set the radiologist by the surgeon and the way in which the former must strive to solve them.

It seems fairly difficult, from the radiological as well as from the clinical point of view, to give a precise definition of pseudarthroses. According to Pl. Mauclair there is a *pseudarthrosis* when the deviation between the fragments does not exceed 3 cm.; there is *loss of substance* properly so called when there is more than 3 cm. deviation between the bony extremities. The first conception that must be gained in the case of pseudarthrosis is the conception of non-consolidation. Radiological diagnosis between simple retardation of consolidation and definite absence of consolidation is often impossible; it is therefore advisable to perform successive examinations, say one each month. If at the end of several months the extremities of the bones not only do not present any apparent growth, but even seem to be decalcifying and becoming atonic, it is possible, in view of this retrograde process, to discuss the possibility of definite non-consolidation. Moreover, it is well to dis-

tinguish *pseudo-losses of substance* by lengthening of the limb amongst *true pseudarthroses* when the bones are in contact from *true losses of substance*; they are easily reducible and have only been ascertained in the case of the humerus.

### *The Types of Pseudarthrosis.*

From the radiological point of view two principal types of pseudarthroses may be distinguished. According to the aspect of the bony extremities, they may be classified into: (1) pseudarthroses where the more or less fine bony extremities, sometimes lanceolate, sometimes regularly transversal, do not present any growth, whether they are in contact or at a distance from each other; (2) pseudarthroses where the bony extremities on the contrary present bony proliferations recalling articular extremities and presenting at first sight a more or less perfect (Obs. 232) and more or less close pseudo-articulation.

Sometimes, when there is a deviation between the two fragments, one may find, when very soft rays are used, traces on the plate of an opaque trail which might be remains of superiosteal resection for removal of splinters (Obs. 320), for in the huge majority of wounded where the fractured bones have not united splinters have been freely removed, mostly within 48 hours of being wounded. Sometimes the intervention occurs of a fibrous or osteofibrous callus between the two fragments, not sufficiently thick to appear as a shadow projected on the radiograph. This fibrous, invisible callus of slight density may in time and under certain circumstances become progressively ossified; it may be considered as intermediary between a very soft fibrous callus which allows of a certain mobility of the diaphysis, and a bony callus which in time becomes a vicious callus in consequence of secondary deformations at the point of fracture or resection. In fine, all intermediary states between pseudarthrosis in which the fine extremities are not joined by any visible tissue and badly set fractures are found with a more or less soft fibrous tissue or, on the other hand, more or less ossified. In these circumstances it seems impossible to attribute any radiological pathognomonic character to pseudarthroses.

As a result of radiological examinations the arrest of ossification has been noted several times and seems more established. Such a bony extremity which seemed to be putting forth growth halts in its expansion in the articular type; another ends in a transversal shaft or in an oblique spire without proliferation. One would think that the two bones were struck into sterility, with impossibility of forming any conjunction. This phase betrays itself very often on the plates by the closing of the medullary canal, as in amputations. From the radiological point of view it is important to study the medullary canal throughout all its length. One sometimes finds several centimetres from the pseudarthrosis spots where the medullary canal seems closed a second time, as in certain cases of infantile osteomyelitis. (Obs. 46.) In general the bony tissue is less thick and more transparent than usual; it is decalcified. But it is to be borne in mind that even with a normal radiological appearance the bone may be found very pliant, "like cardboard," at the moment of intervention, or actual operative interference. (Obs. 283.)

On the other hand, under a linear aspect, a bone may appear not joined, and another bone may appear to be growing and joined on the plates, whilst intervention shows the contrary. (Obs. 333.) In a case of double pseudarthrosis of the forearm, the radius, which on the radiograph appeared consolidated, proved on intervention to be mobile in a pseudarthrosis of the close type; whilst the ulna, which appeared in linear aspect on the radiograph to be without growth, was found to be quite solid.

Many wounded men have come to the prosthesis centre with osseous fistulas; the radiograph has made it possible to recognise the *splinters*—but without giving assurance whether they were adherent or not—and above all the *sequestra* with their characteristic bell-like shape, bony islets



surrounded by a clear zone. (Obs. 13.) The X rays have permitted the observation of the results of preliminary operations for osteitis, performed before the actual operation of bone-grafting.

#### *Radiological Study of the Deformations and their Reduction.*

Some writers have thought that the decalcification or osteoporosis of the extremities in cases of pseudarthrosis might be due to a lesion of the artery nourishing the bone. Examination of the plates enables us to invalidate this opinion, which Pl. Mauclore had already placed in doubt. Contrary to the opinion of M. Chutro, the best argument lies in the verification of osteoporosis and decalcification at a distance, outside the bone attacked by pseudarthrosis. Observation 71 is typical: there exists a decalcification of the radius, but also of the carpus and metacarpus as marked as of the radius, recalling the appearance of certain tuberculous "rheumatisms." It is certain that lesion of the artery nourishing the radius cannot be made responsible for these lesions. Perhaps the ligatures of the great trunk arteries of the limbs are more important.

The X rays give us information about some certainly rare results of the forms of treatment given to the wounded

determine the frontal and lateral correspondences on which the graft is to be made.

It may be laid down as a rule that in all cases where a bone has suffered loss of substance there is produced automatically a frontal deformation and often a deviation from the axis on the part of one or both fragments. It is most important to investigate these deformations in order to correct them as far as possible before intervention. We have here an indication not to put off intervention too long in the case of wounded men; the deformations are the more marked and difficult to reduce the older the cases are. Experience shows that this reduction of deformity cannot always be made at the moment of intervention, even with the powerful forceps of the Heitz-Boyer or B. Cuneo types. As a matter of fact, the deformities would inevitably have a tendency to reproduce themselves, after reduction, accompanied by much loss of blood, under anaesthetics. On the contrary, the facts show that the reduction of bony deformations before operation in pseudarthroses must be slow, gentle, with continuous progressive traction. The devices invented by P. Rolland, head of the laboratory of the Centre for Osseous Prosthesis at Cannes, are based on this idea. But if the general principles are



FIG. 1.—Deviation of the inferior segment of the radius in consequence of a loss of substance of 10 cm.

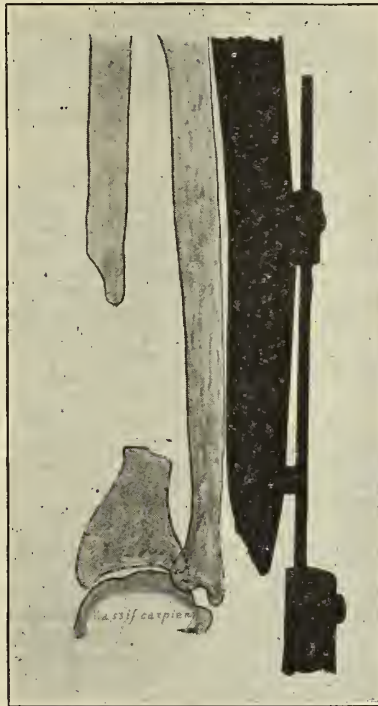


FIG. 2.—Progressive reduction of the displacement of the inferior fragment of the radius in Fig. 1 with the aid of a corrective appliance with screws applied to the ulnar side and over the metacarpal bones.



FIG. 3.—Pseudarthrosis of the ulna. The plate shows the deviation of the superior fragment of the ulna towards the radial diaphysis. There is a separation between the radial cupule and the humeral condyle, and there is also a subluxation outwards of the radial cupule.

before their admission to the centre for bony grafts: *Very prolonged immobilisation* or *simple removal of morbid parts*, with the same hopeless state of sterility of the bony extremities, verified by radiography for several months in succession; *bone sutures after suoh removals* with wires which end either by breaking or by sawing through the bony extremities which they are intended to keep in contact (Obs. 18); *application of metallo plates*, which sometimes produce, on the side opposed to the plate, proliferous osteitis, often of great size (Obs. 500), presenting the appearance of an inflammatory type of osteitis; *application of clasps*, which in spite of their perfect application have not been able to bring about (Obs. 285) any bony proliferation of the extremities; *pegging with ivory or segments of the fibula*, in spite of which the mobility has persisted. (Obs. 320.)

Far more important than the information given as to the structural state is the radiological study of the *deformations of the bone before operation*. Examination by X rays is here of capital importance. Clinical examination alone cannot

uniform, the application is and must be particular to each case, after examination of the plates. And so X rays are wanted first of all to ascertain the deformations in such a way as to give instructions for constructing the apparatus, then in order to judge of the successive advances of the reduction, and lastly in order to decide on intervention when the maximum reduction has been attained.

#### *Prevalent Deformities of Particular Limbs.*

It is interesting to note for each limb the deformations most usually ascertained on the plates.

*Forearm.*—Pseudarthroses of the radius, especially in its middle part, without and still more with loss of substance amounting even to several centimetres, produce a deformation which may be called characteristic. (Obs. 71.) Viewed from the front the inferior radial fragment has a marked inward deviation, and its superior extremity places itself before or behind the ulna. This deformation is sometimes so great that it can be felt on the ulnar edge of the forearm.



(Fig. 1.) There follows an ascension of the radial styloid which, instead of being below the ulnar styloid, reaches the same or even a higher level; there is a projection outwards from the carpal group. Viewed laterally, it sometimes shows on the plate exactly like the back of a fork on the posterior or anterior face of the forearm. However marked these deviations may appear on the radiograph, they are generally reducible by means of the apparatus of P. Rolland. (Fig. 2.) As for the superior fragment of the radius, it is in general less inclined towards the ulna; it is often found in light flexion, and most often in rotation; on the whole, a radius is found in pronation as regards its inferior fragment and in supination as regards the superior fragment. From the radiological point of view it is difficult to estimate the amount of supination of the superior fragment; it is therefore advisable in such cases to take plates of the limb on the healthy side in absolutely pronate and supine positions as well as in intermediate positions, in order to judge by comparison, relying above all on the bicipital tuberosity. (Obs. 407.)

Losses of substance of the ulna may bring about a falling back of the superior humeral fragment, together with a raising of the inferior fragment on the anterior face of the forearm. (Obs. 246.) Laterally there may exist a deviation of the two fragments of the ulna towards the radius, forming the shape of a capital K. (Obs. 401.)

But whether the radius or the ulna be involved, it is important to recognise one fact which is marked at the outset and only accentuated in the sequel—viz., the incurvation of the healthy bone in isolated pseudarthroses of the forearm. Radius curvus is extremely frequent in pseudarthroses of the ulna, and ulna curva in pseudarthroses of the radius. They may be observed even with a minimum loss of substance. (Obs. 317.) The incurvation may be axial, causing the interosseous space to disappear (Obs. 16), or peripheral. In the course of intervention any attempt at reduction is most difficult, if not impossible. Obs. 36 is characteristic on this point:

"Wounded man presenting pseudarthrosis with inward deviation of the radius, in contact with the ulna. After resection of the fragments it is impossible, in spite of all efforts, in the course of the intervention to put the two fragments in direct prolongation of each other."

It must be added that an incurved radius or ulna has a quite natural tendency to become exaggerated in the sequel. Consequently B. Cuneo does not fail to draw attention in the discharge papers of wounded men who have declined intervention to the possible aggravation of the ulterior functional prognosis.

Both in simple pseudarthroses and in double pseudarthroses (Obs. 15, 30) one can observe radio-ulnar synostoses. Always more marked, more extensive, and more dense at the time of intervention than appears on examination of the radiological plates, these synostoses are in themselves causes of super-added deviations.

With all these deformations, exaggerations of pronation and supination, incurvations and synostoses, reactions on the adjoining articulations are naturally expected. With regard to the articulation of the wrist all degrees of subluxation may be found; external subluxation pushing the cuneiform and the pisiform within the axis of the ulna and causing the ulnar styloid to rise beneath the skin (Obs. 264)—internal subluxation with the scaphoid and semilunar separated from their facets at the inferior extremity of the radius. (Obs. 100.) With regard to the articulation of the elbow, an external radio-humeral subluxation can be verified. (Obs. 15, 84.) (Fig. 3.) The older the pseudarthroses involved, the more frequent and marked are the subluxations.

*Upper arm.*—Solutions of continuity of the humerus have as corollary a forward flexion of the inferior fragment on the fold of the elbow; the flexion may exceed 45°. (Obs. 66.) This swing of the inferior fragment is also accompanied by an inward or outward twist. It is useful to know this fact in order to interpret the plates, which on a first examination would give the impression of a lesion of the elbow, whilst it is really a matter of a faulty position. On the other hand, it is hard or even impossible to correct this faulty position at the time of taking the radiograph, for this torsion is sometimes accompanied by an ankylosis (at least functional) of the elbow; the olecranon then appears hidden by the epicondyle or the epitrochlea, whilst it ought to appear clearly disengaged below the condyle or the cochlea.

(Obs. 31.) This deformation is common in pseudarthroses of the middle third, but especially so in those of the inferior third; it is then often combined with a twist or deviation from the axis of the superior fragment. As to abduction of the superior fragment, it has been verified particularly in pseudarthroses of the superior third.

*Thigh.*—Two deviations are particularly met with in pseudarthroses of the femur: *abduction of the superior fragment and backward lapse of the inferior fragment.* (Fig. 4.) The abduction takes place in pseudarthroses situated high up (Obs. 135) or pseudarthroses of the lower third. (Obs. 59.) It is progressive and very difficult of reduction, either under chloroform or by means of corrective apparatus before operation. The same is true of the lower fragment; its reduction is very difficult in pre-operative stage.

*Leg.*—The deformations of the leg recall the usual deformations in fractures: flexion and backward swing of the fragments. Sometimes there is conjoined with it either an attraction of the tibia towards the fibula forming the picture of a capital K, or, on the contrary, a lozenge-shaped separation. But it is above all important to examine the articular modifications at the level of the knee and the instep. At the knee there may exist either an internal subluxation (Obs. 88), or a marked separation between the external condyle and the external tibial plateau (Obs. 126). At the instep there may be an outward lapse of the astragalus; with regard to the fibula, the tibio-fibular diastasis must be investigated.

#### *The Responsibility of the Radiologist Before and After Intervention.*

Such are the bone deformations which may be met with in pseudarthroses before intervention. From the point of view of radiological technique there follows for the radiologist the indication to take a plate of the whole bone segment (diaphysis and epiphyses) and of the nearest articulations. It is very frequently useful to take a plate of all the opposite healthy bone segment in order to judge of the often very small differences in the articular relations. Moreover, the radiologist must strive to place the limb to be radiographed in the most favourable anatomical position. Where this is impossible *stereoscopic radiography* is useful to allow of estimating the relationships of the two fragments to each other and the mutual obliquity of their separation. Finally, in the case of lengthening or shortening of the limb *radioscopic examination* can be useful before intervention, in order to mark on the skin the point corresponding to the pseudarthrosis, so as to permit the surgeon to centralise his incision. In general all plates (from 30/40 to 13/18) are reduced to glass positives 9.12. They are more easy to read as a series, especially with a strong magnifying glass. Stereoscopic plates are reduced to glass positives 45/107, so as to be examined as a series in a Richard's taxiphot.

According to the practice of B. Cuneo intervention consists in taking an inlay from the tibia, of such length and breadth that it can be fixed in the two grooves cut in the superior and inferior fragments of the bone to be grafted. P. Rolland's apparatus made by the firm of Barriquand and Marre, a first model of which has been presented to the Surgical Society by B. Cuneo,<sup>1</sup> allows with the greatest precision of cutting mortises and inlays from an inlay of 21 cm. in length by 15 mm. in breadth placed on a tibia (Obs. 293), to an inlay 3 cm. long and 3 mm. broad placed on a phalanx. (Obs. 319.) The fixation of the inlay in the mortises is performed by means of metallic cables of soft galvanised steel either round the bone or through the bone by means of drilling. In order to be immobilised as rigorously as possible the limb is finally placed either in P. Rolland's appliances of moulded leather or in plaster appliances.

B. Cuneo teaches that in order to obtain a good result there must be intimate contact between the faces of the inlay and the mortises, so as to establish reciprocal penetration of the vessels of the recipient bone into the inlay. But above all things this contact must be very prolonged (nearly a year) and remain as perfectly intimate as possible. Now, after intervention, as the result of hæmatoma or of suppuration in the first days, after cicatrisation following on muscular atrophy in the following months, the volume of the member placed in the containing appliance may vary as

<sup>1</sup> B. Cuneo: Soc. de Chir., June 25th, 1918.





FIG. 4.—Pseudarthrosis of the femur. The superior fragment is in abduction, the inferior in adduction.

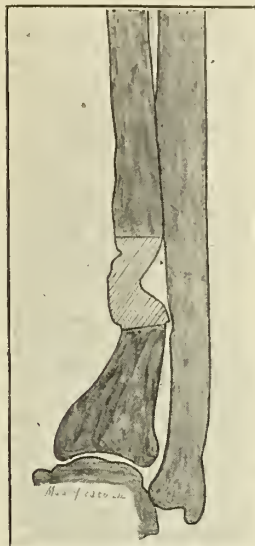


FIG. 5.—Osteoperiosteal graft of the radius performed without previous correction. The plate shows the disappearance of the inter-radial interosseous space. There is also an ascension of the radial styloid apophysis.



FIG. 6.—Pseudarthrosis of the tibia. Bony graft performed without reduction before intervention. After intervention, in which the reduction was only temporary, progressive post-operative deformation.

2 to 1. Radiological examination is indispensable to know whether the graft has remained in its proper place and in proper contact with the bony extremities. It is advisable to watch it by repeated examinations; the radiograph only allows us to know whether the inlay has really remained in contact. If there is any slight displacement the plates show us in which direction it must be reduced when bringing a fresh appliance into use. Radiological examination is all the more important in the consequences of operations for pseudarthrosis, as two factors may displace the inlay during the phase of cicatrisation—firstly, the prolonged presence of the wires sustaining the inlay; secondly, the tendency of the fragments of the bone to reproduce progressively the same deformations which we have noticed above in the examination of the bone before operation. With regard to the metal wires which sustain the inlay, radiography shows us two evolutions of the holes drilled at the time of intervention in order to pass the wires. The hole may either remain the same in size as when first drilled, or it may become enlarged in the proportion of 1 to 3. (Obs. 66.) It is clear that in these conditions of enlargements of the holes, due either to a very slow sawing action of the bone, or perhaps to electrolytic phenomena, the imperfect immobilisation of the inlay as revealed by the plates must be removed by corrective appliances. As to secondary deformations, it cannot be repeated too often that limbs affected with pseudarthrosis, even when reduced before intervention, have a tendency to reproduce the ante-operation deformations after intervention. (Figs. 5 and 6.) The same muscular, tendinous, and even cutaneous causes produce the identical results after intervention. It is desirable to watch the deviations in the containing appliances, and even sometimes to apply corrective appliances with continuous, very slow and gentle extension, just as in the attempts at straightening and correction before the operation.

#### The Technique of Intervention.

The inlay must be maintained in its proper place, directly by metallic wires operating at the point of contact, indirectly by retaining and reducing appliances which operate chiefly to hinder secondary deviations of the bone fragments and to avoid partial or total luxations of the inlay outside of the mortises. Numerous facts have shown the value of this intimate and necessary contact—e.g., the following observation (Obs. 29)—which has all the value of a real experience:—

“Wounded man presenting a fracture of the second metacarpal necessitating excision of four-fifths of the second metacarpal. In spite of subperiosteal ablation no bony regeneration. A third metatarsal was grafted in place of

the wanting metacarpal. Intervention took place on account of the non-regeneration and especially of the functional trouble of the index which placed itself faultily under the medius in flexion. Eight months afterwards a radiograph taken from the front shows that the head of the grafted metatarsal, which had at first retained its normal original configuration and structural aspect, has now become completely *atrophied*, has disappeared as to its external radial half and become rarefied and decalcified as to its internal ulnar half. But above all the radiograph of the profile

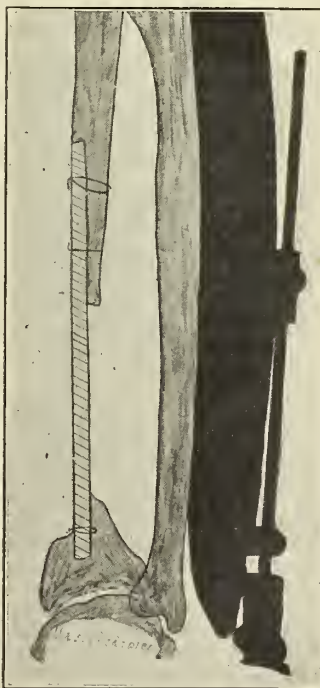


FIG. 7.—Inlay placed on a long loss of substance of the radius after reduction of the inferior fragment before intervention. (Comp. Fig. 2.) As a precaution the reducing apparatus has been left in place after intervention to prevent secondary displacements.

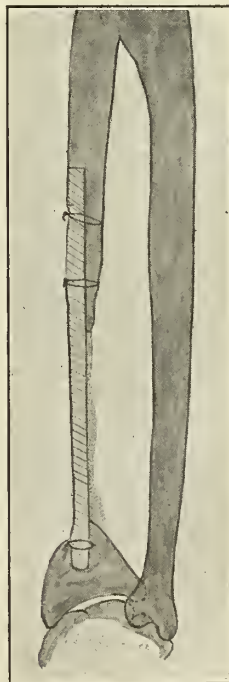


FIG. 8.—Evolution of a graft of 16 cm. placed on a loss of substance of the radius. The inlay is being sheathed progressively by the bony tissue which seems to start from the extremities of the bones on which the inlay has been grafted.



shows that the segment of the metatarsal, resting in a small groove at the base of the metacarpal, is now shifted; the grafted metatarsal is now displaced forwards and outwards in the palm, losing all contact with the stump of the metacarpal.

A second intervention consisted in placing the two bones in contact by means of a metal wire. Successive radiographs have shown that the head of the metatarsal has not only ceased its regressive process, but has also become markedly recalcified."

In this case radiography has shown that a grafted bone atrophies when it has lost its vasculo-nervous contacts with the receiving bone of the graft. But provided that the contacts are re-established, there is not only an arrest of atrophy, but there is also a marked tendency to reparation and recalcification.

As to the inlay, it follows that if the inlay dislocates itself entirely and slips out of the mortises its work on the bony extremities completely ceases. The fact is proved still better in the case when the inlay is dislocated at one of its ends and remains in osseous contact at the other. The first remains sterile and makes a new pseudarthrosis; the second continues in osseous proliferation on the good path of bony reparation of the extremity with which it has remained in contact. (Obs. 18, arm; Obs. 10, leg.) These dislocations are the more important, as they may be accompanied by fracture of the inlay (Obs. 19) at the time when the inlay is passing through a period of atrophy, regression, or softening. Further, to study the typical method of reparation of the extremities of the bone and the evolution of the inlay it is advisable to examine the plates of a case where the inlay has retained intimate contact with the mortises, without secondary deviations of the bony segments, throughout several months. (Fig. 7.) The diagram, issued by B. Cuneo to the Society for Surgery, of the evolution of a graft for loss of substance of the ulna is characteristic. In the first month one may not see any perceptible structural modification on the plates, but in the second or third month one sees two kinds of modification of the inlay. Its two bony extremities in contact with the mortises seem to be lightly atrophied, or, more precisely, appear to be becoming a little decalcified, whilst the middle part of the inlay seems to undergo hypertrophy. It must be noted that the atrophy of the extremities and the hypertrophy of the middle part occupy the medullary zone of the inlay; on the other hand, the cortical subperiosteal zone of the inlay does not undergo any modifications at this time.

At the level of the bony extremities the bones which have been cut transversely appear in the second and third month to be budding out in conical shape towards the inlay, especially on its medullary face, as if to sheathe the inlay. (Fig. 8.) It follows that the intersegmentary zone diminishes; it is easy to measure on the plates (taken at the same distance) the distance between the segments of the bone during the subsequent days and months. This distance diminishes progressively, especially in the fourth month. Later on the two bony cones come into contact, and the inlay appears like a prop which the two extremities of the bone sheathe completely. Even after a year (Obs. 18) it is easy to trace the inlay on the plates, perhaps somewhat modified as regards density and volume, in the midst of the new bony growth of the extremities.

As regards the subperiosteal cortical face of the inlay, one sees a kind of atrophy from the fourth to the sixth month, revealing itself on the plate by a wavy line which contrasts with the linear straightness of this vertical face immediately after intervention. This atrophy usually appears in the centre part of the inlay. If this atrophy is exaggerated, either as the result of too prolonged suppuration (Obs. 246) or of a loss of contact which suppresses vascularisation by tearing the newly formed vessels (Obs. 84), necrosis in the first case and reabsorption in the second may produce a sequestrum, usually lamellar, which is isolated and is very easy to remove secondarily. If these lesions reach a greater degree one can see on the plates such a loss of substance and such a degree of atrophy that the inlay may present a veritable spontaneous fracture. Finally, the entire loss of contact or exaggerated suppuration may end in either complete atrophy of the inlay and its disappearance, or in a state of free foreign body, necessitating excision. (Obs. 167.) It is possible that even with the inlay removed the bony extremities may continue to grow, as if by some osteotropic power (Imbert); the inlay has, by its temporary presence, given some proliferative power to replace sterility.

There remains the reparation of the tibia from which the inlay has been taken. Radiographic series show that the closing up of the bone is radiologically finished between the third and sixth month; by means of palpation it can often be established clinically in advance of radiology.

#### *In Conclusion.*

Such is in brief the information which radiology can give in pseudarthroses and their treatment by bony grafts. But in spite of the precision of the structural details and the knowledge about the deviations before intervention, in spite of the information furnished about the evolution of the graft and the reparation of the extremities of the bone, it is necessary to be quite clear that it does not do to ask more from the X rays than they can supply. Radiology may reveal many details, but it cannot reveal them all; once more it is only the complement of clinical observation. With these reservations it must also be borne in mind that in order to obtain the maximum of precision the plates must be examined long and often; they must be compared with each other and with cases already operated upon; in a word, a reasoned diagnosis of a radiograph must be made, bearing in mind the causes of error, deformations of the plates and superadded invisible elements. Understood in this way radiology seems to be a valuable auxiliary in the surgical treatment of pseudarthroses. As such B. Cuneo has studied it with all the authority which attaches to his work.

The French Supplement to THE LANCET—under the Editorial Direction of Professor Charles Achard, Professor of Pathology and Therapeutics in the University of Paris; and Dr. Charles Flandin, D.S.O., Médecin-Major de 2me Classe, Chef de Clinique à la Faculté de Paris—has appeared on the dates given in the following list, which sets out the titles and authors of the contributions:—

Sept. 21st, 1918: (1) The Microbic Diversity of the Enteric Fevers, by Professor Achard. (2) Post-Typhoid Atony of the Cæcum, by Maurice Loeper, Professor of the Faculty of Medicine and Physician to the Paris Hospitals.

Oct. 19th, 1918: (1) What the War has Taught Us about Tetanus, by Louis Bazy. (2) Tetanus Consecutive to Superficial Wounds and to Trench Foot: Treatment and Prevention, by Professor Raymond, Médecin Principal de 2me Classe.

Nov. 30th, 1918: (1) General Review of French Cardio-Pathology during the War, by Ch. Lanby, Physician to the Paris Hospitals, Médecin Major de 2me Classe. (2) Methods of Estimating Augmentation in Depth of Volume of Left Ventricle, by Dr. Bordet, Director of the Radiological Laboratory of the Centre of Cardiology of Professor Vaquez, Hôpital St. Antoine.

Jan. 11th, 1919: (1) Gunshot Concussion of the Spinal Cord, by Henri Claude, Professor in the Paris Faculty of Medicine, Physician to the Paris Hospitals; and Jean Lhermitte, formerly Chef de Clinique in the Paris Faculty of Medicine. (2) Contribution to the Study of the Manifestations of Emotional Shock on the Battlefield, by Cl. Vincent, Physician to the Paris Hospitals, formerly Medical Officer to the 46th and 98th R.I. and to the 44th B.C.P.

March 1st, 1919: The Surgical Complications following Exanthematic Typhus, by Dr. Paul Monre and Dr. Etienne Sorrel, Prosecutors to the Faculty of Medicine, Paris, Médecins Aide-Majors de 1re Classe, Surgeons to the French Hospital at Jassy.

April 5th, 1919: (1) Nervous Complications of Exanthematic Typhus, by A. Devaux, formerly Interne of the Paris Hospitals, Médecin-Major de 2me Classe. (2) Note on the Epidemic Diseases Observed in Rumania during the Campaign of 1916-17, by Dr. Henri Vnilet, late Interne of the Paris Hospitals.

May 3rd, 1919: (1) Malaria During the War, by G. Paiseau, Médecin-Major de 2me Classe. (2) Distribution of Soldiers, Temporarily Unfit through Malaria, in Agricultural Colonies, by Professor E. Jeanselme. (3) Studies on Renal Function in Chronic Nephritis, thesis by Pasteur Vallery-Radot, reviewed by Professor Charles Achard.

June 21st, 1919: (1) Recent Work on Cerebro-spinal Fever, by C. Dopter, Professor, Val-de-Grâce, Médecin-Chef to an Infantry Division. (2) Meningococcal Rheumatism and Arthritis, by Dr. Paul Sainton, Physician to the Paris Hospitals.

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# THE LANCET.

LONDON: SATURDAY, AUGUST 23, 1919.

## Small-Pox on the Continent.

THE recent increased incidence of small-pox on the continent of Europe is likely to give rise to some uneasiness among those who are acquainted with the comparatively unprotected state of a large section of our population against the onset of this dangerous and infectious disease. The present circumstances, as we have on previous occasions pointed out, are entirely favourable to the spread of small-pox to our shores. Hundreds of thousands of soldiers are returning from the various war zones, in some of which small-pox has lately been occurring, and the pent-up trade and shipping, so long restrained by the war, are now being let loose and bringing many passenger ships and cargo boats to British ports from the Mediterranean littoral, the Baltic, and the Black Sea, in all of which regions small-pox was recently, or still is, occurring in epidemic form. A brief outline of the incidence of small-pox on the continent during the first half of the present year, so far, at least, as information is available, may help the reader to gauge the extent of the danger already threatening this country—a danger which in the late autumn may, in our opinion, become still more acute and menacing.

Up to the middle of June 2586 small-pox cases had been notified in Germany, of which 734 were referred to the city of Dresden, which lies not very far from the borders of Austria. The disease has also been occurring at several ports along the German shores of the Baltic, including Danzig, Stettin, Swinemünde, and Königsberg. In the interior outbreaks were reported in several cities, among which were Berlin, Baden-Baden, Aachen, Leipzig, Frankfurt, and Hanover. At the last-named town the outbreak began in a camp in which Russian prisoners of war were interned. Previous to the war Germany occupied a high position as regards its vaccination and revaccination, and its resulting comparative immunity from the ravages of small-pox, notwithstanding frequent importations of the infection from Russia and Austria. The withdrawal for war service of many medical practitioners in Germany from practice and from public appointments, including that of public vaccinator, no doubt served to upset the routine arrangements for vaccination and revaccination. Another factor favouring recent small-pox in Germany has been the presence of large numbers of unvaccinated Russian prisoners of war, whom, even after the cessation of hostilities, it was impossible to repatriate. Very little information has come to hand from Austria, but small-pox is known to have been recently prevalent in Vienna, Prague, and other places. At Budapest, the Hungarian capital, there has been a sharp outbreak of the disease. Italy of late has been, and still is, suffering from a widespread epidemic of small-pox. In the seven weeks' period ended July 6th 4645 cases of the disease were reported. During the month of June small-pox occurred at some Italian ports, including Bisceglia with 232 cases and Taranto 335 cases, both ports being situated on the Adriatic coast of the province of Bari. At the

Sicilian port of Trapani 230 cases were notified during the month. Outbreaks also occurred at a number of towns, including Naples and Pagani. In Greece small-pox has been prevalent at Salonica, where 42 deaths have been certified from it; cases have also been occurring at the port of Cavalla and on the island of Corfu. There has been a recent epidemic of small-pox in Roumania, and in the four weeks ended July 15th 1595 cases were reported with 553 deaths, giving the high fatality rate of 34.6 per cent. The disease was also present at Bucharest and Jassy, as well as at the ports of Galatz, Braila, and Constanza.

Owing to the Bolshevik regime in Russia little information is allowed to pass over the frontier as to the incidence of infectious diseases. It is, however, a well-known fact that for many years small-pox has been more prevalent in Russia than in any other European country. With the suppression of sanitary administration and the disregard of scientific advice by those now exercising power in various parts of Russia, small-pox has become more prevalent at the present than in the past. Indirectly we have heard that the hæmorrhagic form of small-pox, notoriously attended with great mortality, is epidemic in the town of Simbirsk, which lies about 400 miles east of Moscow. In Southern Russia outbreaks have occurred at Ekaterinodar, in the province of Kuban, and at the Black Sea port of Novorossick, some 90 kilometres from Ekaterinodar. Small-pox is at present epidemic in Finland, and during the first three months of this year 778 cases were recorded, 372 of which occurred in the province of Viborg, which adjoins the Russian Government District of Petrograd. In Sweden small-pox has appeared at Stockholm and also in Denmark at Copenhagen. The disease, though not in large amount, has been reported to be present in Belgium during each of the first five months of 1919. There have been recent outbreaks of small-pox in France, and among the places invaded were Paris, Toulon, Brest, and Havre. Spain frequently suffers from epidemic small-pox, and in the present year some of the large towns were affected; in Madrid, for example, 81 deaths from this cause were reported during the first quarter, and outbreaks also occurred in the Spanish ports of Cadiz, Barcelona, and Valencia; at the last-named port 568 cases were recorded in the first three months of 1919. The disease had been epidemic in Portugal towards the end of 1918, and this continued during the first half of the present year, 160 cases being reported at Oporto and 116 at Lisbon. Little information has come to hand from Turkey, but indirectly we hear of small-pox having occurred recently in Constantinople, as well as in some places in Western Anatolia. In addition, as the voyage to England from Egypt can be done in less time than is represented by the incubation period of small-pox, there is a possibility of the infection being introduced into our own country from this source before the disease can be recognised. Up to the beginning of June close upon 3000 small-pox cases had been recorded in Egypt, and of these 500 occurred in the fortnight ended June 10th.

It is probable that if the pre-war sources of information had been available now the above details of the small-pox incidence would have been greatly extended. But the figures we have given will suffice to show that many countries in Europe are now suffering from small-pox, and that a



number of ports in the Mediterranean and along the Atlantic shores of Europe, as well as in the Baltic and Black Seas, are infected by small-pox, and therefore possible sources of infection for this country. Meanwhile, the disregard in England of vaccination and revaccination continues as before, and the unprotected proportion of the people increases day by day. In THE LANCET of Aug. 16th Dr. W. McCONNEL WANKLYN, a recognised authority, gave some useful notes on small-pox for the assistance of general practitioners. He directed attention to the numerous outbreaks of the disease which have occurred this year in England and Wales, due in some instances to imported infection. He emphasised the importance of a correct diagnosis, missed diagnosis being a frequent source of the spread of the disease. In the same issue we reproduced a memorandum recently sent out by the Ministry of Health on "The Public Supply of Vaccine Lymph," explaining how lymph may be obtained without delay, by those medical officers who are called upon to deal with local small-pox cases, for the vaccination or re-vaccination of contacts and other persons in the invaded locality. This memorandum is timely, and will prove of service to those concerned. As we have already stated, the small-pox danger is more likely to become acute in this country in the latter months of the year.

### Food Preservation in Relation to Accessory Factors.

THE busy and fruitful researches which are being carried on at the present time in regard to the kind and degree of accessory factors in the common dietary are rapidly suggesting that our methods of food preservation in some directions need revision. For example, it is shown that the value of canned vegetables in regard to antiscorvy and growth-promoting properties is negligible. That, at all events, is the purport of an investigation which we publish this week by Dr. MABEL E. D. CAMPBELL and Dr. HARRIETTE CHICK. It is here shown that in the case of runner beans the antiscorbutic value of 20-g. was reduced by canning to less than that of 5 g., and was not superior to 1.5 or 2.5 raw beans. In other words, this preserving process means that 75 to 90 per cent. of the antiscorbutic value had been destroyed. In the case of cabbage the loss is estimated at about 70 per cent. of the original value. This loss is attributed to the destruction of antiscorvy factors occurring during the heating involved in the process of canning, and a further loss occurs during the period of storage. In the case of green leaf vegetables possessing in addition to the antiscorvy vitamine the growth-promoting accessory factor, this was also lacking in the canned material, but was present in the liquor. It would seem undesirable, however, to take the liquor on the ground conceivably that it might be contaminated with metal, though this difficulty may be got over by lacquering the tins, as is done in some cases, or coating them lightly with an innocuous varnish. The results in regard to the deterioration in canned vegetables in growth-promoting and antiscorvy factors are strikingly brought out in a table. In the majority of instances the process of canning reduced the protective power against scurvy to a negligible quantity and the growth-promoting properties were likewise much diminished. The well-known method of preserving vegetables by brine and vinegar is not referred to;

nowhere in these important researches do we find pickles mentioned. It would be interesting to have determined whether the activities of the food accessory factors in vegetables preserved in salt and vinegar are disturbed. The investigation should of course include walnut, cabbage, onion, beetroot, all of which, in their fresh state, are protective against scurvy. In the records previously published<sup>1</sup> pickles appear to have been disregarded. Admirable additions to certain foods, it would be interesting to discover whether they fill a gap also by supplying accessory food factors. If so, there is greater reason for consuming them than on the mere ground of condimental value. Pickled vegetables, of course, may well be distasteful to the animals selected for the experiments, but this technical difficulty occurred in the investigation of dried fruits, when it was overcome by making decoctions, the liquor obtained being administered to the animals by means of a syringe. The same procedure, perhaps, could be adopted with pickles, and an evaluation of antiscorbutic and growth-promoting principles obtained.

In a second contribution by Dr. HARRIETTE CHICK, Miss E. MARGARET HUME, and Miss RUTH F. SKELTON on the Antiscorbutic Value of some Indian Dried Fruits it is shown that the dry tamarind, cocum, and mango possess a definite but small antiscorbutic value. This value is greatly inferior to that possessed by raw cabbages, swedes, germinated pulses, orange juice, lemon juice, but equal or superior to that of carrots, beetroots, cooked potatoes, raw meat juice, reckoned weight for weight in the natural conditions. This investigation was undertaken early in 1917, at a period in the war when scurvy was proving a serious menace to our native troops in Asia. In the Afghan Boundary Commission in 1884-1886 it was observed by Major-General Sir HAVELOCK CHARLES that a freedom from scurvy was enjoyed by the native soldiers who consumed dried mango when fresh fruits or vegetables were not procurable, and these investigations show that the dried mango is to some extent protective, but with nothing like the power of fresh fruit or their juices.

Some valuable observations, again, occur in a third contribution on the subject by Miss ROSAMUND E. BARNES and Miss E. MARGARET HUME, who have in their investigation set out an interesting comparison between the antiscorbutic properties of fresh, heated, and dried cow's milk, the subjects of these nutritional experiments being guinea-pigs and monkeys. The dried milk used was prepared by a process involving the use of a high temperature, which, amongst other things, destroys enzymes, coagulates albumin, and separates fat. It would be well before deciding upon the position of dried milk to examine the milk powder obtained by the spray process, which, being conducted at a relatively low temperature, may possibly secure the retention of antiscorbutic principles. If so, an important differentiation between these methods of drying may be established. At the outset cow's milk, even when fresh, proved to be a foodstuff comparatively poor in antiscorbutic properties. Dried milk was still less protective, and "scalded" milk was superior to it. This observation bears, of course, upon the practice of just boiling milk and setting it to cool rapidly before giving it to infants. Apparently, however, raw milk varies in its accessory food factor value according to whether the cow has received a winter dietary (hay, roots, oil-

<sup>1</sup> THE LANCET, July 5th, 1919, p. 23.



cake, and cereals), or the early summer dietary of fresh grass from the open pasture. In other words, the great increase of antiscorbutic material in the latter diet resulted in a corresponding increase in the antiscorbutic value of the milk given. It is true that these observations are not based on experiments on the human subject, and as Mr. E. A. BARTON points out in a letter published in another column, there seems to be no doubt that animals suffer from the deprivation of the antiscorbutic vitamin in their food much more rapidly and severely than does the human infant. It is to be remembered that the animal diet in the main is raw and growing food. Whether the human mother is able to transmit a tolerance in her infant to a diet poor in vitamins, or whether the human young require much less than other animals to keep them in health is, as Mr. BARTON points out, pure speculation; but there is a probability that when infantile scurvy has advanced to the stage of physical signs we have arrived at the last chapter of the disease and not the first. A valuable region of study in dietetics is being opened up by these investigations.

## Unqualified Treatment of Venereal Disease.

AT the London Sessions recently two men, J. SHADFORTH and J. WILSON, were convicted and sentenced to imprisonment in the second division for four and three months respectively, for offences against the Venereal Diseases Act, 1917. The Act, it will be remembered, forbids the treatment of venereal disease by persons who are not qualified medical practitioners, in areas in which the Act is adopted and in which gratuitous treatment for such disease is provided. The Act also forbids the advertisement of treatment and alleged remedies for venereal disease. The defendants were described as "chemists," engaged in a business conducted under the name of Shadforth's Prescription Service, Ltd. SHADFORTH called himself the "governing director," and stated that he employed a staff of 50 persons. The nature of the business transacted by "a prescription service" is probably indicated by its name and by the fact that SHADFORTH advertised in a daily newspaper a variety of alleged medicines for the treatment of disease, including one described as prescription 606, with a recommendation of it as a "bad blood tonic." In a pamphlet, the purchase of which was recommended by the same advertisement, occurred the passage "even syphilis in most instances can be cured by the patient himself, with practically no supervision, provided he is told at the outset in plain English what to do and what remedy to take." At SHADFORTH'S shop detectives were able to purchase tablets purporting to be those advertised as 606, and one of them was told by WILSON that it was the best he could have for syphilis. As to the tablets being advertised for bad blood without mentioning syphilis, WILSON explained: "Well, we could not put that in, could we?" As a point of law it was submitted that the section of the Act involved referred to actual dealing with a person affected by venereal disease, and that there was no evidence of treatment, prescription, or the giving of advice. Mr. LAURIE, the deputy chairman, however, declined to withdraw the case from the jury, with the result recorded above. The verdict followed after SHADFORTH had himself gone into the witness-box and had stated with considerable

candour that he had done his utmost to oppose the passing of the Venereal Diseases Act, 1917, by writing letters to Members of Parliament, and even by standing himself as an independent candidate for election to the House of Commons. Since the Act became law he had written to every Member of Parliament to inform him that he intended to defy the Act, but he alleged that he had since changed his attitude and had decided to comply with the law, although continuing to protest. He denied that he had advertised "606" with any intention that it should be taken to have any relation to salvarsan, and said he had forbidden his assistants to sell remedies for venereal disease. He admitted, however, that in a letter to Sir EDWIN CORNWALL he had written, "For many years I have openly, honourably, lawfully, and successfully supplied the remedies and treatment for venereal diseases."

The result of this prosecution is one upon which the public and those concerned in the passing of the Venereal Diseases Act, 1917, are to be congratulated; the case shows "Shadforth's Prescription Service, Ltd.," to be one of those institutions conducted for profit, and no doubt with considerable profit, the activities of which are dangerous to sufferers from venereal disease, and so to the public. SHADFORTH said in the witness-box that he had made a special study of venereal diseases. No doubt he had, from his point of view. If he had studied them from the point of view of the medical profession, however, he would have recognised willingly that syphilis and gonorrhoea and their complications cannot, consistently with the welfare of the patient, be dealt with by a shop assistant selling tablets over a counter, or posting them, to one who applies for them in response to an ingenious advertisement. We are writing of particular diseases for sufferers from which a limited form of protection has tardily been provided by Parliament. Our view and that of the medical profession is, however, without any qualification, that whatever may or may not be the matter with the patient, he cannot be treated properly, and he ought not to be treated at all, by an unqualified person, who sells him a nostrum for profit in response to his statement that he is suffering from —. He may name any disease from which he fancies that his symptoms proceed, and, indeed, he may name it correctly, but a physician before prescribing for him would require to know more about his condition than that. Diagnosis is not as simple a matter as the labelling of the bottles and pill-boxes that the quack sells. Of course, in trifling cases, or where the patient has nothing the matter with him, the credulous purchaser may suffer only in his pocket. He may be sold something which, if costly, is quite harmless; but even then he is likely to acquire a habit of self-treatment that may one day prove his undoing. All this is quite well known to the medical profession, but we comment on the case because these are the sort of incidents that our readers ought to bear in mind when advocating firmer legislation in the repression of quackery.

## INDEX TO THE LANCET.

(VOL. I., 1919.)

WILL those subscribers who have written to the Manager asking for copies of this Index kindly note that it was given in the issue of THE LANCET of July 5th and is not printed separately, thus reverting to pre-war custom?



## Annotations.

"*Ne quid nimis.*"

### "THE OSLER MEDICAL LIBRARY."

A DISTINGUISHED foreign physician attended the recent Osler presentation ceremony at the Royal Society of Medicine, fully believing that the undergraduates from the University of Oxford would be present in swarms and that the occasion would be marked by noisy demonstrations in honour of a great teacher. He was not so much disappointed as puzzled by what actually happened. No noisy students were present and the proceedings were simple, dignified, and not unmarked by a touch of pathos in Sir William Osler's charming and characteristic reply to Sir Clifford Allbutt, after the latter had handed him the Birthday Book. Sir John MacAlister struck a right note in the chorus that greets the Regius Professor of Medicine at Oxford on the occasion of his seventieth birthday. This contribution to the Osler Birthday Book is a brilliant essay in Utopianism. Sir John MacAlister dreams a dream and imagines himself the guest of the librarian of an ideal Osler Medical Library, situated in Regent's Park. It is a palace with a Greek portico, and in the centre of the great inner quadrangle stands a noble marble statue, which at first the dreamer mistakes for the "Hope Asklepios," but soon recognises as a living, smiling William Osler. "I could have sworn," he says in ecstasy, "that one of those wonderful eyes solemnly winked at me." The wink gives the cue to the further experiences inside the remarkable building which contains a magnificent collection of books, besides printing presses, a bindery or binding-room, telephones galore, and a system of pneumatic tubes so designed as to drop volumes at the proper instant of time in front of the pampered researchers at their desks in the large main library. These tubes manifestly do the work of the grey matter in the brain: they are the thinking machine of the ideal library. Librarians are there, it is true, but we feel from the first that these persons are only a kind of mechanics or tradesmen of books, however much they may be renowned as specialists in particular branches of medical and surgical learning. The poor fellows, harassed at all hours of the working day by telephone calls, will take their meals together in a refectory and talk shop there to the ruin of their digestions and of general conversation. The noble library is very nearly dust-free, and apart from its wealth and variety, this is the best thing a library can be. The grand aim of a librarian in his house-keeping capacity should be the complete deportation of dust from his precincts, but in too many cases dusting of books only creates a local dun-coloured cloud which re-settles in the old situations. In the "Osler Medical Library" dust is removed from the volumes by damp clean sawdust which is sprinkled on their top edges: this gathers up the book-dust to be swept off the floor clinging to the particles of sawdust. In a dream the process is fine, but is it not a little perilous? Damp sawdust is difficult to regulate. If a little too wet it cakes and exudes small drops of water, which would be fatal to fine bindings. "Pulvo," fitted with the proper shape of nozzle, is the advice of our own dreamer of the model library. But Sir John MacAlister need not be taught any lessons about "pulvo," though we should like to

learn if he has any criticisms to offer, for his article is full of practical suggestions. All he tells us about the manner in which an ideal library should be catalogued is admirable, and we are glad to know that this dream-system is already virtually in use in some of the great scientific libraries. Admirable, too, is his suggestion that the records of research in the shape of literatures and bibliographies made by medical authors should be preserved by librarians. At his own library this, we believe, has been done for some years, while at the library of the Royal College of Surgeons of England Mr. Victor Plarr has catalogued all bibliographies and literatures in the printed books under his charge. This catalogue of bibliographies is a large one and has proved most useful to researchers, among others to Sir William Osler.

### ALCOHOL IN A NEW RÔLE.

THERE are some points of medical interest in the proposal to bring alcohol into prominence as a source of power. Incidentally the moment that facilities are given for its production on a large and economic scale its application would not be limited to traction and like purposes, for cheap alcohol would give an immense stimulus to many industries dependent upon it as a solvent. Alcohol for general industrial purposes, however, must be made undrinkable. The de-naturing of alcohol so that it shall be made unfit for consumption offers no difficulty, though, of course, precaution must be taken that the altered alcohol cannot be again purified and used as potable. At present the process of rendering industrial alcohol undrinkable adds materially to its cost, but recent inquiries have shown that the price of the deterrents can be considerably reduced, and our legislators could further help in this matter by imposing much heavier penalties than those now sanctioned by law for evasion of the spirits duty in any case of illicit purification of "power" alcohol to render it potable. The question is of undoubted importance, when it can be shown that although the United Kingdom may be unable to supply enough raw material to make the manufacture of "power" alcohol a commercial success, the resources of its dominions in this regard are potentially very great. The vegetable sources in the British Islands afford but a poor stock of material for the manufacture of alcohol. But in this matter the Empire could come to our aid most effectively with its vast carbohydrate productive capacity. Apart, however, from that great asset, chemists have recently turned their attention to the possibility of producing alcohol synthetically, and the results are so far promising. The starting point is coal gas or coke-oven gas, which contains a small though not negligible amount of ethylene. This can be removed by charcoal without disturbing materially the quality of the gas. The charcoal then is immersed in molten lead, which drives out the gas, which, as most students of chemistry know, was the basis of the synthesis of alcohol many years ago. That this process should be advanced beyond its stage of flask and still in the laboratory, and become a commercial proposition to-day, is a matter of some wonder even to the chemist himself. In many text-books will be found the statement that these reactions are of considerable theoretical importance, but now we are told it has been demonstrated that our gas-works are capable of yielding annually 150 million gallons of 90 per cent.



alcohol by this synthetic process, which has been proved to be commercially workable. Ethylene ( $C_2H_4$ ) is absorbed by sulphuric acid to form ethyl hydrogen sulphate. This, boiled with water, yields alcohol and sulphuric acid again. Distillation completes the process. The catalyst, that mysterious third party in chemical reactions, has been made to intervene, and the yield of alcohol then becomes greater than of "theoretical importance." Alcohol will play an entirely new rôle in our industrial and domestic affairs if these things be true.

#### A REMINISCENCE OF WILLIAM HUNTER.

Dr. Alexander Napier, the honorary librarian of the Royal Faculty of Physicians and Surgeons of Glasgow, has published in the *Glasgow Medical Journal* for July an interesting note concerning William Hunter. Dr. Napier numbers among his friends a certain Mrs. Kean, whose family is connected with the Hunters through Archibald Hunter, an uncle of William and John, and from a grandson of this Archibald Hunter, another William Hunter, she received the relics which form the subject of the memorial. They are a letter and a portrait. The letter, dated Windmill-street, March 20th, 1782, is written to one Robert Barclay, evidently in response to one from him asking Hunter to intercede with the Queen on behalf of a seaman who had been condemned to death. Hunter refused on very sound reasoning. The other relic, the portrait, is a copy of a stipple engraving by Thornthwaite, and is well reproduced in Dr. Napier's paper. It shows, as Dr. Napier remarks, a different type of face from the better known portraits, which are characterised by elegance and grace. The Thornthwaite portrait is that of a masterful and determined man.

#### DENTAL TREATMENT AND NATIONAL HEALTH.

In the report issued by the Departmental Committee on the Dentists Act attention has been drawn to the necessity of enlightening the public by every possible means as to the need for conservative treatment of diseased teeth. A committee of the British Dental Association has recently considered how this could best be carried out, and has embodied its views in a pamphlet which, we believe, has been circulated amongst education and public authorities. The committee, after due deliberation, are of the opinion that it is impossible, owing to the present condition of the dental profession, to formulate an extensive system of State dental service, and consider that, in the first place, every endeavour should be made to obtain a complete school dental service. For the latter purpose they recommend, as a rule, whole-time officers, and are of the opinion that on the staffs of the Educational Departments of England and Scotland there should be dental officers responsible for the work done in local educational areas. For the treatment of expectant mothers and of children under school age they suggest, if possible, the appointment of whole-time dental officers, and the institution, where possible, of central laboratories for the provision of dentures. The requirements of the adult population, they think, might for the present be met by an extension of the system of factory clinics, by affording support to the public dental services established by members of the profession, and by the creation in certain large industrial areas of experimental clinics. The report shows very clearly the difficulties of pro-

viding an adequate service for the whole community. It quite rightly emphasises the desirability of treating children of school age, but we consider that, important as this is, there is a greater need to deal with those under school age, for in the children of the masses irretrievable damage has often been done to the teeth before school age. A feasible plan would, we think, be to co-ordinate the work of the children's welfare committees with that of the school authorities, and make it possible for those under school age to be treated by the school dental officers. In reading the report we feel that by no means sufficient consideration has been given to the question of prevention. If we are to obtain an improvement in the condition of the teeth of the nation, it will be by teaching the individual to prevent the condition and not to rely upon a cure. One trouble is the indifference of the majority to the question of dental disease, and this can only be overcome by widespread propaganda on the harm which arises therefrom. The establishment of free public lectures and the issue of a small pamphlet written in popular language would prove of inestimable value. By this means the amount of disease would be considerably lessened and there would be a corresponding diminution in the amount of conservative dentistry required.

#### THE METROPOLITAN HOSPITAL SUNDAY FUND.

At a recent meeting of the Council of the Metropolitan Hospital Sunday Fund the Distribution Committee reported that the total amount of the Fund on August 11th would amount to £83,000, of which it recommended the distribution of £82,462 13s 8d. The amount will strike many as large, having regard to the financial situation produced by the war. Others will compare it with far smaller sums which were regarded as satisfactory totals not many years ago. If, however, we contrast its purchasing power with that of a sum of £50,000 or £40,000 before the war we realise that, generous though the public may have been in subscribing, the hospitals will receive allotments small in value by comparison with those of the past. Hospitals have been hardened to rigorous economy, but their need for it has become even greater in an epoch when science has increased their powers of usefulness and when the ravages of war have augmented the number of patients likely to crave their aid. It is a recognised function of the Metropolitan Hospital Sunday Fund to promote economy of management, and a timely recommendation of the Distribution Committee suggests that in some cases where two or three cottage hospitals are within a reasonable distance of one another they should be recommended to amalgamate with a view to more economical working. The Committee points out that the relatively small proportion of occupied beds appears to account for the high cost of treatment shown at some cottage hospitals. The recommendation is in all the circumstances a sound one. The sums allotted to individual cottage hospitals amount in some instances to between £100 and £200, the smallest being under £20. These are not large amounts for the supporters of a cottage hospital to make up if they should prefer to retain as exclusively local an institution of which they are naturally and justly proud. They might then reject with a clearer conscience the advice of the Distribution Committee, and refuse amalgamation, although the resulting economy



would mean obtaining the best possible result for their money. Apart from such voluntary renunciation, the Distribution Committee has, of course, the right to refuse to allocate money where it is not satisfied that economy is practised.

#### "THE DANGERS OF THE NEW PUBLIC HEALTH ACT."

UNDER the above heading appears an article in the July number of a well-known Roman Catholic organ, *The Month*, which shows the apprehension with which legislation, apparently good in itself, excites among a large section of our fellow-citizens. The writer takes exception to the new Act (its proper title is the "Ministry of Health Act, 1919") on two main grounds, namely:—"A. The respects in which this Act is liable to abuse through administrative action (1) on account of, perhaps, accidental vagueness in the text, or (2) on account of phrasing apparently designed to admit of large modifications in administration. B. The actual violations contained therein of (1) general first principles, and (2) definite and precise Catholic doctrine." We are in sympathy with the writer in *The Month* as to the provision made for legislation by Orders in Council, a procedure of which we have seen far too much during the war, but he is in error when he says that provision for legislation of this character is made in "no less than seven of the 11 clauses of the Act." As a matter of fact Orders in Council are only mentioned in three of the 11 clauses—namely, Clauses 3, 4, and 8—though in fairness we must allow that provisions for Orders in Council in Clause 3 are very wide-spreading. As regards objection B, we think he is somewhat in the mental condition of those who worry about crossing the river before they come to the bridge, and we doubt whether the views of extreme "Eugenists" will affect the working of the Act as much as he fears. Anyway, we recommend him to reconsider his judgment until the appearance of the Medical Services Bill. With regard to the question of "birth control," upon which he lays special stress, we recommend to his attention a work by his co-religionist, Dr. C. Capellman, seventh edition, 1890, entitled, "*Medicina Pastoralis*."

#### COMMON LANDS AND MEDICAL USAGE.

DOUBTS are being expressed by the press and members of the public as to the effect upon common lands which may be produced by the provisions of the Land Settlement (Facilities) Bill now before Parliament. Lord Eversley, in a letter recently published in *The Times*, pointed out that although various safeguarding amendments proposed by the Commons Preservation Society have been accepted by the Board of Agriculture, whereby no part of a common or open space vested in a local authority can be alienated without Parliamentary sanction, and no rural or suburban common without the consent of the Board of Agriculture, yet the reclamation schemes included in the Bill constitute a real and serious menace. For the schemes will be initiated by a department of the Board itself, and there will be no appeal from any decision of the Board to acquire and enclose a common. We are glad to know that local authorities must obtain the consent of Parliament to alienate a common, for in past times local authorities have not hesitated to get hold of common land for use as the site of a cemetery, a

sewage farm, or an isolation hospital. It is true that all three institutions are necessities of modern civilisation, and are all abominations in a thickly populated district; but there is plenty of practically barren land in private ownership which should be taken up before common lands are alienated, either with a view to their being turned into cultivated land or used as building sites. There is no clause in the Bill providing that the land shall be restored as common if cultivation proves unsuccessful, and this, surely, is an error. Much common land was put under cultivation with very good results during the war, but then the circumstances were such as to make the experiment likely to succeed. For instance, some 30 or 40 acres of Ashdown Forest were put under cultivation by the military of a large camp. Two essentials of successful cultivation were present—namely, labour and manure—and magnificent crops were grown. The land is too far away from the neighbouring village to serve as allotments and the conservators of the forest have insisted on the land going back to its original condition now that the camp is practically broken up. They have arguments on their side, though they may not be irrefutable. Commons and forest lands are of the greatest importance to the welfare of the community not only as "open spaces" but as pasturage, and sources of litter—e.g., heather and bracken. They are sanctuaries for insect-eating birds, which are of enormous value to agriculture, for every crop is not as assailable as a cherry, nor every bird as mischievous as a bullfinch. So long as other land can be obtained of equal suitability, commons should be exempt from alienation, and economy in purchase is a secondary consideration. But where it is a question between public health and pleasant amenities public health must be allowed to win.

#### THE RAISING OF THE INCOME FOR COMPULSORY INSURANCE.

THE attention of employers is being called by the Ministry of Health to the fact that by the National Health Insurance Act, 1919, which has just received the Royal Assent, the limit of remuneration up to which persons employed otherwise than by way of manual labour are liable to compulsory health insurance has been raised from £160 to £250 a year. Employers are required for the future to pay health insurance contributions in respect of persons employed by them under a contract of service as follows: for non-manual workers, where the rate of remuneration (including any regular bonus, &c.) does not exceed £250 a year; for manual workers, irrespective of the rate of remuneration. A non-manual worker whose remuneration is over £160 a year but not over £250 a year may, within a limited period and under certain conditions, claim a certificate of exemption, and on the grant of such a certificate the employer's contributions (3d. a week) are alone payable. Forms of application for exemption will be obtainable shortly at any post office.

ST. THOMAS'S HOSPITAL, LONDON.—The following scholarships have been awarded: Entrance Science Scholarships, 1919-20: 1st, £150, T. V. Pearce; 2nd, £60, E. G. L. Walker; Arts Scholarship, £15 15s., M. W. P. Hudson; Musgrove Scholarship, £35, F. J. Hackwood; William Tite Scholarship, £25, E. G. Housden.



## REGISTRAR-GENERAL'S DECENNIAL SUPPLEMENT (1901-1910).

### II.

UP to the close of last century the diseases returned as causes of death were classified at the Central Office according to the system adopted by Dr. William Ogle. But in 1901 this system was modified by his successor, Dr. John Tatham, in order to co-ordinate the national records with the revised Nomenclature of Diseases promulgated at that time by the Royal College of Physicians of London. Only a few of the headings in the tables are affected by this modification, the list of diseases having been rearranged with a view to the preservation of continuity. Under the present scheme of tabulation the number of deaths assignable to a particular heading is determined by the rule that out of several causes of death mentioned in a certificate only one disease is to be selected for registration. Greater precision of certification has recently led to increased transference of deaths from indefinite to definite headings. Transfer on these lines has been materially aided in recent years by the judicious practice of appealing from the Central Office to medical certifiers for additional information in cases of deaths imperfectly attested. As a result of this expedient it is stated that in the course of last decennium more than 5000 additions were made to the entries both of tuberculosis and of cancer, and more than 1000 each to those of puerperal sepsis and appendicitis.

The Registrar-General highly appreciates the co-operation thus rendered gratuitously by the medical profession, without which correction of this kind would obviously be unattainable.

#### *Mortality at Different Stages of Life and in the Two Sexes.*

From an instructive series of tables we learn how the chief fatal diseases stand in relation both to one another and to the age constitution of the victims. The proportions, having been calculated on the facts of ten years, may be regarded as resting on a fairly reliable basis.

According to the experience of 1901-10 not less than 10.8 per cent. of the total mortality is due to tuberculosis, a larger proportion than that attributed to any other single cause. From age 15-20 onwards the bulk of this mortality is due to the pulmonary form of the malady. Next to tuberculosis stands heart disease, accounting for nearly another 10 per cent. Following these in order of importance the remaining chief causes of death are pneumonia, bronchitis, cancer, disease of blood-vessels, and diarrhoea. At ages 10 to 20 and 35 to 55 heart disease ranks second in order as a cause of death, while in the intervening period, 20 to 35, it ranks third. Thus for the greater part of life these disorders of the circulation, when they do not actually occupy first place, come second only to tuberculosis as causes of death. The second place is occupied by pneumonia at ages 0 to 5 and 20 to 35, by diphtheria and croup at 5 to 10, by cancer at 55 to 65, by diseases of blood-vessels at 65 to 75, and by bronchitis at ages above 75. At ages 25 to 65 pneumonia and appendicitis are most fatal to males, and whooping-cough, heart disease, and cancer to females.

The familiar epidemic diseases are generally more destructive to life in the first five years than in the whole remainder of life. This is particularly noticeable in the case of whooping-cough, measles, scarlet fever, diphtheria, and diarrhoea. With reference to the behaviour of these epidemic diseases in later life, and to the fact that adult mortality thus caused is generally greater amongst females, Dr. T. H. C. Stevenson suggests that this may be due to their more frequent exposure to infection through sick nursing and other family duties. He finds that adult mortality from scarlet fever and from diphtheria is higher among women, whereas from small-pox, enteric fever, and cerebro-spinal fever it is considerably higher in men, among whom the risk of infection from domestic sources would often not be so serious. The incidence on the sexes of mortality from small-pox and enteric fever does not greatly differ throughout childhood, but on the attainment of adult age the mortality of males far exceeds that of females. This is also true of pneumonia.

*Streptococcus diseases.*—This group, including erysipelas, septicæmia, pyæmia, and phlegmon, with carbuncle and

cellulitis, may be said to possess in some sense a common type of age distribution, about 25 per cent. occurring in the first five years, and the remainder being widely scattered over the rest of life. But whilst the *local* infections are seldom dangerous to older children and young adults, the *general* infections, pyæmia and septicæmia, are very fatal during youth and correspondingly less fatal in old age.

*Syphilis.*—General paralysis of the insane and locomotor ataxy being now regarded as particular manifestations of syphilitic infection, much attention has recently been devoted to these diseases. The total mortality from the first of these conditions is more than three times as heavy for males as for females. There appears to exist little difference between the sexes in regard to the loss of life thus caused among young persons, the higher proportion of juvenile to total mortality in the female sex being due to the lower aggregate mortality of females. We learn that at ages below 20 years, when the disease originates in congenital syphilis, which affects both sexes alike, males and females are equally liable; but that at ages above 25 years, when most of the cases are due to acquired syphilis, the remarkable excess of male mortality becomes evident. The same feature obtains in a less degree in the case of syphilis itself, and it may be that the suppression of facts which notoriously prevails in regard to that disease affects men more than women. That sex has a real influence on mortality arising from syphilitic taint appears from comparison with locomotor ataxy. Although both this disease and general paralysis have a common origin in syphilitic contamination, the excess of male mortality is considerably greater in the case of locomotor ataxy. Moreover, the tendency of approximation of female to male mortality in old age, which is apparent in the case of syphilis as well as of general paralysis, is believed to be absent in the case of locomotor ataxy.

*Tuberculosis.*—The most striking feature of these tables is the prominent position occupied by tuberculosis, which at ages from 5 to 55 accounts for more deaths than any other single cause. Between the ages of 20 and 25 it causes more than 40 per cent. of the aggregate mortality in both sexes. The deaths assigned to tuberculosis in 1901-10 amounted to 565,161, and were fewer by 50,845 than in the previous decennium. Corrected for estimated increase of the population the difference becomes 121,941. The life saving claimed may be still further increased if allowance is made for the fact that the constitution of the population in the recent decennium was more favourable to tubercle mortality than had been that of 1891-1900.

The standardised death-rate in 1901-10 was equal to 1646 per million living, or 18.6 per cent. less than in the decennium immediately preceding. During the 50 years elapsed since 1861-70, tuberculous mortality has been nearly halved among males and more than halved among females. The greatest reduction among males occurred at ages 10-25, and among females at ages 15-45. At ages 45-65 the mortality of women has fallen more than twice as much as that of men.

From the degree in which tuberculosis has contributed to the total deaths at various ages during the last 60 years it appears that the disease is now of less relative importance as a cause of death than in earlier years. This change is much more conspicuous amongst females. It applies in each sex to all ages, except 5-10 and 10-15, when mortality from all causes is relatively low. The ages at which tubercle contributed most to the total death-rate ever since 1860 have been 20-35 for males and 15-25 for females. At the latter age it accounted for rather more than half the total deaths of females during 1851-70, but this proportion has recently fallen to a little over 40 per cent. At all adult ages the disease now plays a more important part in the mortality of males than of females, although during 1851-70 this was the case only at ages above 45. The concentration of tuberculous fatality upon the most valuable working period of life is a startling fact which should receive the earnest attention of the new Minister of Health, to whom it may be suggested in the words of the text, that "the period of early maturity which is specially attacked in both sexes is that at which the proportion of future productivity to dependence is at its maximum, and at which, therefore, deaths are the greatest loss to the community."

#### *Changes of Mortality in Three Decennia.*

Hitherto the study of disease incidence and mortality has been limited in these pages to the experience of a single



decennium. But Dr. Stevenson now furnishes us with the means of tracing the changes of this incidence in the course of the three successive decennia from 1881-90 onwards. The standardised death-rates in each of the last three decennial periods are compared with the aid of a table from which it appears that for all causes jointly a decrease of 16 per cent. in 1891-1910 has succeeded to a decrease of 3 per cent. only in the decennium immediately preceding.

The following are the principal declines in mortality recorded during the last 30 years—a period nearly corresponding to that which has elapsed since the passing of the great Public Health Act. From enteric fever the fall has been equal to 48 per cent., from influenza to 43 per cent., from diphtheria and croup to 36 per cent., from bronchitis to 36 per cent., from puerperal septic diseases to 34 per cent., from gout to 32 per cent., and from pleurisy to 31 per cent.

As against these large declines, as well as many others of a substantial nature, the only important increases recorded are those from cancer, diabetes mellitus, and Bright's disease. Of these by far the most important is the increase of cancer, the standardised rate for which is higher by 13 per cent. than in the previous decennium, this increase being only at half the rate shown in the preceding period.

It is significant that the two chief diseases for the recognition of which examination of the urine is important, diabetes and Bright's disease, are both included in the short list of recorded increases. Such aids to medical diagnosis are no doubt more generally practised by physicians as time goes on, and Dr. Stevenson regards it as quite conceivable that this fact may largely or wholly account for the increase shown in the tables. The slight increases recorded from valvular heart diseases and from angina pectoris may be dismissed as due merely to improvements in certification, seeing that diseases of the heart and blood-vessels in the aggregate show a considerable reduction. For a similar reason the slight increase from pneumonia may be also dismissed.

## TUBERCULOSIS IN ITALY.<sup>1</sup>

THE American Red Cross Commission on Tuberculosis in Italy entered on its inquiry with three guiding principles of action: "First, that no wise plan of coöperation could be drafted in a foreign country without first gathering intimate knowledge of its people and of existing health conditions; second, that no matter how well trained men and women might be for work in America, this was not necessarily an indication of their preparation for work in a foreign country; third, that sympathetic relations between workers and people must be developed through the avenue of mutual knowledge." A long course of preliminary study was accordingly undertaken before the actual work was entered on; and, indeed, the entire investigation appears to have been conceived and carried out in the most thorough and exhaustive manner possible.

### *Mortality from Tuberculosis in Italy Compared with other Countries.*

The mortality from pulmonary tuberculosis in Italy was 115 per 100,000 in the quinquennium 1909-1913, the same as in Scotland and the Netherlands; in Ireland and in Norway it was 173; in England and Wales it was 105; in Belgium (1908-1912), 99; in France (1907-1911), 183. Though there are 20,540 beds available for tuberculous soldiers and discharged prisoners, it is stated that more than half are unoccupied, and that in Sicily a hospital with 800 beds has only five patients. Hospital life and its restrictions are said to be disliked by the Italians. Although the tuberculosis question is therefore not so serious as in some other countries, the decline in mortality from this cause has not been satisfactory during the last 50 years, and during the war there has been a larger proportional increase in spite of favourable conditions of climate.

### *Scope of the Inquiry.*

In view of existing organisations of the Italian Red Cross and the Government, the American Commission decided, after careful inquiry, to limit their work to the provinces of Liguria, Umbria, Palermo, and the island of Sardinia. The ideal organisation that was aimed at comprised these four

sections:—Public health, Antituberculosis methods, Child welfare, and School hygiene; and committees were appointed to deal with (1) hospitals and sanatoriums, (2) dispensaries, (3) teaching of general hygiene, (4) finance, (5) medical instruction, (6) research into social conditions, with various subcommittees. Local authorities and influential persons were approached and assistance offered on the lines suggested. Says the report:—

"The Italian minds were open and alert to the necessity for it (the inquiry), keen to put it into operation; the American minds, constantly having in view what was best for Italy adapted as the Italian saw it, were willing to coöperate in order to enable the Italians to secure it. The combination made a successful issue in each of the provinces chosen."

Thus, in Sardinia Mr. and Mrs. Charles W. Wright established a provincial organisation; at Palermo an anti-tuberculosis league was formed, with correlation of the work of existing organisations and extending it throughout the whole of Sicily. In the organisation the keystone was the full-time paid executive secretary, as would always be the case in similar movements in this country or in America, though in Italy the plan was practically unknown and untried. The public health nurse or visitor, who would carry the instruction given by the physicians in the dispensaries directly into the homes of the applicants for relief, was also practically unknown in Italy.

### *Schools Opened for Italian Students.*

Three schools were opened in Rome, Genoa, and Palermo, committees of Italian women being formed to act as boards of trustees, to assure the continuance of the work; only Italian students were accepted, and American nurses acted as teachers and consultants, their value being fully appreciated by the Italian physicians, and their services being completely and immediately acceptable in the homes of the people. A Section of School Hygiene was established to deal with the needs of the 3½ million children on the school registers, as well as those of an additional million not so accounted for. The birth-rate in 1914 was 31.1 per 1000; in 1916 it had dropped to 24.4; in 1918 it is considered that this ratio had fallen to somewhere between 19 and 16 for the whole country; the infantile death-rate (1910-1914) was 138 per 1000 living births; this had risen to 171 per 1000 in the large cities in 1917.

### *Housing Difficulties: An Antimalarial Campaign Wanted.*

The question of housing is considered in the report, among the special points being the size of the tenement dwellings generally occupied by the working classes in the large towns, and the difficulties presented by the numerous villages situated on hill-tops, of historic interest and picturesque charm, but hygienically presenting "so serious a problem that one wonders what the next step for Italy can be to secure an amelioration of their darkness, and dampness, and sanitary inefficiency." A long antimalarial campaign is first required. Malaria, which in 1914 had been reduced to 129,000 cases, increased during the war to 302,499 cases in 1917; and these were only the "reported cases," probably not nearly all that occurred. Pellagra has apparently not increased, but returns are not available for this disease.

### *Italian Claims for Coöperation: Practical Suggestions.*

In conclusion, the report states that Italy, "the youngest of the nations," has the following claims for full coöperation with the other nations of the world: (1) a low death-rate and high birth-rate; (2) a people who love her, no matter where they go; (3) an accomplishment as United Italy which justifies her ancient tradition; (4) as one of the greatest contributors to the labour of construction throughout the world. America owes her an especial debt, not to be paid in material things, but by fraternal coöperation. Four practical suggestions are given for carrying this out: the preparation annually in foreign languages by national and State governments of "descriptive material and charts, showing their progress in the great social movements, to be sent with the general reports for fuller reference to foreign Ministers and libraries. This method has long been used by industrial concerns in Germany, which prepare their catalogues in the language of the country in which they propose to sell, with the price quotations in the money of that country, based upon delivery at the door of the consumer. At the same time information as to international standards of public health and welfare should be

<sup>1</sup> Report of the American Red Cross Commission.



interchanged by means of a sanitary commission. Secondly, small consultative commissions, working through diplomatic channels, should secure the adoption of similar public health and welfare standards, as already has been done in regard to military and industrial affairs. A third suggestion is the establishment of international scholarships for the teaching and practice of public health and welfare work; a beginning in this direction has already been made in the scholarships offered to France by Miss E. Chalfant and Mrs. W. S. Mitchell of Pittsburgh, and the Boston French Tuberculosis Committee, also by Mr. R. B. Mellon, of Pittsburgh, who has provided three scholarships for an exchange of public health nurses between America and Italy. The value of such coöperation is undoubted, and the present instances practical proof.

#### Supplementary Reports.

To the general report above summarised, which is signed by Dr. William Charles White, the Director of the Commission, is appended a supplementary report of the Nursing Section by Mary S. Gardner, which describes the various forms of nursing that are actually in operation, and the chief points that need attention to make the service a satisfactory one according to modern requirements. To this succeeds a study of the health statistics by Mr. Knud Stouman. An excellent map of Italy shows by graduated shading the tuberculosis mortality in the various provinces of the Kingdom.

### URBAN VITAL STATISTICS.

#### VITAL STATISTICS OF LONDON DURING JULY, 1919.

IN the accompanying table will be found summarised statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious disease it appears that the number of persons reported to be suffering from one or other of the ten diseases notified in the table was equal to an annual rate of 5.9 per 1000 of the population, estimated at 4,026,901 persons; in the three preceding months the rates had been 4.6, 4.5, and 4.7 per 1000. Among the metropolitan boroughs the lowest rates from these notified diseases were recorded in Hammersmith, Fulham, the City of Westminster, Hampstead, and the City of London; and the highest in Bethnal Green, Stepney, Southwark, Bermondsey, and Greenwich. Five cases of small-pox were notified during the month, against 7, 2, 3, and 2 in the four preceding months; of these cases 4 belonged to Woolwich and 1 to Bethnal Green. The cases of small-pox under treatment

in the Metropolitan Asylums Hospitals at the end of the month numbered 2, against 6, 1, 3, and 2 at the end of the four preceding months. The prevalence of scarlet fever was 50 per cent. more than in the preceding month, and was considerably higher than in any other month of the present or preceding year; this disease was proportionally most prevalent in Stoke Newington, Stepney, Southwark, Bermondsey, Deptford, and Greenwich. The Metropolitan Asylums Hospitals contained 1516 scarlet fever patients at the end of the month, against 1043, 1066, and 1132 at the end of the three preceding months; the weekly admissions averaged 236, against 138, 150, and 157 in the three preceding months. Diphtheria was slightly more prevalent than in the preceding month; the greatest prevalence of this disease was recorded in Hackney, Shoreditch, Bethnal Green, Southwark, Bermondsey, and Lewisham. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1134, 1086, and 1021 at the end of the three preceding months, rose to 1108 at the end of July; the weekly admissions averaged 153, against 151, 145, and 138, in the three preceding months. Enteric fever was somewhat more prevalent than in the preceding month; of the 40 cases notified during the month, 9 belonged to Woolwich, 5 to Wandsworth, 5 to Camberwell, 4 to Stepney, and 3 to Chelsea. There were 34 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 16, 19, and 25 at the end of the three preceding months; the weekly admissions averaged 5, against 2, 3, and 5 in the three preceding months. Krysipelas was proportionally most prevalent in St. Marylebone, Stoke Newington, Holborn, Bethnal Green, and Southwark. The 22 cases of puerperal fever notified during the month included 4 in Islington and 2 each in Paddington, Hackney, Poplar, and Southwark. Of the 14 cases of cerebro-spinal meningitis, 2 belonged to Fulham, 2 to Poplar, and 2 to Southwark; while of the 14 cases of poliomyelitis 2 belonged to Paddington and 2 to Camberwell.

The mortality statistics in the table relate to the deaths of civilians belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased had previously resided. During the five weeks ended August 2nd the deaths of 3801 London residents were registered, equal to an annual rate of 9.8 per 1000; in the three preceding months the rates had been 15.0, 11.1, and 9.7 per 1000. The death-rates ranged from 6.5 in Fulham, 7.8 in Lewisham, 7.9 in Stoke Newington, 8.4 in Battersea, 8.4 in Woolwich, 8.7 in Hampstead, and 8.7 in Shoreditch, to 11.1 in Southwark, 11.3 in Finsbury, 11.4 in Kensington, 11.5 in Deptford, and 12.4 in Holborn. The 3801 deaths from all causes included 154 which were referred to the principal infectious diseases; of these, 2 resulted from small-pox, 24 from measles, 14 from scarlet fever, 41 from diphtheria, 12 from whooping-cough, 6 from enteric fever, and 55 from diarrhoea and enteritis among children under 2 years of age. No death from any of these diseases was recorded in Fulham and the City of London. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in the City of Westminster, St. Marylebone, Hampstead, Shoreditch, Lambeth, Wandsworth, and Lewisham; and the highest in Chelsea, Stoke Newington, Stepney, Poplar, and Camberwell. The 2 fatal cases of small-pox belonged to Woolwich. The 24 deaths from measles were one-fifth of the average number in the corresponding period of the five preceding years; of these deaths 4 belonged to Bermondsey, 4 to

#### ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING JULY, 1919. (Specially compiled for THE LANCET.)

CITIES AND BOROUGHES.	Estimated civil population, 1917.	Notified Cases of Infectious Disease.											Deaths from Principal Infectious Diseases.											
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other con- tinued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping- cough.	Enteric fever.	Diarrhoea and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.	Deaths from all causes.	Death-rate per 1000 living.
LONDON...	4,026,901	5	1243	758	—	40	1	22	189	14	14	2286	5.9	2	24	14	41	12	6	55	154	0.4	3801	9.8
West Districts:																								
Paddington ...	122,507	—	31	22	—	1	—	2	5	—	2	63	5.4	—	—	1	1	1	—	—	4	0.3	108	9.2
Kensington ...	151,535	—	25	28	—	—	—	—	—	—	—	64	4.4	—	—	—	2	—	—	3	5	0.3	165	11.4
Hammersmith ...	114,962	—	22	13	—	—	—	1	5	—	1	44	4.0	—	1	—	—	2	1	3	7	0.6	105	9.5
Fulham ...	145,186	—	30	12	—	—	—	1	7	—	—	52	3.7	—	—	—	—	—	—	—	—	—	91	6.5
Chelsea ...	57,368	—	15	8	—	3	—	—	—	—	—	26	4.7	—	—	1	—	—	—	2	4	0.7	69	10.7
City of Westminster	122,046	—	7	14	—	1	—	—	5	—	—	27	2.3	—	—	—	1	—	1	—	2	0.2	118	10.1
North Districts:																								
St. Marylebone ...	92,796	—	20	10	—	—	—	1	8	—	1	40	4.5	—	1	—	—	—	—	1	2	0.2	93	10.5
Hampstead ...	75,649	—	11	5	—	1	—	—	2	—	—	19	2.6	—	—	—	—	—	—	—	1	0.1	63	8.7
St. Pancras ...	186,600	—	35	37	—	—	—	—	13	—	—	85	4.8	—	3	1	—	—	—	1	5	0.3	191	10.7
Islington ...	297,102	—	91	54	—	—	—	4	16	—	1	166	5.8	—	1	1	7	1	—	8	18	0.6	303	10.6
Stoke Newington...	47,426	—	20	7	—	—	—	—	4	1	—	32	7.0	—	—	1	1	1	—	—	3	0.7	36	7.9
Hackney ...	196,803	—	57	48	—	1	1	2	13	1	1	124	6.6	—	—	—	2	1	—	3	6	0.3	178	9.4
Central Districts:																								
Holborn ...	55,303	—	5	8	—	—	—	—	3	—	—	16	4.7	—	—	—	2	—	—	—	2	0.6	42	12.4
Finsbury ...	68,011	—	24	10	—	—	—	—	—	—	—	39	6.0	—	—	—	1	—	—	1	2	0.3	74	11.3
City of London ...	16,138	—	2	1	—	—	—	1	2	1	1	3	1.9	—	—	—	—	—	—	—	—	—	15	9.7
East Districts:																								
Shoreditch ...	89,675	—	14	26	—	—	—	—	5	—	—	45	5.2	—	—	—	1	—	—	1	2	0.2	75	8.7
Bethnal Green ...	107,362	1	40	41	—	—	—	—	15	—	1	99	9.6	—	—	—	—	—	—	2	4	0.4	101	9.8
Stepney ...	232,010	—	151	54	—	4	—	2	8	1	—	218	9.8	—	1	3	3	2	—	13	22	1.0	217	9.8
Poplar ...	143,443	—	36	21	—	—	—	—	9	2	—	72	5.2	—	1	1	5	2	—	1	10	0.7	141	10.3
South Districts:																								
Southwark ...	167,936	—	86	45	—	1	—	2	14	2	—	150	9.3	—	—	—	1	1	1	—	5	0.5	178	11.1
Bermondsey ...	107,635	—	76	41	—	—	—	—	6	—	—	123	11.9	—	4	1	—	—	—	—	5	0.5	102	9.9
Lambeth ...	272,038	—	78	41	—	—	—	—	14	—	—	135	5.2	—	3	—	—	—	—	—	5	0.2	282	10.8
Battersea ...	150,023	—	44	14	—	—	—	1	4	—	1	64	4.4	—	—	—	2	—	—	—	4	0.3	121	8.4
Wandsworth ...	300,787	—	96	37	—	5	—	—	—	—	—	113	5.0	—	—	—	—	—	—	2	6	0.2	275	9.5
Camberwell ...	239,461	—	55	46	—	—	—	—	8	—	2	143	5.1	—	4	—	—	1	—	1	15	0.7	241	10.5
Deptford ...	103,527	—	42	21	—	—	—	—	3	—	1	69	7.0	—	1	1	1	—	—	2	5	0.5	114	11.5
Greenwich ...	90,440	—	55	20	—	—	—	—	5	1	—	82	9.5	—	1	1	—	—	—	1	3	0.3	86	9.9
Lewisham ...	161,406	—	55	45	—	—	—	—	2	1	—	104	6.7	—	1	1	—	—	—	1	2	0.1	121	7.8
Woolwich...	131,942	4	20	29	—	9	—	1	3	—	—	66	5.2	2	—	—	1	—	1	5	0.4	106	8.4	
Port of London ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

\* Including membranous croup



Camberwell, 3 to St. Pancras, 3 to Lambeth, and 2 to Wandsworth. The 14 fatal cases of scarlet fever were 3 less than the average; 3 of these belonged to Stepney. The 41 deaths from diphtheria were 10 below the average; of these deaths 7 belonged to Islington, 5 to Poplar, 4 to Camberwell, and 3 to Stepney. The 12 fatal cases of whooping-cough were one-sixth of the average number; of these, 2 belonged respectively to Hammersmith, Stepney, and Poplar. The 6 deaths from enteric fever were 4 less than the average. The 55 deaths from diarrhoea and enteritis among children under 2 years of age were 64 below the average number; the greatest proportional mortality from this disease was recorded in Hammersmith, Chelsea, Islington, Stepney, and Camberwell. In conclusion, it may be stated that the aggregate mortality from these principal infectious diseases in London during July was 60 per cent. below the average.

(Week ended August 16th, 1919.)

**English and Welsh Towns.**—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had been 10.3, 9.7, and 9.7 in the three preceding weeks, rose to 10.0 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual rate was 10.4, or 0.9 per 1000 above that recorded in the previous week, while among the remaining towns the rates ranged from 3.2 in Hornsey, 3.7 in Wallasey, and 4.1 in Walsall, to 15.5 in Southport, 16.1 in Hastings, and 17.5 in Gateshead. The principal epidemic diseases caused 174 deaths, which corresponded to an annual rate of 0.5 per 1000, and included 92 from infantile diarrhoea, 35 from diphtheria, 28 from measles, 10 from whooping-cough, 5 from scarlet fever, and 4 from enteric fever. Measles caused a death-rate of 1.3 in Gateshead, 1.5 in Salford, and 1.7 in Edmonton. There were 1517 cases of scarlet fever and 1112 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 1547 and 1092 respectively at the end of the previous week. The causes of 21 deaths in the 96 towns were uncertified, of which 6 were registered in Birmingham and 2 each in Gloucester and Gateshead.

**Scotch Towns.**—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had been 11.1, 10.5, and 10.0 in the three preceding weeks, further fell to 9.9 per 1000. The 232 deaths in Glasgow corresponded to an annual rate of 10.8 per 1000, and included 14 from infantile diarrhoea, 6 from diphtheria, 4 whooping-cough, and 1 each from enteric fever and measles. The 70 deaths in Edinburgh were also equal to a rate of 10.8 per 1000, but did not include any from the principal epidemic diseases.

**Irish Towns.**—The 111 deaths in Dublin corresponded to an annual rate of 14.3, or 1.6 per 1000 above that recorded in the previous week, and included 23 from infantile diarrhoea and 1 from measles. The 82 deaths in Belfast were equal to a rate of 10.7 per 1000, and included 6 from infantile diarrhoea and 1 from scarlet fever.

## The Services.

### ROYAL NAVAL MEDICAL SERVICE.

Surg.-Cdr. J. Chambers to be Surgeon-Captain.  
Surg.-Cdr. T. H. Vickers is placed on the Retired List at own request.  
Surg.-Capt. E. C. Lomas is placed on the Retired List.

### ARMY MEDICAL SERVICE.

Col. C. H. Melville, C.M.G., retires on retired pay.

### ROYAL ARMY MEDICAL CORPS.

Majors relinquish the acting rank of Lieutenant-Colonel on re-posting:  
A. C. H. Gray, C. R. Millar.

Major S. M. W. Meadows, D.S.O., and Major and Bt. Lieut.-Col. A. McMunn relinquish the temporary rank of Lieutenant-Colonel on re-posting.

The undermentioned relinquish the acting rank of Major: Capt. and Bt. Major R. E. Barnsley; Capt. L. J. Sheil, O. H. Brennan, R. A. Austin; Temp. Capt. W. Haward, J. V. Grant, M. R. Mackay, W. T. Hessel, Joseph S. Stewart, A. C. B. McMurtrie, R. J. Vernon, H. M. Vickers, I. Jones, L. M. Smith, G. Jackson, G. E. Nelligan, J. F. McG. Storn, T. E. Amyot, J. McDonnell, M. A. Power, L. G. McCune, C. G. McAdam, F. W. Wesley, T. Muir Crawford.

To be acting Majors: Capt. F. W. Matheson, W. E. Adam; Temp. Capt. S. Stockman, R. S. S. Statham, R. E. H. Leach, P. P. J. Stewart, C. E. Walker.

Capt. G. D. Robertson resigns his commission.  
Capt. N. T. Whitehead relinquishes the acting rank of Lieutenant-Colonel on ceasing to command a Medical Unit.

Capt. D. H. C. MacArthur relinquishes the acting rank of Major.  
Capt. R. H. Graham, from Spec. Res., to be Captain.  
Temporary Captains to be Captains: R. N. Porritt, A. R. Oram.

Captains from the T.F. to be Captains: G. F. Carr, C. M. Gozney.  
Temporary Lieutenants to be temporary Captains: J. Paxton, V. D. Pennefather, G. S. Livingston, N. B. Benjafield, J. McClellan, A. P. Mitchell, G. H. Dart, J. C. Warwick, E. H. Milson, A. E. Hodgkins.

Capt. A. G. Harsant, from Spec. Res., to be Lieutenant, and to be temporary Captain.

Temp. Lieut. J. E. Rea to be Lieutenant.  
Officers relinquish their commissions:—Temp. Lieut.-Cols. (retaining the rank of Lieutenant-Colonel) E. W. Goodall, W. D. Buncombe, F. S. Toogood, A. D. Reid, H. L. Eason; Temp. Hon. Major G. Hodge (retains the honorary rank of Major); Temp. Major and Brevet Lieut.-Col. A. W. Robinson (retains the rank of Brevet Lieutenant-Colonel); Temp. Majors (retaining the rank of Major) G. H. Ross, T. MacKenzie; Temp. Capt. and Brevet Majors (retaining the rank of Brevet Major) W. S. Stalker, E. C. Williams, R. McC. Hill; Temporary Captains granted the rank of Major: D. D. Craig, W. B. Davy, J. R. M. Whigham, A. W. Uloth, A. K. H. Pollock, A. E.

Marsack, J. W. Littlejohn, F. W. Wesley; Temporary Captains retaining the rank of Captain: J. Scott, R. W. Valentine, H. L. Morrow, R. T. Stoney, T. F. S. Fulton, J. H. Wilks, T. Brodie, C. Brash, D. McCormack, J. S. Annandale, B. L. Livingstone-Learnmouth, J. M. Woyte, J. E. M. Wigley, P. A. Creux, S. H. L. Archer, S. E. Murray, R. H. S. Marshall, P. J. Kelly, J. C. D. Allan, L. H. Leeson, B. F. Macnaughton, F. R. Hassard, D. Whyte, S. Y. Walsh, W. A. Proud, G. R. Bickerstaff, A. W. Adams, E. G. Fenton, J. M. Wishart, W. B. A. Moore, H. W. Crowe, J. M. Gibson, D. MacGregor, J. C. Hindley, J. Patrick, L. Zealand, F. F. Carr-Harris, C. G. Winter, J. S. Stewart, D. H. Paul, R. F. Wilkinson, A. G. Gilchrist, C. W. Smith, G. Matthews, D. F. A. Neilson, R. W. Smith, A. B. Raffle, J. H. Wrightson, E. Duke, A. M. Clare, R. A. Flynn, E. Billing, A. Brown, C. W. Fowler, F. H. Diggle, P. N. Vellacont, B. G. Gutteridge, J. R. Marrack, H. W. Parnis, J. F. Carroll, C. H. Ayles, G. O. Grain, C. E. Bashall, A. G. Neismitb, O. H. Bowen, B. T. Parsons-Smith, G. M. C. Powell, L. P. Booth; Temp. Hon. Capt. J. B. Fearn (retains the honorary rank of Captain); Temporary Lieutenants retaining the rank of Captain: W. A. Mein, L. H. McConnell, D. R. Wheeler, W. Gilmore.

### Canadian Army Medical Corps.

Temp. Major (acting Lieut.-Col.) E. L. Pope to be temporary Lieutenant Colonel.

Temporary Captains (acting Majors) relinquishing the acting rank of Major: N. W. Strong, W. E. Gallie.

The undermentioned temporary Captains retire in the British Isles:—W. B. Honey, C. V. Bailey, T. V. Hunter, H. J. Thierault, J. A. MacKenzie, J. A. Jardine, J. R. Le Touzel, W. A. Marshall, P. A. Leacy, W. H. Hills, C. V. Mills, M. R. Boe, H. H. Perry.

### Canadian Army Dental Corps.

Temp. Capt. B. E. Brownlee retires in the British Isles.

### SPECIAL RESERVE OF OFFICERS.

Capt. J. P. Charnock relinquishes the acting rank of Major.

Capt. O. Williams to be acting Major.

Capt. A. C. Irvine relinquishes his commission.

Lieutenants to be Captains: M. Jackson, G. P. W. Staunton, T. H. Almond, J. N. Gele, J. W. Mann, F. K. Escrib, A. C. Paterson, A. E. B. Paul.

### TERRITORIAL FORCE.

Lieut.-Col. (acting Col.) F. W. Higgs relinquishes the acting rank of Colonel on vacating the appointment of Assistant Director of Medical Services.

Lieut.-Col. G. C. Taylor vacates the appointment of Deputy Assistant Director of Medical Services.

Lieut.-Col. R. Emmett relinquishes his commission on account of ill-health, and retains the rank of Lieutenant-Colonel.

Capt. (acting Majors) relinquishing the acting rank of Major on ceasing to be specially employed: C. S. Wink, C. M. Nicol, J. Anderson, W. E. Lee, J. Ramsay, J. Turle, A. Wilson, D. G. Kennard, H. S. Wallace, A. J. A. McC. Dallas, P. J. Smyth.

Capt. (acting Major) M. B. G. Sinnott relinquishes the acting rank of Major on vacating the appointment of Deputy Assistant Director of Medical Services.

To be acting Majors while specially employed: Capt. C. E. Whitehead, A. M. Jones, C. M. Nicol.

Capt. W. J. Hoyten relinquishes his commission on account of ill-health, and is granted the rank of Major.

Capt. S. A. McPhee relinquishes his commission on account of ill-health contracted on active service, and retains the rank of Captain.

4th London General Hospital: Lieut.-Col. A. H. Tubby is restored to the establishment.

1st Scottish General Hospital: Major H. Mc I. W. Gray is restored to the establishment on ceasing to hold a temporary commission in the Army Medical Service.

2nd Scottish General Hospital: Capt. J. W. Simpson is restored to the establishment.

2nd Western General Hospital: Capt. (acting Major) G. M. Benton relinquishes the acting rank of Major on ceasing to be specially employed.

2nd London Sanitary Company: Capt. B. R. Hebblethwaite is seconded for service under the Egyptian Government.

### ROYAL AIR FORCE.

**Medical Branch.**—Major (acting Lieut.-Col.) B. R. Bickford, D.S.O. (Staff Surgeon, R.N.), relinquishes his commission on ceasing to be employed.

The undermentioned are transferred to unemployed list: Major C. F. Bainbridge, Capt. K. B. Aickman, R. Hall, Lieut. N. Homewood. Capt. T. E. Mulvaney relinquishes his commission on account of ill-health contracted on active service, and is permitted to retain his rank.

Lieutenants to be Captains: C. T. Costello, G. M. Mellor, H. C. Cox, G. Meadows, L. C. Broughton-Head, H. B. Troup, H. T. Fry-Jones, J. Coulter-Smith, R. Munglison, P. E. Williams, C. Lambird, A. Kirkhope, P. M. Carroll, J. P. Horsford, A. K. Soutar, G. Dunderdale, J. P. Hennessy, G. W. Harbottle, M. J. Wblton, J. Valerie, J. P. Wells, A. St. J. Hennessy, G. W. J. Bonsfield.

**Dental Branch.**—Lieutenants to be Captains: G. Warner, R. Fyson, C. M. Shirreff, H. L. Thorn, N. H. Medhurst, N. L. Smallbone, C. M. John, G. Hughes, G. F. H. Bloom.

### INDIAN MEDICAL SERVICE.

Captains to be Majors: V. B. Green-Armstrong, A. N. Dickson, A. G. Coullie, A. J. H. Russell, Dewan Hakumat Rai, W. H. Riddell.

Lieutenants to be Captains: J. P. Huban, Erach Ruttanji Daboo, M. M. Cruickshank, Anant Yashwant Dabholkar, Kekhasra Sorabji Master, S. A. McSwiney.

Temporary Lieutenants to be temporary Captains: Har Sukh Raj, Nawab-ud-Din, M. J. Saldanha, Yeshwant Vaman Modak, Ragavan Chervuraji Toyle, Abdul Kadir Muhammad Mahiuddin, A. Noble, Joy Devananda Sinha, Dinesh Chandra Chakrabarti, Ravu Venkata Rao, Annaswamy Mutbnukrishnan, Sadashiva Chintaman Lele, Jagdish Chandra Gupta, Colmbatore Srinivasa Rao Venkata Krishna Rao.

The following officers are permitted to retain the temporary rank of Captain on permanent appointment as Lieutenants: Durgadas Sanyal, Fazal-ud-Din, Girish Chandra Maitra, Bijitendra Basu, Sankaranai-narkoil Chidambaranatha Alagappan.



The King has approved the appointment of the undermentioned Lieutenants permanently to the Indian Medical Service: John Patrick Huban, Erach Rutnanji Daboo, Martin Melvin Cruickshank, R.A.M.C. (T.C.), Anant Yashwant Dabholkar, I.M.S. (T.C.), Kekhasru Sorabji Master, I.M.S. (T.C.), Stephen Alphonous McSwiney, R.A.M.C. (T.C.), Durgadas Sanyal, I.M.S. (T.C.), Fazal-ud-Din, I.M.S. (T.C.), Girish Chandra Maitra, I.M.S. (T.C.), Bijitendra Basu, I.M.S. (T.C.), Sankaranainarkoil Chidambaranatha Alagappan, I.M.S. (T.C.).

*Indian Defence Force.*—Lieutenant to be Captain: J. S. Nicolson.  
The King has approved the relinquishment of temporary rank in the Indian Medical Service and Indian Defence Force by Captain A. MacL. Ramsay.

#### HEALTH OF TROOPS ON AFGHAN FRONTIER.

The Secretary of State for India, in a written answer to a question by Colonel Yate concerning the arrangements made for the health and comfort of the troops on the North-West Frontier of India, denies the reports of deficiencies in the Afghan campaign. Quoting from a telegraphic report, he says that with regard to food, &c., two essentials at this time of the year are ice and mineral waters. Ice-machines are working at the following places: Rawal Pindi, Nowshera, Peshawar, Kohat, Bannu, Dardoni, Tank, Dera Ismail Khan, and Quetta, and further machines are under erection. As regards soda-water machines, 22 are already working on the frontier and six more are on their way to the frontier. The total daily output of these machines will be approximately 90,000 bottles. This output is in addition to that of local factories. Each machine is being sent up complete with cylinders and bottles for one month's consumption, and a reserve of three months has been arranged for. Mineral waters are issued to all officers and men in hospital. The scale of rations for British and Indian troops is much superior to any previously granted for campaigns in India. Under the new scale for Indian troops the meat ration has been doubled and a daily issue of fresh vegetables, condensed milk, as well as weekly issues of cigarettes, provided. Orders have been issued to all generals in command that medical officers are to ask for whatever they deem necessary for the comfort of the sick and wounded in their charge and that their demands are to be met at once. Additional hospitals for 4000 British and 8000 Indian troops have been established in specially fitted barracks in proximity to the frontier, and electric lighting and fans, where none already exist, are being supplied to the former. Convalescent depôts for officers and soldiers have, in addition, been formed, mainly in the Murree hills. Special arrangements have been made for the supply of fresh milk to the sick. Arrangements for providing additional equipment are in progress, and have been made already for the establishment of field force canteens for British and Indian troops. Special messes have been formed at various places for the use of individual officers passing through. Rest camps for British and Indian troops en route to the front have also been organised. To ensure that the arrangements for the health and comfort of the troops are working satisfactorily and up to the standard designed by the Commander-in-Chief in India, staff officers from general headquarters carry out under his Excellency's orders frequent tours of inspection on the frontier. Specific inquiry is being made into each definite allegation of deficiency that is brought to notice.

## Medical News.

**ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.**—An extraordinary meeting of the College was held on August 8th, Sir Robert Philip, the President, in the chair. H.R.H. the Prince of Wales having signified his willingness to accept the Honorary Fellowship of the College, was elected by acclamation.

**ROYAL COLLEGE OF PHYSICIANS OF IRELAND AND ROYAL COLLEGE OF SURGEONS IN IRELAND.**—At the Conjoint Examinations held recently the following candidates were successful:—

#### THIRD PROFESSIONAL EXAMINATION.

H. C. Bell, Miss L. H. Byrne, J. F. J. Cleary, R. H. Dolan, M. A. English, J. Fitzsimons, J. J. Fitzsimons (honours), Mrs. M. W. Frazer, T. P. Hefferman, T. E. Kavanagh, Miss A. Ledlie, J. I. Levi, J. J. McHenry, Miss M. G. Neill, Miss I. P. Nelis, Miss M. C. O'Brien, R. C. Ogden, J. O'Leary, J. J. O'Sullivan, P. J. Quigley, T. J. Ryan, W. H. Sexton, R. B. Shaw, J. Tahan (honours), J. W. Tighe, A. D. Watchman, and T. G. Whitcroft.

#### FINAL PROFESSIONAL EXAMINATION.

Michael Barden, Baron Asher Cowan, Joseph Cockburn, Thomas Coffey, Robert Stafford Conyngham, John Francis Gallagher, Daniel Hegarty, Alexander Francis Mallon, John Patrick Morgan, Bernard Thomas McMahon, James McAlister, Michael Joseph O'Connor, Frank Gaed Phillips, Joseph Power, Joshua Ponsner, Andrew Thomas Rathigan, Thomas Kerry Reddin, and William Edward Shipsey.

#### DIPLOMA OF PUBLIC HEALTH.

Patrick Ashe, Geoffrey Collins, Ignatius B. Culhane, Edmund W. Lynch, John D. MacCormack, S. D. G. McEntire, C. C. Macredy, Lionel M. Rowlette, and J. R. Bibby.

**ROYAL COLLEGE OF SURGEONS IN IRELAND.**—At examinations held recently the following candidates were successful:—

#### PRIMARY FELLOWSHIP EXAMINATION.

Robert H. L. M. Corbet, W. J. Corkey, Mary G. Hogan (honours), and Eric S. Horgan.

#### FINAL FELLOWSHIP EXAMINATION.

W. H. W. C. Carden, J. V. Cope, and J. A. Fretton.

As we announced last week, the League of Red Cross Societies have appointed an International Commission to investigate the public health conditions in Poland, with a special view to providing against the spread of typhus and other epidemics across Western Europe. Dr. Addison, the Minister of Health, has lent to the International Commission the services of Dr. G. S. Buchanan, the other members of the Commission being: for Italy, Professor Castellani; for the United States, Colonel H. Cumming; and for France, Lieutenant-Colonel Visbecq, of the Service de Santé of the French Army, the last in place of Monsieur E. Dopter, who has been prevented from starting for Poland.

**EASTBOURNE AND CHILD WELFARE.**—The members of the corporation of Eastbourne are far-seeing, and without opposition have voted no less a sum than £4500 for maternity and child welfare purposes. A home where the work has been carried on some time voluntarily has closed through lack of funds, and the corporation has stepped into the void. The scheme is being pushed on as the need is urgent owing to the house famine. Eastbourne is thus doing its part in the great work of conserving child life, the necessity for which has never been brought home so much as it is to-day.

**MEDICAL SICKNESS, ANNUITY, AND LIFE ASSURANCE FRIENDLY SOCIETY.**—A committee meeting of this society was held at 300, High Holborn on August 15th, when the accounts presented showed that influenza had practically disappeared in the claims for insurance. The volume of new business continues to be exceptionally good, but an increasing number of medical men appear to be retiring from practice at a comparatively early age, necessitating increased new business in maintaining the total membership. The claims are under the expectation for the month, but signs are not wanting that the strain on older members of the society during the last years is beginning to show, long rest from all work being then compulsory. This is essentially the kind of claim that proves the value of the society's sickness contract, for in many policies the benefit only lasts a certain time, while the society goes on paying for years if required.

All particulars may be had from the Secretary, Medical Sickness and Accident Society, 300, High Holborn, W.C. 1.

**ROYAL MEDICAL BENEVOLENT FUND.**—At the last meeting of the committee, held on August 12th, 30 cases were considered and £308 10s. voted to 27 of the applicants. The following is a summary of some of the cases relieved:—

Daughter, aged 47, of M.D. Lond. who practised in London and died in 1873. Lives with two elder sisters, one of whom receives help from the Fund. Has £15 per annum from dividends. Asked to take in pupils, but now wishes to commence a school, and she asks for help towards books, stationery, &c. Voted £12 10s.—M.R.C.S. Eng., aged 44, who practised at Theale. Was in a serious motor accident in June, 1918, and is still suffering from head injury and loss of memory and is quite unable to work, and has had to sell his practice. Receives £24 pension from workhouse and £6 6s. a month from the Medical Sickness Society. Rent and rates £37 13s. 6d. Has three children; the eldest girl is at home and the other two children are at school. Voted £50.—Widow, aged 47, of F.R.C.S. Edin. who practised in London and died in February, 1919. Was left totally unprovided for, and is now acting as a temporary clerk at 37s. 6d. a week. Lives in one room and pays 8s. a week rent. Applicant's husband was helped by the Fund. Voted £5.—Widow, aged 53, of M.B. C.M. Aberd. who practised in London and died in 1917. Was left without means. Has three children; the two eldest are in the Army and both have been wounded, and the youngest is still in the hospital waiting to undergo an operation. She receives £62 a year from children and £26 from the Pensions Committee. Pays £26 a year rent. Voted £12 in 12 instalments.—Widow, aged 60, of L.R.C.P. Edin. who practised at Blackburn and died in 1902. Is at present doing domestic work at 9s. a week, but she suffers from ill-health and cannot stay long at any post. Was in the infirmary for a greater part of last summer. Has one daughter who acts as a children's nurse and receives £26 a year. Relieved six times, £30. Voted £12 in 12 instalments.—Daughter, aged 61, of L.F.P.S. Glasg. who practised at Lauchline, Ayrshire, and died in 1883. Is unable to work owing to ill-health. Only income £15 from the Scottish Indigent Women's Fund. Pays £10 a year rent. Relieved 11 times, £116. Voted £18 in 12 instalments.—Daughter, aged 38, of M.D. Dub. who practised at Moorcroft, British Guiana, and died in 1884. Lives with her mother, who receives a pension of £50 per annum. Suffers from ill-health and is unable to earn her own living. Relieved 13 times, £120. Voted £10 in two instalments.—Widow, aged 63, of L.R.C.P. & S. Glasg. who practised at Walsall and died in 1902. Was left unprovided for with two children, who are now working and pay their mother £1 a week each, and applicant receives about £12 a year by needlework. Relieved 13 times, £142. Voted £5.—Daughter, aged 68, of M.R.C.S. Eng. who practised at Liverpool and died in 1881. Receives £6 a year from dividends and £52 a year from friends. Lost all her money through the failure of an Australian bank. Suffers from ill-health. Relieved six times, £72. Voted £12 in 12 instalments.—Widow, aged 51, of L.S.A. Lond. who practised at Plaistow and died in 1911. Was left with two children, now aged 16 and 14. The elder one wishes to train for a nurse; the younger is still at school. Applicant receives £100 a year from the sale of the practice and from late husband's life insurance, and has to pay £27 a year rent. Asks for help owing to increased cost of living. Relieved twice, £17. Voted £5.

Subscriptions may be sent to the acting honorary treasurer, Dr. Samuel West, at 11, Chandos-street, Cavendish-square, London, W. 1.



## Correspondence.

"Audi alteram partem."

## THE NEED FOR ACCESSORY FOOD FACTORS IN INFANT FEEDING.

To the Editor of THE LANCET.

SIR,—The appalling loss of life which occurred during the war brought into prominence for the first time the need for economy in life generally, and more especially that of infants. The survival of the less fit may be eugenically wrong, but so often infant life depends not on fitness to survive so much as in the knowledge and fitness of the mother. And so there came into being the vast organisation of infant welfare centres throughout the country and the initiation of schemes for ensuring adequate nourishment and care to growing infants. In London the raids put many nursing mothers off their milk, especially in the areas severely visited, and this at a time when the scarcity of cow's milk was keenly felt, and when whole districts were without adequate supply. Then it was that the Government wisely encouraged the use of dried milk, and an exhaustive report on dried milk was made to the Local Government Board. It was shown that the absence or destruction of antiscorbutic factor in the dried milk had no apparent influence on the children's growth, nor did Barlow's disease appear save in very exceptional cases. There is no doubt that animals suffer from the deprivation of the antiscorbutic vitamin in their food much more rapidly and severely than does the human infant. The reason for this is not known. Whether the mother is able to transmit a tolerance in her infant to a vitaminless diet, or whether the human young require much less than do animals to keep them in health is pure speculation, but the probability is that when infantile scurvy has advanced to the stage of physical signs we have arrived at the last chapter of the disease, not the first. Zilva has shown that the growing teeth of the guinea-pig are very early affected by the absence of vitamin in the diet, and there is reason to suppose that the cause of some of the ailing, without actual disease, of infants is caused by the absence of vitamin. So far we have no knowledge of the influence of such absence on the early growth of the permanent teeth. At University College Hospital it has long been felt that it was not right wilfully to withdraw this vitamin from the diet of these artificially fed infants, even although no very obvious symptoms of scurvy had been encountered, and Dr. Harriette Chick suggested two years ago the use of an apple jelly the vitamin in which was not destroyed in the process of manufacture. This jelly was made for the Army, and, alas, is now unobtainable. It did not disagree, and was quite palatable. As the manufacture was discontinued, orange-juice has been used, and successfully, and is well tolerated by even the youngest infants. The rind is mixed with the pulp, as the essential oil, present only in the rind, preserves the juice for quite a long period. The minced orange is then squeezed through a tincture press and the juice collected. The doses given are a teaspoonful in a little sugared water twice daily under three months, and double that amount over that age.

As to the fat-soluble A factor, this is present in the dried milk in sufficient quantity to prevent rickets, but where in some cases the infant does not tolerate dried milk and diluted cow's milk has to be substituted the dilution of the cow's milk becomes an anxiety unless cream is added to the feed. Cream is unobtainable or prohibitive, and as the Marylebone cream is useless so far as fat-soluble is concerned a cream has been in use for many months at the Infant Department at University College Hospital made of beef suet, which is rich in fat-soluble. This cream has a richness in fat equal to ordinary skimmed cream, cannot go bad, and is dispensed at a very low cost. The conversion of suet into an emulsion miscible with all dilutions of milk was found to be difficult by reason of the high melting point of suet. This was overcome at last, and the method of manufacture and the formula (I quote from a paper by Mr. Hampshire and Mr. Hawker in Transactions of the British Pharmaceutical Conference, 1919) are as follows:—

Beef suet, 40 oz.; olive oil, 5 oz.; syrup, 25 fl. oz.; benzoic acid, 35 gr.; decoction of Irish moss, 70 fl. oz.; water to 1 gallon. "The oil is added to the melted suet and the benzoic acid dissolved in the mixture. The decoction is

heated to about 60° C. and placed in the emulsifier, and the fats are then added at about the same temperature. The emulsion is then worked up and the syrup and water added last." I am, Sir, yours faithfully,

E. A. BARTON,  
Medical Officer to Infant Department,  
University College Hospital.

August 14th, 1919.

## THE INCIDENCE OF TUBERCULOSIS AMONGST ASYLUM PATIENTS.

To the Editor of THE LANCET.

SIR,—The paper by Dr. F. A. Elkins and Dr. Hyslop Thomson in your issue of August 9th brings forward many interesting points, to me none more so than the paragraph on clinical features, in which they insist on the extraordinary absence of the classical symptoms and signs of pulmonary tubercle which obtains in the asylum phthisical patient. This is, of course, a fact that is perfectly well known to those of us who have spent some time resident in institutions for the care of the insane, but it is, I find, not appreciated by those who have not, and it is important that it should be more widely known because, for one thing, large numbers of the more chronic insane are still under treatment in the union wards, where the resident or other medical officers are often of a temporary character, or, even if this is not the case, are not so *au fait* with these matters as the expert alienist.

My experience as medical officer in charge of the Western Command Epileptic Centre at the Nell Lane Military Hospital, where for the last two years of the war we have had 68 beds occupied by epileptic soldiers under careful observation, does not lead me to include epileptics under the heading of those predisposed to tubercle; these were, with few exceptions, sane epileptics, but we were struck with the small incidence of tubercle amongst them, smaller indeed, by a good deal, than the average incidence of tubercle amongst medical military patients as a whole.

I do not altogether agree with Dr. Elkins and Dr. Thomson in ascribing so much importance to contact infection when seeking for explanations of the war-time increase in asylum tubercle. To my mind, most of these patients had a latent focus of tubercle on admission, and owing to the poor food, the war-time rationed deficiency of fats, sugar, &c., the resistance was diminished so that the dormant focus became active again. Those who have made post-mortems at all frequently on the asylum type of patient know well that scars of healed apical tubercle are met with in the vast majority of these bodies, and it is casting no stigma on the asylum medical officer to suggest that on admission a far greater number were suffering from tubercle than are so recorded in the table given. His duties on the admission of a patient are to examine that patient and to fill up forms concerning him; he is especially interested in the mental condition, and it is not to be expected that he is likely to spot doubtful or latent foci in the lungs in the way that a tuberculosis specialist would.

"It is true that insane tuberculous patients have rarely any expectoration, and therefore the medium of infection is obviously not sputum." This seems to be going rather too far, both as regards reinfection in the bowel of the patient himself and infection of others in the same ward. In the insane phthisical patient the cough is absent, and sputum, in the strict sense of the word, is also absent, but the morbid material and secretion from the air passages is produced, and reaches the oro-pharyngeal cavity in some, though it may be in small, quantity, and is doubtless swallowed, constituting a medium of contact infection. In addition to this, the contents of the mouth and pharynx may be, as is well known, disseminated through the air for many feet—in the absence of coughing—by speaking, sneezing, or even by the snoring and stertorous breathing of so many of these cases, and such morbid material, being present in the mouth, may contaminate spoons, forks, and drinking vessels, hence infecting others if the washing arrangements are at all perfunctory. The same absence of cough and sputum, the same laryngeal anaesthesia, occur also in the deglutition pneumonia and pulmonary gangrene of asylum patients, another common cause of an insane patient's rapid decline, which has in these subjects the same insidious onset as pulmonary tubercle has.

The authors of the paper ascribe the transference of disease to infected hands and bedclothes. I believe this



holds good, to some extent, as far as the patient himself is concerned, but I do not think, in a well-ordered asylum, that the infection extends to those in neighbouring beds, where I think the natural predisposition of the mental case to tubercle or the lighting up of an old focus plus the diminished resistance from war-time poverty of rations will explain everything not explained by aerial transmission of mouth contents and possibly by contaminated eating and drinking utensils.

I agree entirely as to the importance of cubic space and ventilation. In asylum hospital wards it is often the case that too little air space is allowed for the case of acute infection. It is often also a fact that asylum ward ventilation is poor, given sufficient air space, owing to the bottoms of the windows being for other reasons at a higher level than usual from the floor. Tubercle in the insane is hopeless; in them "early or suspected cases" are in reality too advanced for any treatment to arrest the disease.

I am, Sir, yours faithfully,

FRANK E. TYLECOTE, M.D., D.P.H., M.R.C.P.,  
Assistant Physician, Manchester Royal Infirmary; Visiting  
Physician to the South Manchester Union Hospitals and  
Lunacy Wards; sometime A.M.O. and Pathologist,  
Winwick Asylum.

Manchester, August 12th, 1919.

To the Editor of THE LANCET.

SIR,—I do not think that Dr. F. A. Elkins and Dr. Hyslop Thomson, in their paper published in THE LANCET of August 9th, lay enough stress on the importance of ventilation in asylums when writing on the incidence of tuberculosis. In my opinion the bed-space requirements of the Board of Control (50 square feet in ordinary wards and 67 in hospital wards) is quite inadequate for an asylum population. It must be borne in mind that even for a large asylum they only recommend an isolation hospital with three beds for each sex, which quite precludes the treatment of colitis, for instance, in such hospital. Some years ago I saw at Shrewsbury Asylum what I thought was an admirable arrangement for ventilation, especially in hot weather. The lower sash of each window was of double length, the lower half being unglazed and being housed below the window-sill when the window was closed; when raised it had the effect of a widely open window, the empty frames fulfilling the purpose of bars without their appearance. I suggested the adoption of this arrangement in a new asylum some years ago, but the Commissioner to whom my suggestion was referred poochpooed it.

As regards the dietetic requirements, I do not think that any asylum superintendent would deny that the excessive mortality from tuberculosis since 1914 was due to insufficient food, and that it would have been much greater if the requirements of the Board of Control (no doubt under the direction of the Food Controller) had been carried out literally.—I am, Sir, yours faithfully,

H. K. ABBOTT,

Medical Superintendent, Hants County Asylum,  
August 18th, 1919. Knowle, Fareham.

## THE RESULTS OF COMPLETE COLECTOMY.

To the Editor of THE LANCET.

SIR,—Under the above heading Mr. J. F. Dobson criticises, I think with justice, the imperfect manner in which Major James Taylor has recorded his series of six total colectomies in THE LANCET of August 2nd. Apparently Major Taylor is a whole-hearted disciple of Sir Arbuthnot Lane, and he carries his intimation so far as to imagine that his readers will be satisfied with the statement that the patients made an excellent recovery from the operation; that he has seen four of his cases recently, of whom three were not troubled with looseness of the bowels.

My own experience of total colectomy is limited to one case, and I freely admit that only a few days ago the patient consulted me on account of disturbed nights owing to looseness of the bowels. The colon in this case was excised for dilatation and recurrent attacks of obstruction. Her symptoms are markedly improved, and her looks are satisfactory, but she is not yet free from intestinal troubles.

It appears to me high time for a clinical demonstration of these cases of complete colectomy, and I hope that steps may be taken in this direction at the Surgical Section of the Royal Society of Medicine. We must be supplied with scientific data on this subject, and the matter should no longer be obscured by such literature as is provided in Sir Arbuthnot

Lane's book, entitled "The Operative Treatment of Chronic Intestinal Stasis"; a rather quarrelsome symposium by several authors, abounding both in contradictions and repetitions. This has been adequately reviewed in the April number of the *British Journal of Surgery*, and apparently the art of "slating" is not quite a lost one.

The pity of it is that such a straightforward surgical question should not receive a clear answer. If the whole colon should be removed by all means let us resect it, not because we can, but because we ought.

I am, Sir, yours faithfully,

Devonshire-place, W., August 14th, 1919. JOSEPH E. ADAMS.

## A CRITICISM OF THE MEMORANDUM ON MALARIA.

To the Editor of THE LANCET.

SIR,—May I offer one more criticism of the Memorandum on Malaria recently issued by the Ministry of Pensions? The object of such a publication is, I imagine, to give help to the civil practitioner when called upon to diagnose and treat cases of malaria that have been discharged from the Army, but the vague instructions and information that it gives must, I feel sure, mislead rather than guide him.

*Description of the Forms of Malaria.*

The diagnosis as described is correct, but it deals almost exclusively with the features of what I call a true tropical attack. When demobilised and sent home to England, cases often show symptoms of a far different nature, their condition being post malarial, and post malarial conditions are essentially influenced by climatic and hygienic conditions. The practitioner will, in all probability, be called to treat cases confined largely to the following classes: 1. Those who have already been through a thorough course of hospital treatment following the acute attack—and the vitality of the infecting plasmodium therefore reduced. 2. Those who have already become reacclimatised to home conditions.

Cases such as these will not give symptoms of true tropical attacks. It is the subsequent general constitutional disturbances that will make for difficulty of diagnosis. There will be every kind of obscure symptoms, and men without knowledge of these, whilst looking for the standard symptoms, will probably fail even to recognise them. Therefore the Memorandum should have laid special emphasis on the symptoms and appearances of post tertian and quartan cases, as it is highly improbable that men suffering from the more severe forms would be discharged and sent home.

The Memorandum makes a strong point of "periodic attacks," but this, I think, is misleading; it should only arouse suspicion; it should surely never make diagnosis certain. Many chronic cases never show a typical rigor. Enlargement of the spleen is mentioned as being important; this is correct, but no word is spoken as to the character of enlargement—i.e., the recent case giving "soft" and the long and chronic case giving the "hard" (ague cake)—two conditions requiring entirely different treatment. Pigmentation of various degree, especially around the eye, jaundice, the cold clammy skin with sweating head and tachycardia—these I have seen as giving the only symptoms of undoubted malarial cases. Fine muscular tremors, with anæmia and emaciation, likewise, are the only symptoms of another group of cases.

Nervous disorders should have been given a very important place. Peripheral neuritis, muscular and auditory hyper- and an-algesia, vertigo, and impotence should all have been laid stress upon. "Severe symptoms are usually absent," so says the Memorandum, but surely many of the conditions I have mentioned may be most serious, and nephritis, which is often present, especially so.

Under the vague term "malarial cachexia" a countless number of important symptoms are summarily dismissed. Diagnosis by aid of the blood film is good in the hands of an expert, but almost impossible to the practitioner. A great amount of patience and quite a fair amount of experience is necessary, and no mention is made of the very important fact that a blood film taken within 24 hours of a patient being given large doses of quinine is almost valueless. Films taken between attacks often give negative results. The best time to take the blood is about ten hours after the rigor. In brief, instead of diagnosis being a simple thing, as the



Memorandum assumes, except in acute cases, it may be extremely difficult.

#### Treatment.

I agree with Dr. Gordon Ward that the general and indiscriminate administration of quinine is not sound advice. Quinine is the standby in acute cases—given a few hours before or during sporulation (i.e., the attack) and for some time afterwards—but to give this drug for several months on end to chronic anæmic and emaciated non-febrile cases is folly. A man must “know” quinine and understand malaria. Dr. T. H. Jamieson, in his letter of August 9th, makes the same mistake as the Memorandum. He speaks as if there were but one type of case to consider. The cessation of rigors by the action of quinine does not mean that there has been any cure of malaria. To the civil practitioner this above all things should be pointed out to him—viz., that for any length of time after the attack is cured later symptoms may, and probably will, develop, and that when these later symptoms follow quinine is to be avoided. The administration of a powerful protoplasmic, and therefore metabolic, poison to a person whose natural bodily resistance has already been lowered by the infection, is obviously a practice to be condemned. The danger we have to fight against is not the one Dr. Jamieson suggests—i.e., the failure to give adequate doses of quinine for a sufficiently long period—but the very opposite; the failure to discontinue quinine in cases of malaria showing a post-malarial condition. Dr. Jamieson's statement that such a condition—i.e., “chronic tachycardia and effort syndrome”—“is in most cases the result of inadequate doses of quinine for a short period” shows merely an attempt to substitute fancy for fact. I have suffered myself from the effects of malarial infection for the last ten years—I have undergone thorough hospital treatment with quinine in full doses for some time. I have been cured of the attacks, but no amount of quinine could have prevented my present post-malarial symptoms from developing, and it is because my experience has taught me to avoid quinine now that I am able to enjoy comparatively good health. It is the post-malarial conditions that will be met with mostly in this country, and for these the iron salts with arsenic, colloid preparations of iodides, organotherapy, high frequency, &c., all find their legitimate use.

I have had a varied and extensive practical experience, extending over ten years in the native and European hospitals in Africa (and more recently in the last campaign), and I know that the civil practitioner at home here will, if he adheres to the principles laid down in the Memorandum and Dr. Jamieson's letter, find much to perplex and deceive him.

I am, Sir, yours faithfully,

C. R. CORFIELD, B.Sc., L.M.S.S.A.,

Late Superintendent, Govt. Area and Glencalrn Hospitals,  
August 16th, 1919. Transvaal, South Africa.

#### To the Editor of THE LANCET.

SIR,—In your issue of August 9th Dr. T. H. Jamieson takes me to task for what he describes as “pernicious and dangerous advice.” May I be permitted a few words in reply? Dr. Jamieson seems to assume that I habitually give smaller doses of quinine than he considers correct. As a matter of fact, I give the same doses as he does himself; nor is there anything in my previous letter to suggest that I ever did otherwise. I plead guilty, however, to calling attention to the fact that there is something more than quinine administration to be thought of—i.e., “improvement of the natural resistance of the body.” Anyone who was able to judge of the results obtained by hospital and convalescent camp treatment respectively, the quinine dosage being the same, must bear me out in this. I gather that Dr. Jamieson has not had the opportunity of studying this experiment—for as such it may be regarded—which was so successful with the 10th Division on their return from the East to France. This same experiment also goes far to disprove Dr. Jamieson's assertion that effort syndrome is commonly due to insufficient or irregular quinine treatment, inasmuch as the effort syndrome, &c., persisted in hospital but disappeared in convalescent camps.

I stated that the instructions about intramuscular injection in the Memorandum were unwise. I still think so. Dr. Jamieson says that “a very elementary knowledge of anatomy will enable one not to inject in the close proximity of an important nerve trunk.” So it will, but this elementary knowledge is not always available, as witness the fact that

the official instructions on this matter issued to M.O.'s of the Salonika army were grossly inaccurate as to the position of structures in the buttock.

Dr. Jamieson speaks as if he believed that quinine killed the malaria parasite and that no other treatment was necessary. This view has been widely held, but I recently had the pleasure of hearing Sir Ronald Ross admit publicly that he had grave doubts whether quinine had any direct effect at all on the parasite—a conclusion to which many others have come. In the circumstances blind reliance on quinine ought not to constitute the whole therapy of the disease, as was usually the case in military hospitals.

In conclusion, may I say that the Medical Society of London is holding a discussion on the treatment of malaria on Nov. 24th. I should feel honoured if Dr. Jamieson would be my guest on that occasion, if he has not had an invitation from other sources. He may rest assured that I may be “pernicious,” but I am not “dangerous,” so that he can accept with safety.

I am, Sir, yours faithfully,

Sevenoaks, Kent, August 18th, 1919.

GORDON WARD.

## THE CONDUCT OF LABOUR AND PUERPERAL SEPSIS.

### To the Editor of THE LANCET.

SIR,—Dr. J. H. E. Brock, discussing in your columns last week an aspect of puerperal sepsis which has been neglected for some years, would have us believe that “the reason why there is such a large amount of sepsis still rampant in parturition is that the woman begins her labour with the vaginal canal, and sometimes the uterine canal, surgically unclean,” and that the sepsis is due to the inoculation, by the examining finger, of the cervix and uterine wall with organisms introduced into the vagina during sexual intercourse. I think it can be shown that Dr. Brock has over-estimated the danger of intercourse during pregnancy, and I should like to suggest one or two points for consideration.

Examining the evidence brought forward:

1. I submit that it is not reasonable to assume that because conjunctivitis is prevalent within the first week of birth, therefore the maternal passages are “practically never sterile.” We have still to learn what numbers of the cases of conjunctival inflammation are due to simple, non-infected irritation by the vaginal secretions (? lactic acid), what numbers become infected immediately after birth (there is ample opportunity), and what numbers are infected in the vagina.

2. It is beyond dispute, of course, that every time sexual intercourse takes place the vagina is contaminated by a variety of organisms, but evidence of sepsis of the vagina at term which consists of proof (if proof were needed) that the organisms were introduced into the vagina by intercourse sometime during the pregnancy is not, I think, worth very much. Even if intercourse far on into pregnancy is the rule, there must be a period of one or two months during which there is no fresh infection, and there are at least two factors to be considered—in a question of evidence—during this period: the destruction or neutralisation of the organisms by the mother, and the possibility that the organisms may die or destroy each other from other causes.

3. I cannot understand Dr. Brock's “*very conclusive proof*” (my italics) of the capability of the uncleaned, but otherwise healthy, penis of causing puerperal sepsis. I should expect a rise of temperature after intercourse on the seventh night of the puerperium if the penis had been *boiled*.

But let it be granted that the passages at term are practically never sterile; what is the true significance of the organisms present? If a man presents his wife during her pregnancy with virulent germs from a diseased nethra it is one thing, but puerperal fever occurs in women whose genitals, and whose husbands' genitals, are healthy. Is there any evidence to show that in such a case the infection is due to organisms present in the vagina before labour?

On general grounds one would not expect intercourse during pregnancy by healthy people to be dangerous. It is not probable that a man and woman can both harbour in the genital region a germ of great virulence for months without symptoms. It must happen frequently that bacteria are placed during intercourse very near the cervical canal immediately before the onset of the menstrual flow and very soon after the period, almost certainly whilst there are raw areas in the uterus. It is reasonable to suppose that organisms (as well as spermatozoa) enter the uterus, and yet



no harm follows. I suggest that there is some factor (other than fatigue, size of wound, access to open vessels, &c., which, to my mind, do not meet the case) which operates to make a woman particularly susceptible during a particular labour.

Dr. Brock asks what a surgeon would say if he were asked to operate in a region so soiled as the vagina. Probably—"It might have been piles."—I am, Sir, yours faithfully,

Lansdowne-road, S.E., August 19th. R. L. KITCHING, M.B., B.S.

## Obituary.

WILLIAM SMITH GREENFIELD, M.D. LOND.,  
F.R.C.P. LOND. & EDIN.,

EMERITUS PROFESSOR OF PATHOLOGY AND OF CLINICAL MEDICINE IN  
THE UNIVERSITY OF EDINBURGH.

William Smith Greenfield was born at Salisbury and received his medical education at University College Hospital, London, graduating M.D. in 1874. In the same year he became demonstrator in morbid anatomy and pathology at St. Thomas's Hospital, where for two years previously he had been registrar. Later he became assistant physician and physician for diseases of the throat at the hospital. In 1878 he succeeded Dr. Burdon Sanderson as professor of pathology at the Brown Institute.

It was at St. Thomas's Hospital that William Greenfield laid the foundation of a great career in pathology, influenced by such leaders of thought as Wilson Fox and Murchison. When in 1881, he came to Edinburgh, he had already made his name as a teacher, a clinician, and a pathologist. Both at St. Thomas's and at the Brown Institute he made full use of all the material at his disposal and devoted himself with great enthusiasm to the study of contagious and infectious disease. His work on anthrax stands out as the record of a great scientific observer, and his original publication on "wool-sorter's disease" is still the classic on the subject. Encouraged and abundantly supplied with means by the French Government, Pasteur carried out a great piece of experimental work, which in 1881 resulted in a communication to the International Medical Congress in London dealing with a successful means of protecting animals against infection with *B. anthracis*. This work is justly recognised as one of the greatest contributions on the subject of vaccination, but it is not generally recognised that priority for the discovery must be given to Greenfield. Working with a small and inadequate sum of money furnished by the generosity of a private society, and hampered by the difficulties interposed by the law dealing with experiments on animals, he obtained the same results working with similar methods. His work was published in the Proceedings of the Royal Society in 1880.

Greenfield's work on the "Pathology of the Kidney," published by the New Sydenham Society, is, one of the most accurate pieces of pathological work on the kidney in the English language. All his other work shows the same accuracy and attention to detail. All pathologists regret that during his later years he did not give to the world of science the results of his wide experience, which would have been invaluable to all working in the same field as himself. Those of us who admire him most are fully conscious of this defect, which was largely due to self-consciousness. He was a critic of all scientific work, but his most severe criticism was reserved for his own and, though much work was got ready for publication, it never satisfied the demands of its author. This hypercriticism may be regarded as a great fault in a teacher, but though he did not publish widely, he gave his rich experience to those who worked under him, and the pathological world has benefited indirectly through the work of Woodhead, Muir, and the other professors of pathology and bacteriology who commenced their careers as Greenfield's assistants. Trained as a clinician and having the only sound basis for clinical medicine, a thorough knowledge of morbid anatomy and histology and experimental pathology, it is not surprising that in his introductory lecture at Edinburgh Greenfield said: "It is living matter with which we have to deal, and it is by the exact study of the phenomena of life that we must bridge over the chasm between dead morbid anatomy and living pathology." Or again: "The study of clinical medicine and pathological experiment are, in my opinion, the inseparable adjuncts of pathological study. That would be a strange physiology which should conduct its study on

dead animals alone, and no less strange a pathology studied only on dead subjects." Believing this, and striving with all his energy to give the living pathology to his students, one cannot wonder at his success—a success which is not measured, but which is partly shown by the number of his pupils who have held or are holding important posts in pathology and bacteriology in this country and in our Dominions. It may be said that the Pathological School of Edinburgh has in the past directed the pathological teaching of this country, and that largely because Greenfield inspired those who worked under him to search for truth. Never bound by old shibboleths but always sceptical of the new, he taught others to do that which he himself always did—viz., examine all new facts and theories brought forward, try them, and, if the evidence justified them, then have no hesitation in accepting them and making them bases for further work.

One of his best-known lieutenants thus writes about him: "To his assistants he was always ready to give help and advice, and I often marvelled at his knowledge of the literature of his subject. To be an assistant with him was both an honour and a privilege, for it was only those who were intimately associated with him who knew the real man. Sir German Sims Woodhead, in a letter to me the other day, said, 'I always look back to the period of association with Greenfield as a very pleasant and profitable time. I was fond of the man.' That, I am sure, will be the feeling of everyone who has been an assistant with him. We were drawn to him, not by the mere admiration of a student for a great and brilliant chief, nor by the pride of being associated with a really great pathologist, but by a real bond of friendship and love for the man. A severe but just critic, a man who could not tolerate slackness, and one who loathed toadyism in all its forms, it is not to be wondered at that he made enemies. But his enemies were never those who really knew him. To see him in his own home, to know his real interest in his students, and to have evidence, as I abundantly had, of the true greatness of his character, is to make me look back with pleasure to the years I spent with him. He himself has passed, but his memory must always remain to those, who, like myself, have been closely associated with him and who owe so much to him." J. M. B.

### LOVELL DRAGE, M.D. OXON.

THE profession has lost a valuable and well-known practitioner by the death, from septic poisoning, of Dr. Lovell Drage, of Hatfield. Born in 1859, he was educated at Winchester, Christ Church, Oxford, Owens College, Manchester, and at St. Bartholomew's Hospital, where he was house surgeon to the late Sir Thomas Smith, and resident midwifery assistant under Dr. J. Matthews Duncan. He took a science degree at Oxford in 1881, and proceeded to M.B., B.Ch. in 1887, and M.D. in 1893. After a distinguished career as a student and member of the junior staff at St. Bartholomew's, he joined his father in practice at Hatfield, Herts, and was for many years well known in the country and in medical circles in London. His tall figure and cheery greetings of numerous old friends were a feature of many meetings, whether social or scientific, in the medical world. In spite of the claims of large and important practice and much public work of an urgent character, Drage found time to pursue original clinical observation. His inquiry into the use of the derivatives of cinnamic acid in malignant disease is a case in point. Various papers on this subject from his pen appeared in the columns of THE LANCET, and though his views got no strong outside support, they obtained the respect earned by his obvious sincerity. A man of clear and decided opinions, he was a generous and straightforward opponent of those with whom he disagreed; but he will be remembered far more widely as a warm-hearted and genial friend.

Drage was a typical country sportsman, and in his earlier years a fine horseman and good shot. He had a faculty for preserving old friendships, many of them begun at school or at St. Bartholomew's Hospital, and a large group of men will regret the genuine and warm hospitality of the old house at Hatfield. He will be widely and acutely missed in his county of Hertfordshire, where among other important public posts he held the office of coroner, and in that capacity conducted the inquest upon the bodies of the crew of the Schutte-Lanz airship which was brought down in flames at Cuffley on Sept. 3rd, 1916. The sympathy of many will go out to his widow, his son, Major R. L. Drage, and his daughter.



## Parliamentary Intelligence.

### HOUSE OF LORDS.

WEDNESDAY, AUGUST 13TH.

#### *Closing of Dublin Hospitals.*

LORD SHANDON asked whether the attention of H.M. Government had been directed to the impending closing of the Houses of Industry Hospitals in Dublin; if it was intended to take any action relating thereto; and moved for papers. He said that he desired, if possible, to draw from the Government some sympathetic view and practical assistance in connexion with the serious difficulty that had arisen with regard to the management of four hospitals, which were essentially State hospitals, and at the present time were supposed to be supported by a grant from Imperial resources. This was really a serious matter which ought to be dealt with, and he hoped to suggest one practical way of dealing with it. In the eighteenth century there were established by the Irish Government of the time a series of hospitals to provide surgical and medical aid for the poorer classes in Dublin and Ireland generally, and these hospitals for a time fulfilled the functions now fulfilled by Poor-law relief hospitals. Under the Act of Union this was one of the liabilities taken over by the Imperial Government, and a short time after the operation of the Act of Union it was found that difficulties, both from a monetary and a practical point of view, arose with regard to these hospitals. Two inquiries were held. One was an inquiry by the House of Commons in 1854 and the second was an inquiry held by a commission, generally referred to as the South Commission, in 1856. The South Commission reported that these hospitals were doing such good work that they should be maintained in their then state of efficiency. The report of the South Commission was followed by an Act of Parliament called the Hospitals Regulation Act, 1856, which constituted the hospitals in their present form. They consisted of a group and were called the Richmond, a surgical hospital; the Whitworth, a medical hospital; the Hardwicke, a purely fever hospital; and the Auxiliary block for surgical and certain emergency services. These four hospitals were constituted under the statute with a government of a very peculiar character. The Lord-Lieutenant of Ireland, through the Irish Office, exercised complete control over the management of these hospitals. The buildings themselves were not private property, but were vested in the Commissioners of Public Works in Ireland, and nothing could be done in that way to mortgage or charge these buildings except with the Commissioners' approval. This showed how completely they were State institutions. But more than that, resulting from the recommendations of the South Commission, a sum of £7600 originally, and now £7500, per annum was provided as being sufficient to keep up these hospitals. From 1856, down to the beginning of the war, this grant was found sufficient—a rather tight fit, perhaps, but still sufficient—to keep them going. It was quite impossible to keep any institution going on the same rate of contribution that was possible before the war. He was informed that while prior to the war £64 12s. 11d. per patient was sufficient to keep the hospitals going, in 1919 the sum required per patient was £119 1s. 10d. In Dublin there were a number of hospitals supported by voluntary contributions, most of them being at present in debt. The difficulty of getting the public under present conditions to clear off debt or to keep the hospitals going in their old condition of efficiency was practically insuperable. These particular hospitals had no private subscriptions, and though the statute under which they were constituted did contemplate private subscriptions, the power had never been used, and the hope of getting money in present circumstances from private sources was, he was afraid, an impossibility. The four hospitals together were practically the largest institution of the kind in Ireland. The closing of them would not only affect the indigent poor, but seriously affect medical science and practice in Ireland. It would also seriously affect the training of nurses. The hospitals were practically closed and there was no chance of their being opened unless some practical solution was found. Perhaps a business inquiry representing the Treasury, the medical profession, the governors, and perhaps some of the business men of Dublin, might come to some conclusion. The doctors said, he was informed, that suddenly to shut down one of these hospitals was practically impossible. If they shut down the fever hospital there would be no sufficient accommodation for fever patients in Dublin. If the emergency block were shut down they would have to take serious cases across the city in cars or ambulances, with great suffering to the patients. The doctors said it was practically impossible. Surely some solution might be found before the winter.

The Earl of MAYO supported Lord SHANDON's motion, and expressed the view that he had made out a strong case for these hospitals, which were much needed in Dublin.

The Earl of CRAWFORD (Chancellor of the Duchy of Lancaster), replying for the Government, said these hospitals were not State hospitals in the sense that they rendered any special service to the State. They differed in no degree from any other hospital in Ireland or in Great Britain, except that they had the good fortune for many years to have received a special grant. From accounts he had before him it would certainly appear that the State subsidy of £7600 was not the only source of income available to this charitable institution.

LORD SHANDON: It is the only one except the private patients.

The Earl of CRAWFORD, continuing, said that during the last two or three years the hospital had had a very considerable income from the War Office apart from the money voted by Parliament. Last year it was £7000; the year before £6300; this was in addition to the income from patients who could afford to pay.

LORD SHANDON: They are not very large, but there are some.

The Earl of CRAWFORD: They are upwards of £3000 a year. He was afraid he could not hold out hopes to the noble and learned Lord that the Treasury would see its way to recommend Parliament to pay a larger sum than the present annual grant. He did not think it would be wise to do so.—The motion was by leave withdrawn.

#### *War Pensions Bill.*

Their Lordships went into Committee on the War Pensions (Administrative Provisions) Bill, the Earl of Kintore in the chair. On Clause 8 (dealing with appeals to Pensions Appeal Tribunals),

The Earl of CRAWFORD moved an amendment to provide that no appeal should lie in the case of any claim already heard and rejected by a Ministry Appeal Tribunal. This prevented a man having his case dealt with by a new tribunal after it had already been settled by a competent tribunal in existence.

The amendment was agreed to.

The Committee stage of the Bill was concluded, the Bill was reported and read a third time and passed.

### HOUSE OF COMMONS.

WEDNESDAY, AUGUST 13TH.

#### *Medical Breakdown in Afghan Campaign.*

Major EARL WINTERTON asked the Secretary of State for India if he would state what steps he was taking to inquire into the allegations regarding transport and medical breakdown in the Indian Army operations against Afghanistan.—MR. MONTAGU replied: I have caused inquiry to be made on every definite allegation that is brought to my notice and I hope to lay papers on the table very shortly dealing with the medical arrangements in the North-West Frontier campaign.

Lieutenant-Colonel SIR S. HOARE: Will the papers be laid before the rising of the House for the holidays?—MR. MONTAGU replied: I do not yet know when the House is going to rise, but I want to get out the telegrams that I have received from the Government of India as soon as possible and I hope to have the papers ready at the end of this week.

#### *Small-pox in the Country.*

MR. CLOUGH asked the Minister of Health if he would state how many cases of small-pox there were in this country, and whether any of them had been introduced from outside.—Major ASTOR (Parliamentary Secretary to the Ministry of Health) replied: During the month of July and the first week in August 60 cases of small-pox have come to the knowledge of the Ministry of Health. Of these one group of cases numbering 25 up to August 7th is associated with the return home of a sailor and three groups numbering eight cases in all up to August 7th to soldiers returning home from abroad. There have been three ship-borne cases intercepted by port sanitary authorities from which there has been no spread of infection.

#### *A Pensions Disablement Appeal.*

SIR MONTAGUE BARLOW asked the Pensions Minister whether he would have inquiries made into the case of Mr. A. Wakefield, late able-bodied seaman No. 16,273, of H.M.S. *Ruby*, of 15, Enbridge-street, Trafford-road, Salford; whether this man was invalided from the Navy with flat feet caused through wounds in the leg and ankle after 17 years' service, having joined at the age of 15½ years; whether, on discharge, he was awarded a temporary pension; whether he applied to the local War Pensions Committee for reassessment and was examined by the medical referees on April 29th; and whether, in spite of the fact that his recommendations were forwarded to the Ministry of Pensions and a further medical board ordered, the man was still unable to ascertain what pension, if any, has been awarded to him.—SIR J. CRAIG replied: Mr. Wakefield was invalided for injury to his right leg and was in receipt of disablement pension until May 15th, 1919. The disability of flat feet has been found to be neither attributable to nor aggravated by service. He was medically examined on March 6th, 1919, when the disablement arising from the



injury was assessed at nil. He therefore reverted to a pension of 4s. 8d. a week for life awarded in respect of his service. On an appeal being received from the local War Pensions Committee on his behalf he was further examined on June 3rd, 1919, when the extent of disablement was again assessed at nil. He is therefore ineligible for resumption of his disablement pension, and the fact has now been communicated to him.

THURSDAY, AUGUST 14TH.

*The Isolation of Tuberculous Patients.*

Mr. GRATTAN DOYLE asked the Minister of Health if he was aware that at the Northern Hospital, Winchmore Hill, London, certain wards were used for consumptive patients in all stages of the disease, the patients including men, women, and children, while other wards were being used for children convalescent from scarlet fever and diphtheria removed from other infectious hospitals; if his attention had been drawn to the fact that the whole of the wards referred to were enclosed in one building, that the nursing staff was presided over by one matron, and that the nurses were employed indiscriminately in either infectious or tuberculosis wards; whether, if he decided that the hospital should still house both classes of patients, steps would be taken to appoint a recognised expert to take responsible charge of the tuberculosis wards; and if he would ascertain if there was sufficient and suitable space for recreation for sanatorium patients.—Major ASTOR replied: Some blocks at the Metropolitan Asylums Board Hospital, Winchmore Hill, are used for the treatment of tuberculous patients and other blocks for convalescent cases of acute infectious disease, but no ward and no block is used for more than one disease. The tuberculous patients are classified in their respective wards according to the stages of the disease. A nurse engaged in nursing tuberculosis is not allowed to come into contact with cases of acute infectious disease. An entirely separate medical staff, with special experience in tuberculosis, under the general supervision of the medical superintendent of the hospital, is in charge of the blocks for the treatment of tuberculosis. Having regard to the class of cases admitted to these blocks the space available for recreation is sufficient and suitable.

*Grants to Panel Practitioners.*

Mr. GODFREY LOCKER-LAMPSON asked the Minister of Health if he would state what was the cost each year of the grants made and promised to panel doctors and chemists in respect of war bonuses or allowances.—Major ASTOR replied: Grants by way of war bonuses or allowances as distinct from the regular payments for remuneration for insurance practice have been made to insurance practitioners in respect of the year 1918, amounting to approximately £300,000. Approval has been given by the Treasury for the grant of a war bonus to insurance practitioners in respect of the year 1919 on a basis corresponding broadly to that laid down by the Conciliation and Arbitration Board for Civil Servants. The cost of the grants for the year 1919 is estimated to be approximately £950,000. These figures are for Great Britain. As regards chemists, the increase in remuneration afforded them in respect of war conditions forms part of a general charge upon funds provided for defraying the cost of medical benefit, and cannot be readily separated.

*Medical Officers obtained by the War Office.*

Major FARQUHARSON asked the Secretary for War if he would state the number of new medical officers which had been obtained by the War Office upon the consolidated rates of pay offered at the commencement of July of this year.—Mr. FORSTER (Financial Secretary to the War Office) replied: The number of new medical officers obtained is 27.

*Release of Medical Officers in the Army.*

Major FARQUHARSON asked the Secretary for War (1) if he was aware that the contract under which a number of medical practitioners held temporary commissions in the Royal Army Medical Corps would expire on the date on which the termination of the war was officially declared; and what arrangements had been made to enable those practitioners now serving in India and Mesopotamia to return to this country immediately on the termination of their contracts; (2) if he would state under what authority medical and other officers were being temporarily retained in India; and what steps were being taken to ensure the immediate release of those medical officers who were marked for early demobilisation by the Ministry of National Service prior to April of this year.

Mr. BENNETT asked the Secretary for War whether, in view of the fact that Royal Army Medical Corps officers in India serving under yearly contracts were to be demobilised previously to those who volunteered for the duration of the war, he would consider the claim to compensation of officers of the latter category whose practices, which they had built up by their exertions and for which they paid substantial sums, had been virtually ruined and absorbed by the large number of medical officers demobilised from France and other theatres of war; and whether he would

state how many temporary medical officers, exclusive of sick, had been sent home from India since the armistice and how many remained in India.—Mr. FORSTER replied: Temporary medical officers are being retained in India under the terms of their contracts, which render them liable for service for the duration of the present emergency. The only officers who are serving on yearly contracts are those who are not liable to the Military Service Act, and cannot therefore be retained beyond the termination of their contracts. The contracts of temporary officers serving for the duration of the present emergency terminate on the statutory date for the end of the war, and everything possible will be done to enable them to be returned to the United Kingdom by that date. In the event of this being effected the question of compensation does not arise. One hundred and forty-five temporary, Special Reserve, and Territorial Force officers (exclusive of sick) have been sent home since the armistice, and 335 remain, including 100 officers temporarily detained while en route from Mesopotamia on account of the situation prevailing in India. I would add that every available medical officer who is liable for further service is being placed under orders for India or Egypt in order to relieve those who have been asked for by the Ministry of National Service.

MONDAY, AUGUST 18TH.

*Neurasthenia and Shell Shock Treatment in Ireland.*

Lieutenant-Colonel WALTER GUINNESS asked the Pensions Minister whether he was now in a position to make a statement on the provision for the accommodation and general treatment of disabled men in the southern region of Ireland who had been discharged suffering from neurasthenia and shell shock; whether accommodation could be found for such invalided men who were on the borderline of lunacy, and who in consequence must be detained, even against their wishes, in institutions; whether he was aware that the authorities of the two institutions in the neighbourhood of Dublin were prohibited from detaining men against their wishes and, therefore, that such institutions were of little value in the case of neurasthenia or shell shock that bordered on lunacy; whether he was aware that in the absence of such accommodation most of the men in question who had no homes were living in lodging-houses, that a few were certified as being potentially dangerous, that the procedure of getting men into an asylum was troublesome and lengthy, and that on more than one occasion before the admission of the man to an asylum had been secured friends interested in his welfare had lost sight of him; whether he considered it satisfactory that ex-Service men should be committed to lunatic asylums in Ireland and treated as paupers in accordance with the Lunacy Laws as they operated in Ireland; whether provision could be made at once to set up a separate institution for the Southern region of Ireland, to which such cases might be admitted and detained for a time even against the wishes of the patient; and whether the scientific treatment accorded to such cases at the Seale Hayne Institution could be introduced into Ireland.—Sir L. WORTHINGTON EVANS replied: I have no power to keep any man in an institution against his will unless he is certified under the Lunacy Laws. A man so certified and sent to an asylum in Ireland has hitherto been treated as an ordinary patient, but under a scheme which will come into force at an early date he will in future be treated as a Service patient. Arrangements are being made to establish a neurological hospital in the South of Ireland for ex-Service men at which scientific treatment for neurasthenia and shell shock will be provided.

*Seale Hayne Hospital.*

Mr. LAMBERT asked the Secretary for War if he could now state definitely when the Seale Hayne Military Hospital, Newton Abbot, would be evacuated.—Mr. CHURCHILL replied: The work of reinstatement is proceeding as rapidly as is possible, but I am afraid that it is not yet possible to fix a definite date. Three out of the four blocks of the building are empty and are ready for handing over to the owners, who, however, are not prepared to take over portions of the hospital and prefer to wait until the whole can be handed over on the completion of reinstatement. At the present moment the laboratory is being reinstated, and the reinstatement of technical and scientific apparatus is a matter which necessarily takes some time.

*Clothes of Asylum Patients.*

Sir J. BRUTON asked the Home Secretary whether he was aware that Service or ex-Service men when sent to lunatic asylums were put into pauper clothes until the asylum authorities were notified by the Home Office; that they accepted them as Service patients; and, pending acceptance (which might not be given for six weeks to three months), whether it would be possible to allow these men to wear their Service or civilian clothes, and thus avoid the distress caused to their relatives on finding them in pauper attire.—Mr. SHORTT replied: Ex-Service men sent to lunatic asylums direct from war hospitals under Section 91 of the Army Act or Section 3 of the Naval Enlistment Act, 1884, are immediately transferred to the



private class, and as private patients are allowed to wear their own clothes. This class form the hulk of the ex-Service men admitted to asylums. Ex-Service men admitted on summary reception orders after discharge from the Army or Navy are chargeable to the rates until their eligibility to be classed as "Service" patients has been investigated by the Ministry of Pensions, and they are clothed for the time being as ordinary patients. Where a medical superintendent has reason to believe that a man of the latter class will be accepted as a "Service" patient I think he might properly allow such a patient to wear his own clothing, and I will ask the Board of Control to make this suggestion to the asylum authorities.

#### *Tuberculous Ex-Service Men.*

Lieutenant-Colonel Raw asked the Minister of Health if he would state what steps he proposed to take in connexion with the recent report of the inter-departmental committee on tuberculous ex-Service men in view of the urgency of the matter.—Mr. TOWN JONES replied: The report has been in my right honourable friend's hands for a very short time; and while he quite agrees that the matter is urgent, he is not yet in a position to state what action the Government propose to take.

#### *Medical Inspection of Aliens.*

Mr. C. K. MURCHISON asked the Minister of Health if a decision had been reached, in conjunction with the Home Office, concerning the regulations to be carried out in the medical inspection of aliens arriving in this country; and, if so, whether these regulations could now be published.—Mr. TOWN JONES replied: An Order in Council containing further provisions with regard to the medical inspection of aliens will be issued at an early date. I will see that a copy is sent to my honourable friend when available.

#### *Expenses of Port Sanitary Authorities.*

Mr. MURCHISON asked the Minister of Health whether he would consider the desirability of taking steps to secure that the cost incurred by the port sanitary authorities, especially in East Coast ports like Hull and Newcastle, in protecting the people of this country from the inroads of infectious diseases from abroad should be treated as a national charge at least to the extent of 50 per cent. of the amount so incurred.—Mr. TOWN JONES replied: Yes, sir, this question is already under consideration.

#### *Scottish Board of Health.*

Mr. JOSEPH JOHNSTONE asked the Secretary for Scotland whether he was aware that the Minister of Health for England was now in process of forming the consultative councils provided for under the Ministry of Health Act; and whether he proposed similarly to appoint the consultative council provided for under the Scottish Board of Health Act.—Mr. PRATT (Parliamentary Secretary to the Scottish Board of Health) replied: The answer to the first part of the question is in the affirmative. The proposals of the Scottish Board of Health for the establishment of consultative councils are being embodied in a draft Order in Council. The actual constitution of the councils must, however, await the fulfilment of the requirements of the Act as to the Order in Council lying before Parliament for 30 days.

TUESDAY, AUGUST 19TH.

#### *V.A.D. Nurses and Gratuities.*

Mr. HOGGE asked the Financial Secretary to the War Office whether Voluntary Aid Detachment nursing members who had worked in military hospitals received gratuity; whether Voluntary Aid Detachment general service members working in the same hospitals received no gratuity; whether, if a Voluntary Aid Detachment nurse had served any part of her time as a general service member, she was debarred from gratuity; and whether he could revise these anomalies.—Mr. FORSTER replied: The facts are as stated, except that a nurse is not debarred from gratuity on her service in a non-professional capacity. The nursing members receive gratuity because they are part of the nursing service; the general service members receive, instead, furlough and out-of-work donation on termination on the same lines as members of the Queen Mary's Army Auxiliary Corps. It is not proposed to make any change.

#### *Patients in Military Hospitals.*

Major GLYN asked the Secretary for War if any arrangement had been arrived at with the Ministry of Pensions in regard to patients under treatment in military hospitals that were to be taken over by the Ministry of Pensions; and whether the arrangements insured the continuance of treatment by the doctors and nurses who had had previous charge of all non-convalescent cases.—Mr. FORSTER replied: An arrangement has been arrived at. The staff will not be transferred en bloc, as transfer is dependent in part on the wishes of the individuals, but no doubt the Ministry of Pensions will be glad to take into their service as many as possible of the old staffs who are desirous of remaining.

## Appointments.

WORSTER-DROUGHT, C., M.B., B.C. Cantab., has been appointed Honorary Neurologist to Out-patients, Bethlem Royal Hospital.  
St. Thomas's Hospital: WAYTE, J. W., M.R.C.S., L.R.C.P. Lond., M.B., B.Ch. Cantab., BROWN, E. P., M.R.C.S., L.R.C.P. Lond., M.B., B.Ch. Cantab., BROCKMAN, E. P., M.R.C.S., L.R.C.P. Lond., CARTER, E. E., M.R.C.S., L.R.C.P. Lond., MOOR, F., M.R.C.S., L.R.C.P. Lond., PROCTOR, R. A., W. M., M.C.S., L.R.C.P. Lond., Casualty Officers and Resident Anesthetists: SMITH, J. F., M.R.C.S., L.R.C.P. Lond., AMOS, S. K., ECCLES, C. Y., M.R.C.S., L.R.C.P. Lond., THOMAS, A. E., M.B., B.Ch. Oxon., Resident House Physicians: LE GROS CLARK, W. E., M.R.C.S., L.R.C.P. Lond., SPROTT, N. A., M.B., B.Ch. Oxon., WALKER, J. P., S. M.B., B.Ch. Oxon., HIGGINS, L. G., M.B., B.Ch. Cantab., Resident House Surgeons: RYAN, J. F., M.R.C.S., L.R.C.P. Lond., House Surgeon: POTTER, A. F., M.R.C.S., L.R.C.P. Lond., BIAGER, W. G., D.S.O., M.B., B.Ch. Cantab., Obstetric House Physicians: DICKSON, D. McV., M.R.C.S., L.R.C.P. Lond., EVANS, H. L., M.R.C.S., L.R.C.P. Lond., Ophthalmic House Surgeons: SMITH, F. P., M.R.C.S., L.R.C.P. Lond., Clinical Assistant to the Throat Department: VINCEY, A., M.R.C.S., L.R.C.P. Lond., Clinical Assistant to the Children's Medical Department.  
Certifying Surgeons under the Factory and Workshop Acts: WILSON, J. C., M.B., B.Ch. Belf. (Ballyward); STEWART, J. K., M.B., Ch.B. Belf. (Randallstown); AITKEN QUINE, W. J., M.B., B.S. Lond. (Chapel-en-le-Frith); SELKIRK, A., M.B., C.M. Edin. (Cowdenbeath); DOBHOE, D. B., L. & L.M.R.C.P. & R.C.S. Irel. (Rathvilly).

## Vacancies.

For further information refer to the advertisement columns.

Adelaide University.—Prof. of Path. and Bact. £300.  
Barnsley, Beckett Hospital.—Res. H.S.  
Bath Royal United Hospital.—H.P. £150.  
Benenden National Sanatorium, Kent.—Asst. Med. Supt. £175.  
Birmingham Education Committee.—Asst. Sch. M.O. £300.  
Birmingham General Hospital.—Two Asst. S.'s. £50. Also Res. M.O. £155.  
Bradford, Okeal Sanatorium for Tuberculosis.—Res. Asst. M.O. £300.  
Bradford Royal Infirmary.—Res. Surg. O. £250.  
Brighton, Royal Sussex County Hospital.—Asst. H.S. £20.  
Bristol Eye Hospital.—H.S. £150.  
Buxton, Derby-hire, Devonshire Hospital.—Asst. H.P. £120.  
Camberwell Infirmary, Brun-wick-quarre, Camberwell.—Locum Tenens Asst. M.O. £7 7s. weekly.  
Carlisle, Cumberland Infirmary.—Res. M.O. £200.  
Chichester, Royal West Sussex Hospital.—H.S. £200.  
Chorley Education Committee.—Asst. Sch. M.O. £400.  
Cornwall Education Committee.—Asst. Sch. M.O. £400.  
Derbyshire Royal Infirmary.—Oph. H.S. £200.  
Devonport, Royal Albert Hospital.—Res. H.S. £200.  
Dumfries and Galloway Royal Infirmary.—Res. Asst. H.S. £75.  
East London Hospital for Children and Dispensary for Women, Shadwell, E.—H.S. £125.  
Evelina Hospital for Children, Southwark, S.E.—H.S. and H.P. £160.  
Finchley Urban District.—M.O.H. and Sch. M.O. £600.  
Garmang County Asylum, Bridgend.—Fourth Asst. M.O. £400.  
Glasgow, Royal Samaritan Hospital for Women.—Asst. Visiting S.'s.  
Great Yarmouth Hospital.—H.S. £200.  
Greenwich Union Infirmary, Vanbrugh Hill, East Greenwich, S.E.—Deputy Med. Supt. £400.  
Guisborough Union.—M.O. £700.  
Hong-Kong University.—Lecturer in Biologv. £400.  
Isleworth Infirmary.—Sec. Asst. to Med. Supt. £300.  
Italian Hospital.—H.S. £150.  
Khartoum, Wellcome Tropical Research Laboratories.—Asst. Bacteriologist. £2,600.  
King's Lynn, West Norfolk Hospital.—H.S. £150.  
Leeds Public Dispensary, North-street.—Res. M.O. £200.  
Leeds Searcroft Hospitals for Infectious Diseases.—Res. M.O. £300.  
Leyton U.D.C. Education Committee.—Asst. M.O. £350.  
Liverpool, David Lewis Northern Hospital.—Three S.'s and Two P.'s. £150.  
Liverpool Royal Infirmary.—Hon. Asst. Gynaecol. S.  
Liverpool School of Tropical Medicine.—Tropical Research, Brazil. £350.  
London County Council.—Fourth and Fifth Asst. M.O.'s at London County Mental Hospitals. Fourth Assts., £425 to £500; Fifth Assts., £300 to £400.  
Maidstone, Kent County Ophthalmic Hospital.—Hon. Oph. S.  
Manchester, Ancients Hospital.—Res. S.O. £200.  
Manchester Children's Hospital.—Asst. S. £50.  
Manchester, Mousall Fever Hospital.—First Med. Asst. £350. Second Med. Asst. £300.  
Manchester Royal Infirmary.—Med and Surg. Registrars. £75.  
Surg. Tutor. £30. Also H.S.'s. £25.  
Melbourne University.—Lecturer in Pathology. £600.  
Middlesbrough, North Yorkshire Hos. Ital.—Asst. H.S. £175.  
Middlesex County Council.—Female Asst. M.O. £500.  
National Hospital for Diseases of the Ear, Westmoreland-street, W.—Res and Non-Res. M.O.'s. £100 and £50.  
Nelson, Lancs.—M.O. II. and Sch. M.O. £700.  
Newport Borough Asylum, Caelecon, Mon.—Asst. M.O. £350.  
Northampton General Hospital.—Pathologist. £750.  
Northamptonshire C.C. Education Committee.—Sch. Dentist. £350.  
Oldham County Borough.—Asst. M.O.H. £450.  
Preston Royal Infirmary.—Res. H.S.  
Prince of Wales's General Hospital, Tottenham.—Hon. Asst. P. and Hon. Asst. Ophth. S. Also Clin. Asst.'s.  
Putney Hospital, S.W.—Res. M.O. £50.  
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—H.S. and Cas. H.S. £100 each.



Rochdale Infirmary and Dispensary.—Sen. H.S. £200. Also Jun. H.S. £100.  
 Roll of Honour Hospital for Children, 688, Harrow-road, W. 10.—  
 Ohio, Assts.  
 Rotherham Hospital.—Senior H.S. £250.  
 St. Helens Education Committee.—Whole-time Dentist. £450.  
 Sheffield City Education Committee.—Sch. Dental S's. £350.  
 Sheffield Royal Infirmary.—H.S. for Ear, Nose, and Throat. £150.  
 Shetland.—Fingwall, Whiteness, and Weisdale.—M.O. and Pub. Vac. £45.  
 South Africa, Mental Hospital Service.—Asst. P.'s. £380.  
 South Shields, Ingham Infirmary and South Shields and Westoe Dispensary.—Junior H.S. £175.  
 Southampton, Free Eye Hospital.—H.S. £150 to £200.  
 Swansea General and Eye Hospital.—Res. M.O. £250.  
 Taunton and Somerset Hospital.—Res. Asst. H.S.  
 Warwickshire County Council.—Female Asst. M.O.H. £400.  
 Westminster Hospital, Broad Sanctuary, S.W.—H.P.  
 Winsley Sanatorium, near Bath.—Asst. Res. M.O. £250.

The Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Wadebridge, Port Glasgow, Paisley, and Dundrum.

## Births, Marriages, and Deaths.

### BIRTHS.

GARDNER.—On August 15th, at Merlon-street, Oxford, the wife of A. Duncan Gardner, M.D., F.R.C.S., of a son.  
 KEYNES.—On August 14th, at Grove House, Hollywood-road, S.W., the wife of Geoffrey Keynes, M.D., of a son.  
 TATHAM.—On August 10th, at Ealing, the wife of Captain G. T. P. Tatham, R.A.M.C., of a daughter.  
 WELLS.—On August 17th, at Birchwood, Fleet, Hants, the wife of Major A. G. Wells, D.S.O., R.A.M.C., of a son.

### MARRIAGES.

HEBERT—TATTON.—On August 12th, at St. Andrew's Church, Holborn, Godfrey Taunton Hebert, M.D., to Constance, youngest daughter of the Rev. D. and Mrs. Tatton, of Moorlands, Edgware.

### DEATHS.

DRAGE.—On August 14th, at North Place, Hatfield, Lovell Drage, M.D. GREENFIELD.—On August 12th, at Muir House, Juniper Green, William Smith Greenfield, M.D., LL.D., Emeritus Professor of Pathology in the University of Edinburgh.

N.B.—A fee of 6s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

## Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.  
 LONDON HOSPITAL MEDICAL COLLEGE, in the Clinical Theatre of the Hospital.

A Special Course of Instruction in the Surgical Dyspepsias will be given by Mr. A. J. Walton:—

MONDAY, August 25th.—4.30 P.M., Lecture VII.—Gastric Ulcer. Complications, Treatment.

FRIDAY.—4.30 P.M., Lecture VIII.—Surgical Anatomy of the Duodenum and Paucereas. (In the Dissecting Room.)

A Course of Clinical Lectures for Advanced Students on Intermittent Blood Infections and their Relation to Certain Common Diseases of the Kidney, Prostate, Testicle, and other Organs will be delivered by Mr. F. Kidd:—

WEDNESDAY.—4.15 P.M., Lecture IV.—Etiology and Pathology of Intermittent Blood Infections and their Relation to General Medicine. Intermittent Blood Infection as a Common Factor in the Causation of Disease. The Importance of this Conception for the Future of Preventive Medicine.

Communications, Letters, &c., to the Editor have been received from—

A.—Dr. H. K. Abbott, Knowle; Dr. R. W. Allen, Lond.; Dr. F. L. Apperly, Lond.

B.—British Colloids, Ltd., Lond.; Dr. J. M. Beattie, Liverpool; Dr. E. A. Barton, Lond.; Dr. E. C. Bousfield, Lond.; Dr. S. G. Billington, Wolverhampton; Mr. H. Birrell, Ealing.

C.—Miss H. Chick, Lond.; Mrs. E. J. Coles, Eynsham; Dr. C. R. Corfield, Manchester; Caxton Press, Lond.

D.—Demobilised Médico; Decimal Association, Lond.; Major A. Drury, R.A.M.C.; Dr. R. R. Eager, Exminster; Surg.-Gen. Sir G. Evatt.

E.—Dr. F. E. Fremantle, Hatfield, Lond.; Capt. T. P. Greenwood, R.A.M.C.; Mr. P. Geddes, Lond.

F.—Capt. H. A. Haig, R.A.M.C.; Dr. R. C. Holt, Didsbury; Messrs. W. Heffer and Sons, Cambridge.

G.—Dr. D. W. C. Jones, Lond.; Mr. R. L. Kitching, Lond.; Mr. H. Lucas, Wigan; Dr.

C. E. Lakin, Lond.; Rt. Hon. Lord Mayor of Lond.

M.—Ministry of Health, Lond.; Dr. J. McIntosh, Lond.; Dr. I. Moore, Lond.; Mr. A. Miller, Dublin; Dr. A. Maude, Hatfield; Mr. D. M. Macleod, Evesham.

O.—Dr. S. Otobe, Lond. P.—Messrs. G. P. Putnam's Sons, Lond.

R.—Dr. J. D. Rolleston, Lond.; Royal Medical Benevolent Fund, Lond., Sec. of

S.—Dr. W. J. Shaw, Donington; Secretary of State for the Home Department, Lond.; Mr. B. Sutton, Lond.; St. Thomas's Hospital Medical School, Lond., Sec. of; Dr. J. A. Shaw-Mackenzie, Balblair.

T.—Dr. H. A. Thompson, Lond.; Dr. F. E. Tylecot, Manchester; Mrs. J. F. Todd, Lond.; Dr. A. T. Todd, O.B.E., Huddersfield.

V.—Dr. F. Vicars

W.—Mr. E. M. Wood, Lond.; Dr. G. Ward, Sevenoaks; Dr. L. A. Weatherly, Bournemouth; Capt. A. C. Wilson.

## Notes, Short Comments, and Answers to Correspondents.

### STAMMERING AND VOICE DEFECTS.

BY MABEL V. O. OSWALD,  
 SPEECH SPECIALIST; LATE 1ST SOUTHERN GENERAL HOSPITAL,  
 NEUROLOGICAL SECTION, BIRMINGHAM.

With a Preliminary Note by Dr. J. N. ROBINS.

Dr. J. N. ROBINS, lately in charge of the Neurological Section at the 1st Southern General Hospital, writes as follows:—

"The paper on Stammering and Voice Defects, written by Miss Oswald, will be appreciated by the members of the medical profession as it illustrates in a simple and comprehensive manner a line of treatment which was found to yield highly satisfactory results. Miss Oswald's assistance in the treatment of functional voice defects was of much value, alike to her patients and to me as officer in charge of the Monyhull Neurological Section of the 1st Southern General Hospital. There appear to be two schools of thought on the treatment of stammering: (1) deals with the psychic cause and leaves the symptoms (stammering, aphonia, &c.) alone; and (2) deals with the symptoms (stammering, &c.), and leaves the psychic cause alone. Both of these appear to me to be wrong, for in the first case Scylla is avoided but the danger of Charybdis remains, and in the second case the reverse happens. Therefore, let us take a middle path and deal by mental exploration with the underlying unrecognised cause, and also the symptom by re-education; in this way really good results may be achieved."

### Experimental Treatment.

Stammering and functional voice defects have until recently been looked upon as unfortunate disabilities, and no real scientific attempt was made thoroughly to deal with such cases, and hence there was no recognised cure. Various treatments have been in vogue, each one more or less experimental.

The more successful regarded stammering as the result of some purely physical cause—i.e., incorrect respiration, spasmodic contractions of the laryngeal muscles, incoordinated movements of the organs of articulation, &c. Hence the treatment was directed to the correction of these physical disabilities exclusively. In many cases the actual speech defect was overcome, but as a rule the treatment was a prolonged one and the cure by no means permanent, the speech defect (in varying degree) tending to reappear.

### Tricks Designed to Overcome Speech Defects.

In some cases the patient was taught to resort to tricks in order to overcome his difficulty—e.g., when commencing to speak: (1) to pitch his voice on a note higher or lower than his natural-speaking voice; (2) to resort to certain rhythmical gestures to induce smooth speech; (3) to "sing" his words; (4) to press his knee firmly with the right hand; (5) or even to hold a pebble in his mouth!

Such methods of treatment obviously could not cure, and have done much harm in making the general public distrustful as to the possibility of a genuine cure. That such means were attended by any fleeting success is probably due to the fact that the patient's attention for the time being was diverted from his speech anxiety to the very unusual method of cure, the later being far more inconvenient, as a rule, than the original disability.

### Stammering Dependent on a Psychic Cause.

The frequent occurrence of stammering, mutism, and aphonia during the war, in patients with no such pre-war history, has opened a field of inquiry which has had considerable attention paid to it by those medical officers who have been trained in psycho-therapy. It has now been established that stammering is dependent on a psychic cause, with which it is necessary to deal adequately. Hence the original cause of the speech defect is psychological, the stammer being the expression of a memory of some painful nature which is either wholly or partially repressed.

The presence of a stammer, however, gives rise to the feeling of "fear of speech," and the patient loses confidence in his ability to speak before others. He then tries to force himself to speak naturally, but this, as a rule, only results in incorrect respiration, spasmodic contraction of the laryngeal and other muscles, and incoordinated movements of the organs of speech. By degrees these uncontrolled movements, incorrect breathing, &c., become established, which in turn cause the speech defect to become more fixed. This, then, is a secondary and not the original cause of the speech defect.

communications relating to editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C. 2.



From regarding stammering as a purely physical defect, to be remedied solely by treating the physical symptom, at the present time there may be a danger of going to the opposite extreme and looking upon it as a symptom which will automatically disappear when the underlying psychical cause has been discovered and fully explained to the patient.

In cases of mutism and aphonia, however, the symptom does tend to disappear automatically. The underlying psychic cause is discovered and brought into consciousness, and by means of strong suggestion the patient is induced to use his voice, which invariably he is able to do. At this juncture, in order to avoid any resultant stammer, care must be taken that the patient produces his voice correctly and has been convinced of his ability to continue speech. This is important, as so many cases of mutism and aphonia become stammerers—i.e., their voice returns, but "anxiety" as to their ability to continue producing it results in a stammer. Convince the patient, and the anxiety disappears and there is no resultant stammer.

#### *Cases Successfully Treated.*

One case of aphonia—the result of gassing and being buried by shell—had persisted for nine months in spite of various treatments (massage, electrical treatment, &c.) tried previously in other hospitals. I treated the patient on the lines indicated above, and he was cured in two treatments (of about half an hour each) with no resultant stammer.

In another case the patient lost his voice gradually and the aphonic condition had persisted for nine months. I treated him similarly and he was cured in two treatments with no resultant stammer.

Another case I treated had already lost his voice twice as a result of gassing; the first time (4/8/16), he recovered his voice after three weeks in hospital; the second time (18/9/18) he was gassed again and aphonia had persisted for two months, when he was sent to me. He also was cured with no resultant stammer; and similarly other cases.

But in my experience with cases of stammering—especially those of long standing—the removal of the psychic cause does not necessarily mean that the symptom (stammering) disappears automatically. Logically, this should be so, since stammering (like tremors, monoplegias, &c.) is the outward expression of the patient's subconscious mental state. In practice, however, the stammer tends to remain even though the repressed memories have been brought to the surface and rendered ineffective. This is probably explained by the fact that an incorrect habit of breathing and speech production has been acquired, which the patient must voluntarily overcome.

#### *"Mental Exploration" and "Speech Relief."*

In the stammering cases I have treated the quickest results have been obtained where the patient has been treated both physically and psychically—i.e., by giving him certain respiratory and voice exercises together with strong suggestion, at the same time the psychic cause being removed by means of "mental exploration,"—and this latter can only be successfully accomplished by those with knowledge of psychological medicine. In order to effect a cure, therefore, it is obviously necessary to discover the original psychic cause of the stammer.

Hence the method of procedure would be, first, to explain fully to the patient why he stammers; next, and especially in cases of severe stammer, to give the patient "speech relief" by showing him how to breathe correctly, relax his muscles, &c., at the same time using strong suggestion that he will be able to read or say a certain thing correctly and not permitting him to fail. The patient having obtained an initial success must be convinced that he is able to repeat it, and so led to perceive that the cure in reality depends upon himself. By these means of re-education the patient will have gained confidence and lost to some extent "the fear of his own speech," but a permanent cure will not be effected till the psychic cause has been explored.

#### *Examples of Treatment.*

The following are a few practical examples of the above method of treatment. In each case the psychic cause was being specially dealt with by neurological medical officers:—

I had a patient with a very severe stammer dating from September, 1918, when he had been blown up by a shell and left dazed. He was being treated by one of the neurological medical officers who sent him to me for his stammer. I gave him certain breathing and voice exercises, which enabled him at once to speak with less difficulty. By means of strong suggestion he was able to read aloud without stammering. I explained things to him and convinced him that, having done so once, he could repeat it, and that the cure now depended on himself. He determined he could and would be successful. I saw him once again (making two treatments in all), when he was able to read aloud and speak with no difficulty and continued to do so.

Another patient had a nervous hesitating stammer when I saw him. He had been blown up and four months later had lost his voice. Aphonia had persisted for seven months, when his voice returned under treatment, leaving, however, this stammer. He was sent to me for treatment. In this case I chiefly used strong suggestion to convince him of his ability to speak with no stammer. He was cured in two treatments.

Another patient with a stammer of three months' duration—after aphonia of eight months—was convinced that he could not be cured.

He stammered badly while reading and speaking. I explained things to him and gave him certain breathing and voice exercises, showing him how to control his breath while reading. I then made him read aloud which, after a few attempts, he did with no stammer. When I saw him the second time, he said the stammer now only affected him if nervous. I again explained the nature of his stammer and by strong suggestion convinced him he could overcome it. After four treatments he could read and speak fluently on all occasions.

#### *Pre-War Stammerers.*

Similar treatment will be found to apply to pre-war stammerers. In these cases the habit of incorrect speech production is more strongly fixed and, therefore, will take rather longer to remove, but the permanency of the cure will depend (as in cases of war neuroses) on the removal of the psychic cause which originated the stammer.

One patient I treated, who had stammered very severely since experiencing a bad fright in early manhood (in civil life). He joined up and out of two years' foreign service had spent 11½ months off and on in hospital. While recounting the bad fright experienced years ago, the stammer became extremely severe, at times totally inhibiting speech, accompanied by tremors, &c. His respiration was incorrect, with spasms of the diaphragm. I explained to him why he stammered, and gave him special breathing and voice exercises, showing him how to relax his muscles. I then made him read aloud, which he did fairly. At subsequent interviews the stammer and tremors were much less marked, till the patient was able to talk over his experience with absolute calm and no attendant stammer. He had eight treatments altogether, after which he could speak and read aloud fluently on all occasions.

Another patient had stammered slightly since six years of age, the stammer increasing after experiencing air-raids. When I saw him the stammer was very severe, his breathing incorrect and uncontrolled, accompanied by strong muscular contraction of the laryngeal and other muscles during speech. I explained his stammer to him, showed him how to breathe diaphragmatically and to relax his muscles, and in ten treatments he was speaking and reading aloud with no stammer.

#### *Stammering in Young Children.*

In cases of purely imitative stammer in young children who are treated immediately, breathing and voice exercises with strong suggestion are sufficient to effect a rapid and permanent cure, probing into their subconsciousness being unnecessary.

A boy of 7, whom I treated, had a severe stammer. He was highly excitable, with little self-control. Though well-built, he had very poor respiratory expansion. By teaching him correct diaphragmatic breathing, giving him easy voice exercises, explaining his "fear of speech," using strong suggestion to give him confidence, and training him in self-control, he was soon absolutely cured. I had him under my direct observation all the time, this being advisable in young children, but not necessary, if older, where the patient will carry out instructions.

I would lay stress on the importance of at once treating a stammer in young children, since, if taken at an early stage, the cure is certain. Most of the adult stammerers in civil life might have been cured when young. Thus it seems apparent, in the case of adults, that to treat the symptom alone, ignoring the repressed memory or, conversely, to revive the repressed memory ignoring the symptom is, in either case, insufficient. The quickest and most permanent results being obtained by a combination of the two—i.e., "mental exploration" and re-education.

#### *WELFARE OF THE BLIND.*

THE Ministry of Health announce that they have, after consultation with the Advisory Committee on the Welfare of the Blind, issued Regulations under which, subject to the consent of Parliament, grants will be paid in aid of certain services carried on on behalf of the blind. These services include workshops, assistance to home-workers, home teaching, homes and hostels, book production, &c. In a covering letter to the regulations the needs of the unemployable blind living in their own homes are recognised as requiring legislative treatment, and it is indicated that proposals will be laid before Parliament as early as possible. The regulations have been put on sale (price 3d.) and can be obtained directly from the Stationery Office or through any bookseller.

#### *VIVISECTION EXPERIMENTS.*

A RETURN issued by the Home Office shows the number of experiments on living animals during 1918 in the United Kingdom. In England and Scotland licences were held by 701 persons, of whom 401 performed no experiments. In Ireland there were 22 licensees, of whom 6 performed no experiments. In England and Scotland the total number of experiments was 77,610; under Group A 1557, and under Group B 76,053. In Group A anaesthesia was required—951 all the time and 606 part of the time. In Group B no anaesthetic was required. They were simple inoculations, hypodermic injections, feeding, and similar proceedings. Cancer investigation accounted for 137 in Group A and 5890 in Group B; 29,000 were on behalf of Government Departments and public health authorities, and over 37,000 for the preparation, standardising, and testing of sera, vaccines, and drugs. In Ireland 313 experiments were performed by 16 licensees, of which 232 were simple inoculations.



# GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION OF THE UNITED KINGDOM.

## POWERS, DUTIES, AND CONSTITUTION OF THE GENERAL MEDICAL COUNCIL.

THE powers and duties of the General Medical Council, or "General Council of Medical Education and Registration of the United Kingdom" to give the Council its full title, have been set out in detail in many previous Students' Numbers of THE LANCET. It is first a registering body: no person, even though his qualifications have been obtained, is a legally qualified medical practitioner unless his name appears on the Medical Register. Secondly, it is a standardising body, ensuring that the education of medical men is kept up to an efficient standard by scientific examination. Thirdly, it is a penal and disciplinary body, having power to remove from the Register any practitioner adjudged guilty of conduct "infamous in a professional respect." Fourthly, to the Council is committed the codification of pharmaceutical remedies.

The duties of the Council are thus primarily of a public nature, and its construction shows its fitness for its fourfold responsibilities.

The Council at present consists of 38 members, of whom, as will be seen by the annexed list, all but 11 are official representatives of some corporate body. Five members are chosen by the Crown on the advice of the Privy Council, and six others are elected by the members of the medical profession as Direct Representatives.

President of the General Council: Sir Donald MacAlister. Members of the General Council: Sir Norman Moore, chosen by the Royal College of Physicians of London; Mr. Holburt Jacob Waring, Royal College of Surgeons of England; Dr. Benjamin Bloomfield Connolly, Apothecaries' Society of London; Dr. Arthur Thomson, University of Oxford; Professor Frederick Gowland Hopkins, University of Cambridge; Dr. Robert Howden, University of Durham; Dr. Sydney Russell Wells, University of London; Dr. Grafton Elliot Smith, Victoria University of Manchester; Sir Harry Gilbert Barling, University of Birmingham; Dr. Richard Caton, University of Liverpool; Dr. Thomas Wardrop Griffith, University of Leeds; Mr. Rutherford John Pye-Smith, University of Sheffield; Sir Isambard Owen, University of Bristol; and Dr. David Hepburn, University of Wales. Dr. William Russell, chosen by the Royal College of Physicians of Edinburgh; Mr. James William Beaman Hodson, Royal College of Surgeons of Edinburgh; Dr. David Neilson Knox, Royal Faculty of Physicians and Surgeons of Glasgow; Dr. H. Harvey Littlejohn, University of Edinburgh; Sir Donald MacAlister, University of Glasgow; Dr. Matthew Hay, University of Aberdeen; and Dr. John Yule Mackay, University of St. Andrews. Sir John William Moore, chosen by the Royal College of Physicians of Ireland; Sir Arthur Gerald Chance, Royal College of Surgeons in Ireland; Dr. Edward Magennis, Apothecaries' Hall of Ireland; Dr. Arthur Francis Dixon, University of Dublin; Sir Bertram Coghill Alan Windle, National University of Ireland; and Dr. Thomas Sinclair, Queen's University of Belfast. Nominated by His Majesty, with the advice of his Privy Council: Sir Charles Sissmore Tomes, Sir Arthur Newsholme, Sir Francis Henry Champneys, Dr. John Christie McVail, and Dr. Edward Coey Bigger. Elected as Direct Representatives: Dr. Langley Browne, Dr. H. A. Latimer, Dr. J. A. MacDonald, Mr. Thomas Jenner Verrall, Dr. Norman Walker, and Dr. Leonard Kidd. Treasurers of the General Council: Sir Charles Sissmore Tomes and Sir Norman Moore.

## THE EDUCATIONAL CURRICULUM.

*Professional Education.*—The course of professional study after registration occupies at least five years. The Final Examination in Medicine, Surgery, and Midwifery must not be passed before the close of the fifth academic year of medical study.

*Registration and Preliminary Examination of Medical Students.*—The following are the General Medical Council's Regulations in reference to the registration of students in medicine.

Every medical student should be registered in the manner prescribed by the General Medical Council. The registration No. 5009.

of medical students is placed under the charge of the Branch Registrars. Every person desirous of being registered as a medical student should apply to the Branch Registrar of the division of the United Kingdom in which he is residing; and should produce or forward to the Branch Registrar a certificate of his having passed a preliminary examination as required by the General Medical Council, and evidence that he has attained the age of 16 years, and has commenced medical study at an institution approved by the Council. The Branch Registrar shall enter the applicant's name and other particulars in the Students' Register and shall give him a certificate of such registration. Each of the Branch Registrars shall supply to the several licensing bodies, medical schools, and hospitals, in that part of the United Kingdom of which he is registrar, a sufficient number of blank forms of application for the registration of medical students. The commencement of the course of professional study recognised by any of the qualifying bodies should not be reckoned as dating earlier than 15 days before the date of registration. In addition to the universities and schools of medicine there are many institutions where medical study may be commenced. Applications for special exceptions are dealt with by the Students' Registration Committee, which reports all such cases to the Council.

## *Regulations for the Maintenance of the Register of Medical Students.*

The following examinations have been approved by the Council:—(a) The final examinations for the degrees in Arts and Science of any University of the United Kingdom or of the British Dominions. (b) All examinations which are accepted for Matriculation in the Faculties of Arts and Science in any one University of Great Britain, provided the pass-certificate includes English, Mathematics, and at least two other subjects named in the following list:—Latin, Greek, Hebrew, Arabic, Persian; French, German, Spanish, Italian, Russian, or any approved modern language; History, Geography, Natural Philosophy or Physics, Chemistry, Biology, Physical Geography, and Geology. (c) All examinations not included under the foregoing section (b), which are accepted for Matriculation in the Faculty of Medicine in any one University of the United Kingdom of Great Britain and Ireland provided the examination is completed at not more than two periods of examination, and that the pass-certificate includes English, Mathematics, Latin (or Greek or Hebrew), and at least one other subject named in the following list:—Latin, Greek, Hebrew, Arabic, Persian, French, German, Spanish, Italian, Russian, or any approved modern language. (d) The Council may grant special recognition to the following examinations not included under the foregoing sections (a), (b), and (c):—(1) The final examinations for the degrees in Arts and Science of any specially recognised Foreign University. (2) Examinations conducted by approved Examining Bodies within the United Kingdom under the provisions set forth in the foregoing section (c). (3) Examinations conducted by approved Examining Bodies out of the United Kingdom under the provisions set forth in the foregoing section (c), and under such other conditions as the Council may impose in each case.

## *List of Bodies whose Examinations are accepted under the foregoing Regulations.*

### *I. Examinations in Great Britain.*

(1) The Matriculation Examinations in the Faculties of Arts and Science of, and all examinations accepted in lieu thereof by, the following Universities: Oxford (including Responsions and Moderations), Cambridge (including the Previous Examination and the General Examination), Durham, London, Manchester, Birmingham, Liverpool, Leeds, Sheffield, Bristol, Wales, Edinburgh, Glasgow, Aberdeen, St. Andrews. These examinations are accepted subject to the conditions set forth under Section 2 (b) above. (2) The Preliminary Examinations in the Faculty of Medicine of, and all examinations accepted in lieu thereof by, the Universities of Durham, Edinburgh, Glasgow, Aberdeen, St. Andrews. These examinations are accepted subject to the conditions of Section 2 (c) above. (3) Specially recognised Examinations conducted by approved bodies.

The following Schools Examinations have been recognised by the English Board of Education and are accepted by the General Medical Council under the conditions noted below.



## AS FIRST EXAMINATIONS.

1. The School Certificate Examination of the Oxford and Cambridge Schools Examination Board.
2. The Senior Local Examination of the Oxford Delegacy for Local Examinations.
3. The Senior Local Examination of the Cambridge Local Examinations and Lectures Syndicate.
4. The School Certificate Examination of the University of Bristol.
5. The First School Certificate Examination of the University of Durham.
6. The General School Examination of the University of London.
7. The School Certificate Examination of the Northern Universities Joint Matriculation Board.

## AS SECOND EXAMINATIONS.

8. The Higher Certificate Examination of the Oxford and Cambridge Schools Examination Board.
9. The Higher School Certificate Examination of the Oxford Delegacy for Local Examinations.
10. The Higher School Certificate Examination of the Cambridge Local Examinations and Lectures Syndicate.
- (a) 11. The Higher School Certificate Examination of the University of Bristol.
12. The Higher Certificate Examination of the University of Durham.
- (c) 13. The Higher School Certificate Examination of the University of London.
14. The Higher Certificate Examination of the Northern Universities Joint Matriculation Board.

(a) These Examinations will be held for the first time in 1919. In the First Examinations: School Certificates ("passes with credit") and in the Second Examinations: Higher Certificates, provide in both instances that they fulfil the conditions required for Matriculation in the Faculties of Arts or Pure Science in any University of Great Britain, are accepted by the General Medical Council under Clause 2(b); otherwise they are accepted under Clause 2(c), provided that evidence is afforded that all the subjects required by the Council have been actually passed on an approved standard. (*Applicants are advised to apply to the Examining Bodies for the necessary evidence.*)

Other Certificates accepted under Clause 2(b). Scottish Education Department: Leaving Certificates. Other certificates accepted under Clause 2(c). Intermediate Certificate. Central Welsh Board: Senior Certificate. University of St. Andrews: Final Examination for Diploma of L.L.A. College of Preceptors: Senior Certificate; Preliminary Examination for Medical Students Certificate. Educational Institute of Scotland: Preliminary Medical Examination Certificate.

## II. Irish Examinations.

University of Dublin: Matriculation Examination: (a) Junior Freshman Term Examination (exclusive of Trigonometry); (b) Special Preliminary Examination to be held in March, the standard and subjects of which shall be those of a Junior Freshman Examination (exclusive of Trigonometry); (c) Junior Exhibition Examination on obtaining marks of sufficient merit in the subjects of (a) or (b); (d) Examinations for the First, Second, Third, or Fourth Year in Arts. (Certificate to be signed in the approved form by the Medical Registrar of the University.) Queen's University of Belfast: Matriculation Examination. National University of Ireland: Matriculation Examination. Intermediate Education Board of Ireland: Middle Grade Examination, with Honours in three subjects; Senior Grade Examination. Royal Colleges of Physicians and Surgeons in Ireland: Preliminary Examination. These Examinations are accepted subject to the conditions set forth in Section 2(c) above.

The remainder of the curriculum, though all under the supervision of the Council, is in detail in the hands of the various degree- and diploma-granting bodies whose representatives are members of the General Medical Council. In the next pages we give the regulations of the various examining bodies, but it must always be remembered that the examinations are under the supervision of the General Medical Council, who visit the various centres in turn and closely inspect the procedure.

## III. Examinations Held Out of the United Kingdom

Every Certificate from Indian, Colonial, and Foreign Universities and Colleges must contain evidence that the Examination has been conducted by or under the authority of the Body granting it, must include all the subjects required by the General Medical Council, and must state that all the subjects of Examination have been passed in at not more than two examinations; copies of the form of the required Certificate are supplied by the Registrar of the Council for the purpose. In the case of Natives of India or other Oriental countries whose vernacular is other than English an Examination in a Classical Oriental Language (e.g., Sanskrit, Arabic, Chinese) may be accepted instead of an Examination in Latin. The German Abiturienten-Examen of the Gymnasia and Real-Schulen and the examinations entitling to the French diplomas of Bachelier ès Lettres and Bachelier ès Sciences and other corresponding Entrance Examinations to the Universities in Europe are recognised by the General Medical Council.

These examinations are accepted subject to the conditions set forth in Section 2(c) above.

Further particulars are given in the Students' Regulations, which can be obtained at the offices of the Council, price 9d.

## The Registration of Medical Practitioners.

Under the provisions of the Medical Act, 1858, any person possessing one or other of the medical qualifications enumerated in the schedule to the Act is entitled to registration by the General Medical Council on producing to the registrar of a Branch Council proper evidence of qualification. Registration entitles him, in the words of the Act of 1886:—

"... To practise medicine, surgery, and midwifery in the United Kingdom, and (subject to any local law) in any other part of [Her] Majesty's dominions, and to recover in due course of law in respect of such practice any expenses, charges in respect of medicaments or other appliances, or any fees to which he may be entitled."

These qualifications are enumerated in the Medical Register, printed each year under the direction of the Council, and the course of study necessary to obtain each of them is duly set out in the succeeding pages.

A number of diplomas granted in British possessions and in certain foreign countries entitle the holder to registration in the colonial or foreign list respectively of the Medical Register, and therefore to practise medicine within the borders of the United Kingdom. Some account of these diplomas is given on p. 373 and following pages.

## The Officers of the Council.

Norman C. King, Registrar of the General Council and of the Branch Council for England, 44, Hallam-street, Portland-place, W. 1.—James Robertson, Registrar of the Branch Council for Scotland, 54, George-square, Edinburgh.—Richard J. E. Roe, Registrar of the Branch Council for Ireland, 35, Dawson-street, Dublin. All communications should be addressed to "The Registrar" and not by name.

## POSTPONEMENT OF THE ELECTION OF DIRECT REPRESENTATIVES.

By an Order in Council dated August 14th the provisions of the Parliament and Local Elections Act, 1918, have been extended to the election of members of this Council by registered practitioners resident in the United Kingdom, the effect of which is to extend the term of office of the existing Direct Representatives until Dec. 31st, 1919.

THE  
MEDICAL EXAMINING BODIES  
AND

## SCHOOLS OF THE UNITED KINGDOM.

A GUIDE TO THE FACILITIES FOR OBTAINING THE VARIOUS MEDICAL DEGREES AND OTHER QUALIFICATIONS FOR THE BRITISH MEDICAL REGISTER.

## I.—ENGLAND AND WALES.

## THE UNIVERSITIES.

## UNIVERSITY OF OXFORD.

THERE are two degrees in Medicine, *B.M. and D.M.*, two degrees in Surgery, *B.Ch. and M.Ch.*, and two diplomas, *Public Health and Ophthalmology*.

Graduates in Arts (*B.A. or M.A.*) are alone eligible for the degrees. The most convenient course for the *B.A.* degree for intending graduates in Medicine is to take Responsions, the Preliminary Science Examinations mentioned below, and the Final Honour School of Physiology. In order to obtain the degrees of *B.M.* and *B.Ch.* the following examinations must be passed:—1. Preliminary subjects: Mechanics and Physics, Chemistry, Zoology, and Botany. 2. Professional. (a) First Examination: Subjects—Organic Chemistry, unless the candidate has obtained a first or second class in Chemistry in the Natural Science School; Human Physiology, unless he has obtained a first or second class in Animal Physiology in the Natural Science School; Human Anatomy. (b) Second Examination: Subjects—Medicine, Surgery, Midwifery, Pathology, Forensic Medicine with Hygiene, *Materia Medica* and Pharmacology. The approximate dates of the examinations are as follows:—Preliminaries—Zoology, Botany, and Chemistry, December and June; Mechanics and Physics, March and June; Professional (First and Second *B.M.*), June and December.

The First Examination for the degrees of *B.M.* and *B.Ch.* may be passed as soon as the Preliminary Scientific Examinations have been completed. Anatomy and Physiology are to be passed together, and Organic Chemistry may be taken before or after these have been passed.



The *Second Examination* may be passed after the completion of the first, but Pathology, Hygiene, and Materia Medica and Pharmacology may be taken before or with the remaining subjects. Before admission to the Second Examination candidates must present certificates of attendance on a course of laboratory instruction in Practical Pathology and Bacteriology and of having acted as post-mortem clerk for three months, surgical dresser for six months, and clinical clerk for six months. Also they must produce certificates of instruction in Infectious and Mental Diseases, and of attendance on Labours, of proficiency in the practice of Vaccination and Anæsthetics, and of having attended a course of Practical Pharmacology. Also in respect of the First Examination candidates must present certificates showing that they have dissected the whole body once and have attended courses of laboratory instruction in Practical Histology and Practical Physiology.

The degree of *D.M.* is granted to Bachelors of Medicine of the University provided they have entered their thirtieth term and have composed on some medical subject a dissertation which is approved by the professors in the Faculty of Medicine and examiners for the degree of *B.M.* whose subject is dealt with. The degree of *M.Ch.* is granted to Bachelors of Surgery of the University who have entered their twenty-first term, who are members of the surgical staff of a recognised hospital, or have acted as Dresser or House Surgeon in such a hospital for six months, and who have passed the *M.Ch.* examination in Surgery, Surgical Anatomy, and Surgical Operations. This examination is held annually, in June, at the end of the Second *B.M.* Examination.

*Diploma in Ophthalmology.*—The examination is held in July.

*Diploma in Public Health.*—Examinations in June and November.

*Travelling Fellowship, Scholarships, and Prizes.*—A Radcliffe Travelling Fellowship is awarded annually after an examination held in February. It is tenable for three years and is of the annual value of £200. The examination is in Physiology, Pathology, and Hygiene, and is partly "practical." Candidates must be graduates in Medicine of the University. The holder must travel abroad for the purpose of medical study. Application should be made to the Radcliffe Examiners, Radcliffe Library, University Museum. A Rolleston Memorial Prize is awarded once in two years to members of the Universities of Oxford and Cambridge of not more than ten years' standing for an original research in some Biological subject, including Physiology or Pathology. The Radcliffe Prize, founded by University College (1907), is of the value of £50 and is awarded biennially for research in some branch of medical science. The Theodore Williams Scholarships of the value of £50 each are awarded annually in the subjects of Anatomy, Physiology, and Pathology. A King's College Hospital Burney Yeo Scholarship of £80 is awarded each year. The Scholarships in Science which are offered by several Colleges are open to those who intend to pursue Medicine. The value of these scholarships is usually £80 a year for four years.

In addition to the University lectures and classes the several Colleges provide their undergraduates with tuition for all examinations up to the *B.A.* degree.

In the Radcliffe Infirmary and County Hospital clinical instruction is given by the Regius Professor of Medicine, the Litchfield Lecturers in Medicine and Surgery, and the other physicians and surgeons. Instruction is also given in post-mortem work and Clinical Pathology in connexion with the courses in Pathology.

More detailed information may be obtained from the University Calendar; from the Examination Statutes, 1918 (both of which are published by the Clarendon Press); from the Regius Professor of Medicine; and from the Professors in the several departments of medical science. Certain special conditions as regards students who have been engaged on war service may be obtained on application to the Assistant Registrar of the University, Clarendon Building, Oxford.

UNIVERSITY OF OXFORD: RADCLIFFE INFIRMARY AND COUNTY HOSPITAL.—Courses of instruction are given in connexion with the Oxford University Medical School. These include (1) a course in Practical Medicine by the Regius Professor of Medicine; (2) Clinical lectures by the Litchfield Lec-

turers in Medicine and Surgery; and (3) tutorial instruction and demonstrations in special Regional Anatomy (medical and surgical), methods of Medical and Surgical Diagnosis, and Surgical Manipulation. (4) Pathological demonstrations and instruction in post-mortem work are given by the Assistant Pathologist. Practical Pharmacy is taught in the Radcliffe Dispensary. Opportunities are offered to students who wish to act as surgical dressers and clerks. The Hospital contains 170 beds.

#### UNIVERSITY OF CAMBRIDGE.

The student must enter at one of the Colleges, or as a non-collegiate student, and keep nine terms (three years) by residence in the University. He must pass the Previous Examination in Classics, Mathematics, &c., if possible, before he comes into residence in October, or he may obtain exemption through the Oxford and Cambridge Schools Examination Board, the Oxford or Cambridge Senior Local Examinations, the London Matriculation Examination, the Scotch Education Department, Responsions at Oxford, and the Joint Matriculation Board of the Universities of Manchester, Liverpool, Leeds, and Sheffield, the Matriculation Examination of the University of Birmingham, or by being graduates of certain other Universities in the United Kingdom. He may then devote himself to medical study in the University, &c. Or he may, as nearly all students now do, proceed to take a degree in Arts by passing either (a) the General Examination and one Special Examination, or (b) two Special Examinations for the ordinary *B.A.* degree, or an Honours degree in one of the Triposes. The Natural Sciences Tripos is taken most frequently, as some of the subjects are practically the same as those for the first and second *M.B.*

For the degree of *Bachelor of Medicine (M.B.)* five years of medical study are required either in Cambridge or at one of the recognised Schools of Medicine. The first three or four years are usually spent in Cambridge till he has passed, say, the examination for Part I. of the Natural Sciences Tripos and the first and second examinations for *M.B.* Hospital practice and many of the requisite lectures may be attended in Cambridge, and some students remain to attend lectures and hospital practice until they have passed the second part of the second examination for *M.B.* The laboratories for Botany, Chemistry, Physics, Biology, Zoology, Human Anatomy, Physiology, Biochemistry, Pathology, Bacteriology, Pharmacology, Psychology, and Public Health are well equipped. Addenbrooke's Hospital, the Infectious Diseases Hospital, the Cambridge Research Hospital, and the Field Laboratories are utilised for study and research.

There are three examinations for *M.B.* The first includes (1) Chemistry and other branches of Physics, and (2) Elementary Biology. These parts may be taken together or separately. The second is divided into two parts—viz., (1) Human Anatomy and Physiology; and (2) Pharmacology and General Pathology. The third is also divided into two parts: (1) Principles and Practice of Surgery (including Special Pathology and Midwifery and Diseases Peculiar to Women); and (2) Principles and Practice of Physic (including Diseases of Children, Mental Diseases, Medical Jurisprudence), Pathology (including Hygiene and Preventive Medicine), and Pharmacology (including Therapeutics and Toxicology). The examinations are partly in writing, partly oral, and partly practical, in the hospital, in the dissecting room, and in the laboratories. An Act has then to be kept in the Public Schools, by the candidate reading an original dissertation composed by himself and being examined orally on some subject approved by the Regius Professor of Physic.

Candidates who have passed both parts of the third *M.B.* examination are admitted to the registrable degree of *Bachelor of Surgery (B.Ch.)* without separate examination and without keeping an Act.

The degree of *Doctor of Medicine (M.D.)* may be taken three years after that of *M.B.* or four years after that of *M.A.* The candidate is required to produce certificates of having been engaged in Medical Study for five years, and if an *M.A.*, to pass the same examinations as are required for the degree of *M.B.* An Act has to be kept, consisting of an original Thesis sustained in the Public Schools with *viva voce* examination; and a short



extempore essay has to be written on a topic taken from the general subject of his thesis, whether it be Physiology, Pathology, Pharmacology, the Practice of Medicine, State Medicine, or the History of Medicine.

For the degree of *Master of Surgery (M.Ch.)* the candidate must have passed all the examinations for B.Ch., or, if he is an M.A., have obtained some other registrable qualification in surgery. He is required either (1) to pass an examination in Principles and Practice of Surgery, Surgical Anatomy and Surgical Operations, and Pathology, and to write an extempore essay on a Surgical Subject; or (2) to submit to the Medical Board original contributions to the advancement of the Science or Art of Surgery. Before he can be admitted to the examination two years at least must have elapsed from the time when he completed all required for the degree of B.Ch. Before submitting original contributions he must have been qualified at least three years.

**Women Students.**—Increased facilities have been offered to students of Girton and Newnham Colleges, and they are admitted to the First and Second M.B. Examinations under certain conditions.

**University Prize in Medicine.**—The one University Prize in Medicine, the Raymond Horton Smith Prize (value £19), is awarded to that candidate for the degree of M.D. who presents the best thesis for the degree during the academical year, provided that he has taken honours in a tripos examination. Medical Studies are endowed by the numerous Natural Science scholarships at the various colleges, information about which can be obtained from the respective Tutors.

An abstract of the Regulations and Schedules of the range of the examinations in Chemistry, Physics, Biology, Pharmacology, and General Pathology may be obtained upon sending a stamped directed envelope to the Registry, the Registry, Cambridge.

**ADDENBROOKE'S HOSPITAL.**—Clinical Lectures in Medicine and Surgery, in connexion with Cambridge University Medical School, are given at this hospital twice a week during the academical year; and practical instruction in Medicine and Surgery is given in the wards and out-patients' rooms by the physicians and surgeons daily during the term time and vacations. The fee for pupilship is 3 guineas a term. All communications by students should be made to Dr. Aldren Wright.

#### UNIVERSITY OF LONDON.

The University of London was established by Royal Charter in 1836 as an examining and degree conferring body with affiliated colleges but no direct teaching functions. In 1900 it was reconstituted under the Act of Parliament 1898 and became a teaching as well as an examining body. Many schools already existing became constituent colleges, including all the metropolitan medical schools. Teachers were also appointed in special subjects to give lectures at the University.

**Teaching Staff.**—The teaching staff of the University is organised under two heads: 1. Appointed teachers—i.e., such as are appointed by, and are paid out of the funds of, the University. 2. Recognised teachers—i.e., those who have been appointed and are paid by the several schools of the University and other institutions at which instruction is given under the auspices of the University, and who have been recognised by the Senate as conducting work of University standard. Courses by non-recognised teachers may also be approved in schools of the University. The lecturers in the Medical Sciences and the professors in the Faculties of Medicine in University College, London, and King's College, London, will be found enumerated under their respective medical schools.

**Internal and External Students.**—All the examinations of this University are open to men and women alike. Matriculated students of the University may be either internal or external. Internal students of the University are students who have matriculated at the University and who are pursuing a course of study approved by the University, either (a) under the direct control of the University or a committee appointed thereby; or (b) under one or more of the appointed or recognised teachers of the University. Centres for preliminary and intermediate medical studies have been established by

the University at University and King's Colleges. Internal students must pursue their studies at one of the above centres, or at one of the medical schools connected with the University. These are St. Bartholomew's Hospital, Charing Cross Hospital, St. George's Hospital, Gny's Hospital, King's College Hospital, the London Hospital, St. Mary's Hospital, the Middlesex Hospital, St. Thomas's Hospital, University College Hospital, Westminster Hospital, and the London (Royal Free Hospital) School of Medicine for Women. The London School of Tropical Medicine and the Lister Institute of Preventive Medicine are also recognised as schools of the University in special departments. External students are all other matriculated students, and may pursue their studies at other universities and medical schools, presenting themselves for examination at the University of London.

**Faculty of Medicine.**—The Faculty of Medicine grants the joint degrees of M.B., B.S. (*Bachelor of Medicine and Surgery*), and the higher separate degrees of M.D. (*Doctor of Medicine*) and M.S. (*Master of Surgery*).

The curriculum for the Bachelor's degrees is now five and a half years from the time of matriculation, with certain exceptions which must be looked for in the official regulations of the University, to be obtained from the Principal Officer, University of London, South Kensington, S.W. 7, and the examinations formerly known as the Preliminary Scientific, the Intermediate, and the Final Examination in Medicine are now respectively entitled the First, Second, and Third Examinations for Medical Degrees. Part II. of the former Preliminary Scientific Examination has now been made Part I. of the Second Examination.

**A. Internal Students.**—In order to be admitted to the Bachelor's degrees a student must normally, after registration as an internal student, have: (1) Attended prescribed courses of study for five and a half years in one or more schools of the University. (2) Passed the following examinations, under the conditions mentioned below: (a) The First Examination for Medical Degrees in Inorganic Chemistry, Physics, and General Biology; (b) the Second Examination for Medical Degrees: Part I., Organic and Applied Chemistry; Part II., Anatomy, Physiology, and Pharmacology, including Pharmacy and Materia Medica; (c) the Third Examination for Medical Degrees, or M.B., B.S. Examination: Medicine and Surgery, Midwifery and Diseases of Women, Pathology, Forensic Medicine and Hygiene.

**B. External Students.**—To be admitted to the Bachelor's degrees an external student must (1) have passed the Matriculation examination or have been exempted therefrom under Statute 116 not less than five and a half years previously; (2) have passed subsequent examinations similar to those required of an internal student; and (3) have been engaged in professional studies during the five and a half years subsequently to Matriculation and four and a half years subsequently to passing the First Examination for Medical Degrees at one or more of the medical institutions or schools recognised by this University for the purpose, one year at least of the four and a half years to have been spent in one or more of the recognised institutions or schools in the United Kingdom.

**The First Examination for Medical Degrees (Inorganic Chemistry, Physics, and General Biology)** will take place twice in each year, commencing on the Monday following Dec. 7th and on the second Monday in July. It must as a rule be passed not less than nine months after matriculation.

**The Second Examination for Medical Degrees (Part I.): Organic and Applied Chemistry.**—This examination will take place twice in each year, commencing on the Wednesday following the third Monday in March and on the afternoon of the Thursday following the second Monday in July. No candidate will be admitted to this examination within six months of having passed the First Examination.

**The Second Examination for Medical Degrees (Part II.)** takes place twice in every year, commencing on the Tuesday following the third Monday in March and on the Tuesday following the first Monday in July. The subjects of the examination are Anatomy, Physiology, and Pharmacology, including Pharmacy and Materia Medica. No candidate shall be admitted to the examination unless he has passed the First Examination for Medical Degrees at least 18 months previously, and has passed Part I. of the Second Examination for Medical Degrees.



*The Third or M.B., B.S. Examination.*—The M.B., B.S. examination takes place twice in each year, commencing on the fourth Monday in October and on the first Monday in May. No candidate will be admitted to this examination unless he has completed the Second Examination, for Medical Degrees, together with a course of study summarised below, nor within three years from the date of passing the Second Examination, Part. II. (1) Principles and Practice of Medicine; (2) Clinical Methods and Physical Diagnosis; (3) Insanity (with clinical demonstrations at a recognised Asylum); (4) Therapeutics; (5) Vaccination; (6) Principles and Practice of Surgery; (7) Operative Surgery, Surgical Anatomy, Practical Surgery, and the Administration of Anæsthetics; (8) Diseases of the Eye, Ear, Throat, and Skin; (9) Lectures and Demonstrations on Midwifery and Diseases of Women; (10) Practical Midwifery, the conduct of at least 20 Labours, and practice as a Clinical clerk in Gynæcological work; (11) Pathology and Bacteriology; (12) work of the Post-mortem room; (13) Forensic Medicine; and (14) Hygiene. He must also have attended the Medical and Surgical practice of a recognised hospital for two years and a course of instruction at a recognised Fever Hospital for two months. He must have had clinical instruction and must have held the posts of medical clinical clerk and surgical dresser for periods of six months each. Candidates will be examined in Medicine (including Therapeutics and Mental Diseases), Pathology, Forensic Medicine and Hygiene, Surgery, Midwifery, and Diseases of Women. The subjects may be divided into two groups—namely: (1) Medicine, Pathology, Forensic Medicine, and Hygiene; and (2) Surgery, Midwifery, and Diseases of Women. These groups may be taken either separately or together. The list of candidates who have passed will be published in two parts—namely, an Honours list and a Pass list. Bachelors of Medicine of this University who graduated in or before May, 1904, may obtain the B.S. degree by passing the Surgical part of the M.B., B.S. examination.

*Doctor of Medicine.*—The examination for this degree takes place twice in each year, commencing on the first Monday in December and on the first Monday in July. Candidates may present themselves for examination in one of the following branches, namely: (1) Medicine; (2) Pathology; (3) Mental Diseases; (4) Midwifery and Diseases of Women; (5) State Medicine; and (6) Tropical Medicine. Any candidate for the degree of M.D. may transmit to the Registrar a thesis or published work having definite relation to the branch of Medicine in which he is a candidate, and if the thesis be approved by the examiners the candidate may be exempted from a part or from the whole of the written examination in that subject.

*Master in Surgery.*—The examination for the degree of Master in Surgery takes place twice in each year and commences on the first Monday in December and on the first Monday in July.

*Fees.*—Matriculation £2 2s. for each entry. At provincial examinations an additional local fee is charged. First examination for Medical Degrees: £5 5s. for each entry to the entire examination. For re-examination in one subject the fee is £2 2s. In the second examination, Part I. £2 2s., repeated on each subsequent entry; Part II. £8 8s. for the whole examination. Third examination: £10 10s. for each entry to the whole examination. M.D. Examination: £21; for re-examination £10 10s. M.S. Examination: As for M.D.

Full details of the prescribed curricula of study and the names of the recognised Internal and External Schools of the University, can be obtained free on application to the Principal Officer, University of London, South Kensington, S.W.

## MEDICAL SCHOOLS OF THE UNIVERSITY OF LONDON.<sup>1</sup>

**ST. BARTHOLOMEW'S HOSPITAL AND COLLEGE.**—The hospital contains 757 beds, of which 687 are for patients in the hospital at Smithfield and 70 for convalescent patients at Swanley. It receives over 8000 in-patients annually and its out-patients and casualties amount to more than 75,000 annually. Special departments have been organised for Diseases of Women and Children, the Eye, Ear, Larynx, and Skin, as well as for Orthopaedic and Dental Surgery, and for Electro-therapeutics and X Ray work. Surgical

operations take place every day at 1.30 P.M. and Surgical Consultations are held on Thursdays at the same hour. Medical Consultations are held on Thursdays at 3.15 P.M. The physicians and surgeons deliver clinical lectures weekly during both the winter and the summer sessions. Clinical Lectures on all special subjects are also given. The visits of the physicians and surgeons are made at 1.30.

Ten house physicians and ten house surgeons are appointed annually, and are provided with rooms by the hospital authorities and receive £80 a year as salary. A resident midwifery assistant, an ophthalmic house surgeon, and a house surgeon for diseases of the throat, nose, and ear are appointed every six months, and are provided with rooms and receive a salary of £80 a year. Three resident anaesthetists are appointed annually, and receive salaries of £120, £100, and £100 respectively, with rooms. An extern midwifery assistant is appointed every three months, and receives a salary of £80 a year. The clinical clerks, the obstetric clerks, the clerks to the medical out-patients, the dressers to the surgical in-patients and to the out-patients, and the dressers in the special departments are chosen from the students. A residential college is attached to the hospital.

*New Buildings.*—The new buildings comprise residential quarters for the resident staff, casualty, medical, surgical, and special out-patient departments, casualty wards, dispensary, and clinical lecture theatre. A new chemical laboratory has been added to the Medical School, and a laboratory devoted to instruction in Public Health. A second new block is devoted to Pathology, and contains the post-mortem room as well as extensive laboratories for bacteriology, clinical pathology, pathological histology, and pathological chemistry. *The Medical School Buildings* include three large lecture theatres, a large dissecting room, a spacious library (containing 13,000 volumes), a well-appointed museum of anatomy, physiology, comparative anatomy, materia medica, botany, and pathological anatomy. The pathological museum is the most complete in the kingdom. There are laboratories for chemistry, physiology, pharmacology, physics, public health, and biology, giving ample accommodation in every department.

*Special Classes* for the Primary and Final F.R.C.S. are held twice yearly. *Instruction in Preliminary Science* is given to University of London students in chemistry, biology, and physics throughout the year. *Laboratory Instruction for the D.P.H.* is provided during the winter and summer sessions.

The recreation ground of 10 acres is at Winchmore Hill for the use of the members of the Students' Union, which all students are expected to join. The Students' Union contains a large reading and smoking room, a committee and writing room, luncheon and dining hall, and a miniature rifle range.

*Scholarships given in aid of Medical Study.*—At this school various Scholarships, prizes, &c., are given. For five of the Scholarships and the Exhibition—namely, (a), (b), two Entrance Scholarships of the respective values of £75 and £100; (c) Entrance Scholarship in Arts, £100; (d) Jeaffreson Exhibition, £50; and (e) Shuter Scholarship, £50—a full or University course at St. Bartholomew's Hospital is required. The awards of (a), and (b) are made after examination in selections from the subjects of Chemistry, Physics, Zoology, Botany, Physiology, and Anatomy; (c) and (d) are awarded after examination in Latin, Mathematics, and Greek or French or German; (e) is awarded after competitive examination among Cambridge Graduates in Anatomy and Physiology. The remaining Scholarships and prizes are as follows:—Four Junior Scholarships: (f) No. 1, £30, Anatomy and Physiology; (g) No. 2, £20, Anatomy and Physiology; (h) No. 3, £25, Chemistry, Physics, and Biology; (i) No. 4, £15, Chemistry, Physics, and Biology; (j) Senior Scholarship, £50, Anatomy, Physiology, and Chemistry; (k) Kirkes Scholarship, £30 and medal, Clinical Medicine; (l) and (m) two Brackenbury Scholarships, £39 each, one in Medicine and one in Surgery; (n) Sir G. Burrows Prize, £10, Pathology; (o) Skynner Prize, 13 guineas, Regional and Morbid Anatomy; (p) Matthews Duncan Medal and Prize, £20, Midwifery and Gynæcology; (q) Luther Holden Research Scholarship in Surgery, awarded by election, £105; and (r) Lawrence Research Scholarship and gold medal in Pathology, awarded by election, £115.

<sup>1</sup> For Ancillary Metropolitan Medical Schools see p. 376.



Information may be obtained on application to the Dean of the Medical School: Dr. T. W. Shore. The Warden of the College is Mr. W. Girling Ball.

**CHARING CROSS HOSPITAL.**—The Hospital, to which the School is attached, contains 300 beds. Over 3000 cases pass through its wards each year, and some 24,000 out-patients and casualties are treated. There are special departments for Mental Diseases, Midwifery, Diseases of Women, of Children, of the Skin, Eye, Ear, Throat, Nose, and Teeth, for Orthopaedic Cases, X Ray work, and for Electrical Examination and Treatment.

**Appointments.**—In the Medical School Demonstratorships and Assistant Demonstratorships are open to students of the School. Medical, Surgical, and Obstetric Registrars to the Hospital are appointed annually. Six House Physicians, six House Surgeons, and two Resident Obstetric Officers are appointed each year after competitive examination.

**Primary and Intermediate Studies.**—By an agreement with the University of London the School sends its Primary and Intermediate Students to receive their lectures and practical work at King's College, which is situated within four minutes' walk. This arrangement has proved most successful.

**Final Studies.**—These are taken in the school and hospital, where systematic lectures, demonstrations, and tutorial classes are arranged to cover all the subjects necessary for qualifying examinations. Departments are also available for other final subjects of *Materia Medica*, *Toxicology*, and *Operative Surgery*.

An Institute of Pathology with a whole-time staff of scientific workers and fully equipped Laboratories has been established in the School. Students receive their training in Preventive Medicine, Pathology, and Bacteriology here, and are encouraged to undertake Research. Special facilities for Post-graduate Research and Study.

The course in Ophthalmology is given in the Royal Westminster Ophthalmic Hospital. Special lectures and demonstrations are arranged for Post-graduates.

The *Museum* contains over 4000 specimens, including a notable collection of over 800 gynaecological specimens, "The Cuthbert Lockyer Collection."

**Students' Club.**—The social comfort and convenience of students are met by library, reading, and smoking-rooms, refreshment-room, &c. The Club, which is under the control of a Committee of Students, provides needful athletic recreation, and includes the Medical Society.

**Women Students.**—Women students are accepted by the School and Hospital upon the same terms and conditions as men, and after qualification are eligible for resident Hospital appointments. A separate common-room and a female attendant are provided, but beyond this no further distinction is made. This system of co-education, under which men and women are placed on terms of complete equality throughout the whole of the curriculum, has been found to work successfully and to their mutual advantage.

**Fees.**—An entrance fee of 10 guineas and 8 guineas is payable by full-course and final-course students respectively, and an annual fee of 26 guineas covers all other expenditure, with the exception of 7 guineas for vaccination, dispensing, and fever hospital attendance, which must be taken outside the hospital. Membership of the Students' Club is included in these fees.

Further information may be obtained on application to the Dean, Dr. W. J. Fenton, Medical School, Charing Cross Hospital, London, W.C.

**ST. GEORGE'S HOSPITAL.**—This hospital has a service of 436 beds, of which 180 are allotted to surgical, 150 to medical cases, and 100 are at the Convalescent Hospital at Wimbledon. One ward is set apart for Diseases Peculiar to Women. Children's beds are placed in all the women's wards. Two wards are allotted to ophthalmic cases.

Entrance Scholarships and Endowed Prizes of a total value of £576 are awarded annually; a detailed list is placed below. The entire teaching and laboratories are now devoted to purely clinical subjects, and arrangements have been made with the University of London for students who enter during the first, second, or third year of the curriculum as students of St. George's to carry out the necessary courses of instruction at either University College or King's College. Students then complete their course,

without payment of any entrance fee, in a school entirely devoted to Clinical work.

Eight house physicians and eight house surgeons are appointed annually. Special attention is directed to the following paid appointments, among others, which are open to students after they have held house office:—Resident Assistant Physician and Resident Assistant Surgeon, at £350 per annum each; Medical Registrarship at £200 per annum; Surgical Registrarship at £200; Assistant Curatorship of the Museum at £100; Obstetric Assistantship (Resident) at £50; the post of Resident Anaesthetist at £100; the post of Senior Anaesthetist at £50; the posts (3) of Junior Anaesthetists, each at £30. The St. George's Hospital Club, with smoking- and luncheon-rooms on the hospital premises, and an athletic ground at Wimbledon, is an amalgamation of the Hunterian Society, the *Gazette*, and the chess, lawn tennis, boxing, hockey, rifle, and golf clubs. Students have the advantage of a library of medical and scientific books which is kept up to date.

**Scholarships and Prizes.**—At this school two entrance scholarships are given, the money value and the subjects of examination being as follows: (a) and (b) two University Entrance Scholarships, 70 guineas and £50 respectively, Anatomy and Physiology. The others are as follows: (c) William Brown Exhibition, tenable for two years and open to perpetual pupils having registrable qualifications, £135 per annum, Practice of Medicine, Midwifery, and Surgery; (d) William Brown Exhibition, tenable for three years and open to perpetual pupils qualified not more than three years previously, £45 per annum, Essay and Original Work; (e) Allingham Scholarship in Surgery for Students qualified not more than three years, £60, Competitive Essay; (f) and (g) two Brackenbury Prizes, one in Medicine and one in Surgery, £30 each, open to students of not more than five years' standing; (h) H. C. Johnson Memorial Prize, £15, Practical Anatomy; (i) Pollock Prize, £17, Physiology, Physiological Chemistry, and Histology; (j) Clarke Prize, £5; (k) Thompson Medal, £5, Clinical Reports; (l) Brodie Prize, £7, Clinical Reports; (m) Webb Prize, open to perpetual pupils, £30, Bacteriology; (n) Sir Francis Laking Memorial Prize, £65, open to students having registrable qualifications.

Further information may be obtained from the Acting Dean of the Medical School, Mr. R. R. James.

**GUY'S HOSPITAL.**—This hospital, founded by Thomas Guy in 1721 for the reception of 400 patients, and enlarged through the aid of a large bequest from the late William Hunt, contains at the present time 644 beds. The school buildings have been rebuilt and now offer very complete accommodation. Within the grounds of the hospital are situated the residential college, with accommodation for 60 students, the students' club, with reading, smoking, luncheon, and dining-rooms, a fives court, and swimming bath. The athletic ground and club house is situated at Honor Oak Park, and can be reached in 20 minutes from the hospital.

House physicians, house surgeons, out-patient officers and assistant house surgeons, obstetric residents, ophthalmic house surgeons, clinical assistants, clerks to anaesthetists, surgeons' dressers, medical clinical clerks, post-mortem clerks, extern obstetric attendants, and dressers and clerks in the special departments are appointed from among the students upon the recommendation of the Medical Council according to merit.

There is a Medical Section of the Officers' Training Corps of the University of London in connexion with the Hospital. Drill is held in the grounds of the Hospital, so that the senior students can carry out the necessary military training without any serious interruption of their work in the wards. The establishment of a Venereal Clinic, in accordance with the Scheme of the Local Government Board and London County Council. Lectures and clinical instruction are given, to which Medical Students and Practitioners are admitted without fee. Residential College: the rent of rooms remains the same, but the cost of board has increased.

**Scholarships.**—Five entrance scholarships are awarded annually as follows:—(a) one scholarship of £100 for students under 21 years of age, Latin, English, Greek or French or German, Arithmetic, Euclid, and Algebra; (b) one scholarship for students under 21 years, £120,



Inorganic Chemistry, Physics, and Biology; (e) a Scholarship of £50, open to candidates under 21 years of age, to be awarded either in Arts or in Science, according to the discretion of the Examiners, and to the percentage of the marks obtained; (d) two scholarships, one of £75 and one of £35, for students under 25 years of age who have completed the curriculum for, or passed the examination in, Anatomy and Physiology for a medical degree in any University of the British Empire. Subjects: Any two of the following: Anatomy, Physiology, Pharmacology, General Pathology, Organic Chemistry.

In agreement with the practice of the Universities, an allowance will be made (1) for Military Service performed by candidates, the term "military service" meaning service in the Naval or Military Forces of His Majesty or of His Majesty's Allies during the war; or (2) in respect of other approved duties in connexion with national defence.

The Dean of the Medical School is L. Bromley, M.Ch., from whom further information may be obtained.

**UNIVERSITY OF LONDON: KING'S COLLEGE.**—The medical department (Faculty of Science, Medical Division) at this College only deals with Preliminary and Intermediate subjects, and instruction in these subjects is given in the College laboratories by university professors and their assistants. The following four hospital schools prepare their students only for the final examinations—viz., King's College Hospital, Westminster Hospital, St. George's Hospital, and Charing Cross Hospital—sending them to King's College for the earlier part of the curriculum. The department is open to both men and women.

**Fees.**—For London University course: For First examination for medical degrees, 25 guineas; for the Second examination, 58 guineas, or two instalments of 30 guineas each. For Conjoint Board course: For First examination, 20 guineas; for Second examination, 58 guineas, or two instalments of 30 guineas each. For prospectus and further information application should be made to the Dean of the department (Professor W. D. Halliburton).

**KING'S COLLEGE HOSPITAL MEDICAL SCHOOL.**—The advanced subjects in the curriculum are dealt with at the Medical School attached to King's College Hospital, which is situated at Denmark Hill, S.E. The hospital stands in the midst of a South London population, from which an immense amount of clinical material is forthcoming, an average of 3500 out-patients being dealt with weekly. There are 400 beds available for in-patients, and provision will ultimately be made for 600 beds. Special departments are provided for the following: diseases of women and children, the eye, ear, throat and nose, skin, teeth; radiography, radiotherapy and radium-therapy; pathology, massage, medical gymnastics, and electro-therapeutics. The appointments open to students are those of senior clinical assistant to the special departments; medical, surgical, and obstetric tutors; resident casualty officer; resident anaesthetist; resident assistant pathologist; and medical, surgical, and obstetric registrarships. There are 16 resident medical and surgical officers appointed yearly.

**Scholarships and Prizes.**—For the first two scholarships in the list here shown a complete course at King's College is required. The money value and subjects of examination are as follows:—(a) Two Warneford Scholarships, tenable for four years, £25 each per annum; (b) Sambrooke Scholarship, £50; (c) Rabbeth Scholarship, £20; (d) Medical Entrance Scholarships, £50, Anatomy and Physiology, and, £50, Pathology and Pharmacology, open to students who (1) propose to take a degree at any British University, and have passed their University examination in Biology, Chemistry, and Physics, and who (2) will become students at King's College Hospital from date of entering upon Scholarship; (e) Two Medical Entrance Scholarships one in Arts and one in Science, £50 each, tenable for five years, successful candidates to study at King's College and King's College Hospital; (f) Three Medical Scholarships, £40 for fifth-year students, £20 for third-year students, and £20 for second-year students; (g) Two Sambrooke Registrarships, open to matriculated students who have filled certain appointments in hospital, £50 each; (h) Carter Prize, £15, Botany; (i) Tanner Prize, £10, Obstetrics and Diseases of Women; (j) Todd Prize, £4 4s. and medal, Clinical Medicine; (k) Two Burney Yeo Entrance Scholarships, £80 each, open to students of Oxford and Cambridge.

**Athletics.**—The King's College Hospital Clubs and Societies Union was formed in 1908, and consists of the Listerian and Musical Societies, the Students' Common Rooms, and the various athletic and sports clubs. Admirable playing fields, over six acres in extent, have been provided for the use of the students on Dog Kennel Hill, Lordship-lane, S.E., about ten minutes' walk from the hospital. There are also Tennis Courts in the grounds of the Hospital and of "The Plantans," the hall of residence for students belonging to the hospital.

**Fees.**—The composition fee for Hospital work and Final subjects of the curriculum is 70 guineas if paid in one sum, or 72 guineas if paid in two instalments, in addition to the Entrance Fee of 10 guineas. For information and prospectus application should be made to either of the following: H. Willoughby Lyle, M.D. Lond., F.R.C.S., Dean; S. C. Ranner, M.A. Cantab., Secretary of the Medical School, King's College Hospital, Denmark Hill, S.E. 5.

**LONDON HOSPITAL.**—The hospital, with its Medical College and Dental School, is situated in the Mile End-road, E. The hospital contains 933 beds, which are in constant use, and is the only general hospital for East London. During last year 17,247 in-patients and 94,554 out-patients received treatment, while 9056 major operations were performed. 26,319 out-patients attended the special departments of the Ear, Nose, Throat, Skin, Teeth, &c., and the Obstetric, Orthopaedic, and Venereal Departments. The hospital presents, therefore, a large field for clinical instruction, and in its Wards and Out-patient Departments exceptional opportunities are offered for acquiring an extensive and practical experience of all phases of disease. Owing to the large number of patients more appointments are open to students before and after qualification than at any other hospital. Holders of resident appointments have free board. Special classes are held for the degrees of the University of London, the Fellowship of the Royal College of Surgeons, and other higher examinations. Special entries for medical and surgical practice can be made. A residential Hostel on hospital grounds is provided for the convenience of students. The Clubs Union Athletic Ground is within easy reach of the hospital.

**Scholarships and Prizes.**—At this school the successful candidates for the first items in the list here shown must enter as full students. The value and the subjects of examination are as follows:—Price Scholarship £100; and one Entrance Scholarship of £50, subjects of First Medical Examination at the University of London; Epsom College Scholarship, free education, subjects of First Medical Examination as above; Price Scholarship, open to students of Oxford and Cambridge Universities, £52 10s., Human Anatomy and Physiology; Buxton Scholarship, £31 10s., subjects of Anatomy and Physiology; three Scholarships for Clinical Work, £20 each, Medicine, Surgery, and Obstetrics; Sutton Prize, £20, Pathology; Duckworth Nelson Prize, biennial, £10, Pathology, Practical Medicine, and Surgery; Letheby Prizes (2), £25, Chemistry; eight Dressers' Prizes, amounting to £40, zeal, efficiency, and knowledge of Elementary Clinical and Minor Surgery; Hutchinson Prize, triennial, £40, Clinical Surgery; two Practical Anatomy Prizes, £6 and £4 respectively; Andrew Clark Prize, biennial, £26, Clinical Medicine and Pathology; James Anderson Prizes, £9, Elementary Clinical Medicine; Forensic Medicine; Arnold Thompson Prize, £15; Wynne Baxter Prize, £5 5s.; and Liddle Prize, triennial, £120.

**Medical Research Funds.**—Research Funds of over £25,000, including the Eliza Ann Alston Endowment Fund for Medical Research, provide valuable scholarships for men wishing to undertake research or desirous of preparing Theses for University degrees.

The Schorstein Memorial lectures in Clinical Medicine, which have been postponed during the war, will be given during 1919-20 by Sir Archibald E. Garrod, K.C.M.G., F.R.S., physician to St. Bartholomew's Hospital.

**ST. MARY'S HOSPITAL.**—305 beds. The number of in-patients treated during 1918 was 3034. The number of out-patients was 11,346 with 19,145 casualty cases, a total of 30,491. The situation of the hospital and Medical School in the centre of the residential districts of Paddington, Bayswater, and North Kensington renders it exceptionally convenient for students' rooms, a register of which is kept by the authorities for the use of students.



*Laboratories, &c.*—The Medical School provides for the entire curriculum. Special laboratories are in use for Biology, Chemistry, and Physics, a series of lecture theatres and laboratories for Anatomy and Physiology, and a spacious and well-lighted dissecting-room. The Pathological Department is under the direction of Dr. B. H. Spilsbury, and a block of consulting-rooms and laboratories in the New Wing of the Hospital has been equipped for the department of Therapeutic Inoculation.

*Appointments.*—All clinical appointments in the hospital are free to students of the Medical School and the resident medical officers are chosen by competitive examination. Six house physicians, six house surgeons, four obstetric officers are appointed in each year and receive board and lodging in the hospital. Two resident anaesthetists are appointed in each year and receive a salary at the rate of £100 per annum, with board and lodging. Four casualty house surgeons are appointed in each year upon the same conditions. Several assistants in the department of Therapeutic Inoculation are appointed annually at salaries of £100 per annum and upwards. In addition to the above, the senior appointments, medical, surgical, and obstetric registrar, casualty physician, demonstrator of anatomy, physiology, and biology, are made annually.

*Clubs, &c.*—The amalgamated clubs include all the various athletic clubs, as well as the medical society, &c. There is a students' club on the Hospital premises, the membership of which is included in the amalgamated clubs. The athletic clubs' ground at Park Royal, Acton, has been commandeered by the War Office and sold. Steps are now being taken to procure a new site.

*Special Tuition.*—Special tuition is provided for the Intermediate and Final Examinations of the Universities of Oxford, Cambridge, and London, and for the Primary and Final F.R.C.S.

The composition fee for full students is £140 if paid in one sum, or £145 if paid in four instalments. University students who have completed their examinations in Anatomy and Physiology are admitted on payment of a composition fee of 65 guineas (£68 5s.) paid in one sum or by payment of two annual instalments of 40 guineas (£42) and 30 guineas (£31 10s.) respectively. A system of annual fees is also in force as an alternative to composition fees. Separate courses of lectures, laboratory work, or hospital practice may be taken.

*Scholarships and Prizes.*—The money value and subjects of examination of these are as follows: (a) and (b) Entrance Scholarships in Natural Science, £100 and £50 respectively, awarded by competition in September; (c) the Frederic John Palmer Scholarship in Natural Science, £25; (d) University Scholarship in Natural Science, open to members of Oxford or Cambridge University, £52 10s.; (e) University Scholarship in Natural Science, open to members of any British University, £52 10s.; (f) Epsom Scholarship, awarded by nomination, £52 10s.; (g) Gold Medal, £20, an Essay on Some Special Point in Clinical Medicine; (h) Meadows' Prize, awarded in alternate years, £8, Obstetrics; (i) Wallace Memorial Prize and Medal, for work in Vaccine Therapy, £5 5s.; (j) David Lees Prize in Clinical Medicine, £8.

Sir John Broadbent is Dean of the Medical School. The School Calendar and full information can be obtained from the Secretary, Mr. B. E. Matthews, St. Mary's Hospital Medical School, Paddington, W.

**MIDDLESEX HOSPITAL.**—The Hospital and Medical School are situated in Mortimer-street, at the top of Berners-street, and only a few minutes' walk from Goodge-street Station (Hampstead and Charing Cross Tube), Oxford Circus Stations (Bakerloo and Central London Tubes), and Great Portland-street Station (Metropolitan Railway).

The hospital contains 455 beds, including special wards for Cancer Cases, Maternity and Gynaecological Cases, and for Diseases of Children and the Skin and Eye.

The Cancer Charity, containing 92 beds and Special Investigation Laboratories, offers unrivalled opportunities for the study of Cancer, both in its clinical and pathological aspects.

In the Electro-Therapeutic Department students obtain instruction in the Treatment of Lupus and Cancer by the X Ray method of treatment. An Electrocardiograph Department has recently been established.

The Hospital and Medical School are fully equipped for the theoretical and practical teaching of all the subjects of

the medical curriculum, and for the Diplomas in Public Health, for which two courses are held yearly, commencing in April and October. Ample laboratory and class-room accommodation is provided.

The Bland-Sutton Institute of Pathology contains a new lecture theatre and large pathological, bacteriological, and clinical laboratories where every facility is given for original research. The Anatomical and Pathological Museum is now part of the Institute.

Special classes are held to prepare students for the Intermediate examinations of the Universities, and for the Primary and Final examinations for the F.R.C.S. (England) Diploma. There is a Residential College in the hospital for students.

*Hospital Appointments.*—All appointments are made without fee of any kind, and the following are appointed at intervals annually: six house physicians, eight house surgeons, two obstetric and gynaecological house surgeons, two casualty medical officers, two casualty surgical officers, one resident anaesthetist, and two resident officers to the special departments. The medical and surgical casualty officers are appointed twice a year. The medical, surgical, and obstetric and gynaecological registrars are appointed as vacancies arise.

Non-resident qualified clinical assistants are appointed to assist in the various out-patient departments. Clinical clerks and surgical dressers are also appointed in every department.

*Scholarships, Prizes, &c.*—(a), (b), and (c) Three Entrance Scholarships, value £100, £50, and £25, and (d) a University Scholarship, value £50, are awarded annually in September. The successful candidates are required to become general students of the school. (e) A Freer Lucas Scholarship for Students of Epsom College is awarded annually on the nomination of the Headmaster. There are also, (f) and (g), two Brodrip Scholarships, value £60 and £40 respectively; (h) the Lycl Gold Medal and Scholarship, value £55 5s.; (i) the John Murray Medal and Scholarship, value £25 (awarded every third year); (k) the Freeman Scholarship, value £30; (l) the Hetley Clinical Prize, value £25; (m) the Leopold Hudson Prize, value 11 guineas; and (n) the Second Year's Exhibition, value 10 guineas. There are also numerous class prize examinations.

In connexion with the Cancer Investigation Department the following Scholarships are awarded:—Richard Hollins Research Scholarship, value £100; Walter Emden Scholarship, value £100; and a Cancer Research Scholarship, value £60.

*Fees.*—The fees are arranged on a basis of an annual payment of £30 for the five years of the curriculum. After five years, if the student is not qualified, the annual fee is £20.

The Amalgamated Students' Club includes the following: the Medical Society, the Common Room Society, the cricket club, the football clubs, the athletic club, the rowing club, the musical society, the chess club, the lawn tennis club, and the hockey club. A subscription to the Amalgamated Students' Club is payable by all General and Dental students.

**ST. THOMAS'S HOSPITAL.**—This hospital received its present charter from King Edward VI., but as a monastic institution was in existence prior to the year 1207. The building occupies a unique position by the river, opposite the Houses of Parliament, and contains 1014 beds, including 530 for military patients. The in-patients last year numbered 9780, whilst the number of attendances as out-patients, including the casualty and light departments, was 242,686. There are special departments for the treatment of women, children, the eye, ear, nose and throat, skin, and teeth. The Tuberculosis Department forms a part of the Lambeth scheme for treatment of patients and for instruction. The Venereal Department has been established as part of the London County Council scheme. Departments for light treatment, X rays, and the Physio-therapeutic Department are also special features. A speech clinic has recently been inaugurated in connexion with the Children's Department. Exceptional facilities are offered in the hospital laboratories for the study of general pathology, clinical pathology, chemical pathology, cardiology, and of treatment by serums and vaccines. Surgical operations take place in the main theatres every day except Saturdays at 2 P.M. Clinical teaching in the wards, out-patients' and special departments, is available every day of the week.



Clinical lectures are delivered every Wednesday during the sessions. All appointments in the hospital are open to students without extra fee. Clinical assistants to all the special departments are appointed every three months. A resident assistant physician and a resident assistant surgeon, at a salary of £150 each, are appointed biennially; also four hospital registrars (medical, surgical, obstetric, and ophthalmic), the two former receive a salary of £150 and the two latter £50. An assistant in the clinical laboratory and an assistant pathologist are paid at the rate of £200 per annum. Appointments open to students before qualification: Clinical clerks and dressers for in- and out-patients are selected from students who have completed their third year's work. Every student acts as clerk in the post-mortem room and in one of the pathological laboratories, takes his turn on maternity duty under proper supervision in the maternity ward, thus obviating any necessity for seeking instruction elsewhere. Students are instructed in the administration of anaesthetics by one of the hospital anaesthetists. The Students' Club comprises a spacious restaurant and smoking and reading room. There is no occasion for students to leave the hospital buildings during working hours. The curriculum is arranged to meet the requirements of all the Examining Bodies. Special classes are held for the examinations at the University of London and for the First and Final Fellowship Examinations of the Royal College of Surgeons of England. Tutorial classes in all subjects precede the various examinations. The hospital is easily accessible from all parts.

*Fees.*—The annual composition fee is 30 guineas, covering all tutorial classes—in addition to a fee on entrance. Qualified practitioners are permitted to attend the hospital practice on terms which may be ascertained from the secretary.

*Scholarships and Prizes.*—At this school there are five Entrance Scholarships—namely, two in Arts, equivalent to the tuition fees for the first medical examination; two in Natural Science, of the value of £150 and £60 respectively, to be taken out in tuition fees; and the University Scholarship of £50 in Anatomy, Physiology, and Chemistry. The money value and subjects of examination of the remainder are as follows: (a) and (b) two College Prizes, one for second-year students and one for third-year students, £10 and £5 respectively; (c) William Tite Scholarship for second-year students, £25; (d) and (e) Musgrove Scholarship or (alternately) Peacock Scholarship, each for third-year students and tenable for two years, £35 each; (f) three College Prizes for fifth-year students of £10 each and three of £5 each; (g) Cheselden Medal, Surgery and Anatomy; (h) Mead Medal, Medicine, Pathology, and Hygiene; (i) Toller Prize, Medicine, Pathology, and Hygiene; (j) Bristowe Medal, Pathology and Morbid Anatomy; (k) Solly Medal and Prize, biennially, Surgical Reports; (l) Treasurer's Gold Medal for the most distinguished fifth-year student; (m) Wainwright Prize, Medicine, Pathology, and Hygiene; (n) Hadden Prize, Pathology; (o) Beane Scholarship, £50 biennially, Surgery and Surgical Pathology; (p) Sutton Sams Prize, biennially, reports of cases in Obstetric Medicine; (q) Grainger Testimonial Prize, £31 10s. Anatomy and Physiology; (r) Salters' Company Research Fellowship, tenable for three years, £100 annually, Pharmacology; (s) Louis Jenner Research Scholarship, tenable for two years, £60 annually, Pathology; and (t) Research Scholarship, tenable for two years, £200 per annum.

The Dean of the Medical School is Sir Cuthbert S. Wallace, the Sub-Dean Dr. C. R. Box, and the Secretary Dr. A. Elliot, from whom any further information may be obtained.

UNIVERSITY OF LONDON, UNIVERSITY COLLEGE.—University College has been constituted a University centre for the teaching of medical sciences. The College Faculty of Medical Sciences comprises the Departments of Physics, Chemistry, Botany, and Zoology (the Preliminary Medical Sciences); also the Departments of Anatomy, Physiology, and Pharmacology (the Intermediate Medical Sciences), and the Department of Hygiene and Public Health (Post-graduate Study).

*Faculty of Medical Sciences.—Composition fees.*—For the courses required by the University of London. 1. For

the First Medical Course, 26 guineas, entitling to one attendance and to the privileges of the Union Society for one session. 2. For the Second Medical (Intermediate) Course, 58 guineas if paid in one sum; 60 guineas if paid in two instalments of 30 guineas each. This fee entitles to attendance at Anatomy and Physiology during three years and to one attendance at Organic and Applied Chemistry, Pharmacology, and Materia Medica, and to the privileges of the Union Society for two sessions.

For the medical education required by the Examining Board in England and the Society of Apothecaries. First examination, Parts I., II., III., 21 guineas, entitling to attendance for the First and Second Terms and to the privileges of the Union Society for one session; 26 guineas, entitling to attendance throughout the session and to the privileges of the Union Society for one session. First Examination, Part IV., and second examination, 58 guineas if paid in one sum, and 60 guineas if paid in two instalments of 30 guineas each. This fee entitles to attendance during three years in all subjects but Practical Pharmacy and to the privileges of the Union Society for two sessions.

*Scholarships and Prizes.*—The first three items on the present list require a complete intermediate course at University College. The money value and subjects at examinations are as follows: (a) The Bucknill Scholarship, 135 guineas; (b) and (c) two Entrance Exhibitions, 55 guineas each, Chemistry, Physics, Botany, and Zoology; (d) Cluff Memorial Prize, £15 biennially, Anatomy, Physiology, and Chemistry; (e) Schäfer Prize in Physiology, £18 triennially; (f) Sharpey Physiological Scholarship, £105, Biological Sciences; (g) Morris Bursary for sons of deceased professional men, by nomination, tenable for two years, £16 a year; and (h) five Gold and five Silver Medals awarded annually in various departments.

Women students are admitted.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL.—Dean: Dr. G. F. Blacker. Acting Secretary: G. E. Adams. Open to men and women students. Fees for Preliminary and Intermediate Course: See under University College. For the Final M.B., B.S. (London) Course, 80 guineas if paid in one sum, 82 guineas if paid in two instalments, as follows—first year, 50 guineas; second year, 32 guineas. This fee entitles to attendance on Lectures and Hospital Practice during three years and to one attendance on Practical Pathology and Practical Surgery. Vaccination and attendance at a Fever Hospital are not included. This course of instruction is also suitable for the corresponding examinations at the Universities of Oxford, Cambridge, and Durham, and for the medical education required by the Examining Board in England and the Society of Apothecaries.

There are over 300 beds in the hospital.

*Special Departments, Clinical and Laboratory Facilities.*—Those who are desirous of carrying out original research in Pathology, including Morbid Anatomy, Bacteriology, Experimental Pathology, and Chemical Pathology, are admitted to work in the laboratories of the school by the Professor of Pathology, and under certain conditions can receive grants from the Charles Graham Medical Research Fund. A special course of instruction is given in conjunction with University College for preparation for the examinations for Diplomas in Public Health of the various universities and examining bodies. Special courses of Lectures and Demonstrations in Anaesthetics, Diseases of the Eye, of the Ear, Nose, and Throat, and of the Skin, in Electrical and Radioscopic Diagnosis and Treatment, and in Clinical and Cardiac Pathology are also given. These courses are designed for senior students and graduates. Special arrangements have been made which enable students of University College Hospital to carry out a portion of their clinical studies at the National Hospital for Nervous Diseases, Queen-square, the Children's Hospital, Great Ormond-street, and the Central London Ophthalmic Hospital, Judd-street. The Royal Ear Hospital, Dean-street, Soho, has been amalgamated with University College Hospital as the Ear, Nose and Throat Department. In the Dental Department in Great Portland-street, formerly known as the National Dental Hospital, there is afforded the opportunity for attending lectures and practical instruction in diseases of the mouth and teeth.



*Appointments tenable by Students.*—Clerkships and dresser-ships to the physicians, surgeons, anaesthetist, and pathologist are allotted amongst the students of the hospital. Maternity students are appointed each month and reside in the Students' House connected with the Medical School and Hospital. Eight house physicians and house surgeons, four senior and four junior obstetric assistants, are selected annually by examination from among the senior students who have a medical qualification. The house physicians and house surgeons reside free in the hospital for six months, and the senior obstetric assistants for three months. In addition to these posts there are certain special appointments which are vacant from time to time and are filled by senior students of the hospital: 1. The Resident Medical Officer. This officer is appointed for a period of two years and is chosen from amongst the more senior recent residents of the hospital. 2. The two Surgical Registrars are also chosen from among the more senior recent residents of the hospital. 3. The Obstetric Registrar. 4. Two Casualty Medical Officers and a Casualty Surgical Officer are appointed, each for a period of six months. 5. Assistant in Ear and Throat Department, appointed for one year. 6. Assistant in Ophthalmic Department, appointed for one year. 7. Registrar in Anaesthetic Department, appointed for one year. 8. Deputy Anaesthetists. During the absence of one or another of the Anaesthetists in the summer months a senior qualified student is appointed as a substitute and is granted a special certificate.

*Museum of Pathological Anatomy.*—The Museum is open for study from 9 A.M. to 5 P.M. Microscopic sections of most of the specimens in the Museum have been prepared and are available for the use of students on application to the Curator. The Museum contains 1100 admirable paintings by Sir Robert Carswell and Sir Charles Bell and a collection of old surgical instruments formerly belonging to Robert Liston.

The Anatomical Museum of the University of London, University College, is open to all students of University College Hospital and Medical School on the recommendation of the School Committee.

The Medical Library is open daily for the purposes of study to every student of the Medical School from 9 A.M. to 5 P.M., Saturdays 9 A.M. to 1 P.M. It contains about 13,500 works on medical subjects, including all the current text-books and works of reference required for study or research.

The Medical Society of University College Hospital Medical School exists for the dual purpose (1) of promoting the study of Medical and Surgical Science, and (2) of promoting social intercourse among its members. All Students of the Medical School are eligible for membership. Meetings are held once a fortnight for the purpose of discussing subjects connected with the study of medicine. In its social aspect the society includes various athletic clubs and superintends the gymnasium and squash racquet court in the Medical School. The Athletic Ground, which is used in conjunction with the Union Society of the University of London University College, is situated near the Great Western Railway station at Perivale.

*Scholarships and Prizes.*—At this School the first two Scholarships (a) and (b) entitle the holder to a complete course at University College and University College Hospital Medical School; the second two (c) and (d) entitle to a final course at the Medical School. The money value and subjects of examination are as follows:—(a) Entrance Scholarship, Bucknill, 135 guineas, Chemistry, Physics, Botany, and Zoology; (b) Epsom Free Medical Scholarship, subjects of Preliminary Scientific Examination and Nomination by Epsom College; (c) and (d) two Goldsmid Entrance Exhibitions, 80 guineas each, Anatomy and Physiology; (e) Graham Scholarship in Pathology, £200 per annum for two years, awarded by the Senate of the University of London; (f) Atkinson Morley Scholarship, tenable for three years, £45 per annum, Surgery; (g) Atchison Scholarship, tenable for two years, £55 per annum; General Proficiency in Medical Studies; (h) Magrath Clinical Scholarship, about £100, Clinical Cases; (i) Percival Alleyn Scholarship, about £60, Surgery; (j) Filliter Exhibition, £30, Pathology; (k) Erichsen Prize, £10 10s., Practical Surgery; (l) two Senior and two Junior Fellowes Clinical Medals for Clinical Medicine; (m) two Liston Gold Medals for Clinical Surgery; (n) Alexander Bruce Gold Medal for Pathology and

Surgery; and (o) Tuke Silver and Bronze Medals for Pathology. (p) Radcliffe Crocker Travelling Scholarship for Dermatology. (q) Leslie Pearce Gould Travelling Scholarship for Surgery.

*Residence of Students.*—University College Hall, Ealing, is recognised by the Medical School authorities as a residential hostel. The Students' House in University-street contains large and comfortable rooms. The Maternity Students occupy them on payment of a moderate charge. Gentlemen who desire assistance in their studies should consult the Dean or Lecturers.

**WESTMINSTER HOSPITAL.**—The hospital contains 215 beds and affords relief to upwards of 2000 in-patients and 30,000 out-patients annually. There are separate departments for Diseases of the Eye, Ear, Skinf, Teeth, and Throat, for Orthopaedic practice, for Diseases of Women, for Diseases of Children, for Radiography, and for the Light Treatment. The Anatomical, Pathological, and Materia Medica Museums are open to all students of the school.

The usual registrarships and house appointments will be made as soon after the conclusion of the war as possible.

By a scheme for the concentration of the teaching of the preliminary and intermediate subjects of the curriculum, which has the support of the London University, an arrangement has been made by the Westminster School for the teaching of these subjects at King's College. Students, however, may join the Westminster Medical School as formerly and may compete for Entrance Scholarships as heretofore.

*Scholarships and Prizes.*—The following Entrance Scholarships are offered for competition: Winter Session: (a) Arts Scholarship, the "Guthrie," £60. (b) Science Scholarships: Natural Science Scholarship, £60; Chemistry and Physics Scholarship, £30; and Two Scholarships in Anatomy and Physiology, £50 each. Summer Session: Two Scholarships in Anatomy and Physiology, £50 each. During the period of study the following prizes may be competed for: Sturges Prize in Clinical Medicine, about £6, Notes of Cases; Clinical Surgery Prize, £5, Notes of Cases; Chadwick Prize £21 in books or instruments—Medicine and Surgery, including Pathology and Applied Anatomy and Physiology; Frederic Bird Medal and Prize, open to Fourth-year Students, £14 in medal and books or instruments—Midwifery, Diseases of Women, Medicine, Pathology, Forensic Medicine and Bacteriology, and Public Health and Toxicology; Abrahams Prize in Clinical Pathology, 5 guineas, a Paper and Tests in Practical Work; Alfred Hughes Memorial Prize, open to Second-year Students, about £5 in books or instruments—Anatomy; Huxley Memorial Prize, 3 guineas in books or cash, open to Second-year Students—Physiology; Carter Gold Medal and Prize for Botany, open to Students of not more than three years' attendance, gold medal and books of the joint value of £15; Jelf Medal awarded to Third-year Students; Second-year Scholarship, £20, Elementary Anatomy, Physiology, Histology, and Organic Chemistry; Daniell Scholarship, tenable for two years, £20, Chemistry; Rabbeth Scholarship, open to First-year Students, £20, Class Examinations in the Preliminary Scientific Course; and the Sambrooke King's College Scholarship in Science, value £25.

The Dean is Dr. David de Souza, to whom inquiries may be addressed.

**LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN,** 8, Hunter-street, Brunswick-square, W.C.—The fee for the medical course for the degrees of the University of London and for the diplomas of the Royal Colleges of England and for other qualifications is £169 in one sum, or £179 in five instalments. These sums include library and laboratory fees.

The Royal Free Hospital contains 230 beds. Students also attend the in-patient and out-patient practice of the Elizabeth Garrett Anderson Hospital, Cancer Hospital, Hospital for Sick Children, Great Ormond-street, National Hospital for Paralysed and Epileptic, and Brompton Chest Hospital.

An agreement has been made under which students of the school attend full clinical courses at St. Mary's Hospital, Paddington (305 beds).

Special courses are arranged for the Primary Fellowship Examination of the College of Surgeons; also for dental



students in conjunction with the London Dental Hospital, Leicester-square, and the National Dental Hospital.

Students after qualification can hold the posts of house physician, house surgeon, obstetric assistants, clinical assistants, assistant anaesthetist, medical, gynaecological, and surgical registrars, assistant pathologist, and museum curator; and at the Medical School the posts of demonstrators in the departments of Anatomy, Physiology, Pharmacology, Biology, Chemistry, and Physics. Many other resident posts in London and elsewhere are also open to them.

The School buildings have been entirely rebuilt in recent years, and there are spacious, well-equipped laboratories, which afford every facility for efficiency of teaching and practical work in all departments.

There are residential chambers at 8, Hunter-street, 25, Gordon-square, 16, Brunswick-square, and 36, Tavistock-square, and the Warden can be consulted on the subject of other residences for students. The Students' Union arranges the social, athletic, and other clubs and societies at the School.

*Scholarships and Prizes.*—(a) Isabel Thorne Scholarship, £30. (b) St Dunstan's Medical Exhibition, £60 a year, tenable for three or five years. (c) Mrs. George M. Smith Scholarship, £50 a year, tenable for three or five years and next to be awarded in 1921. (d) Bostock Scholarship, tenable for two or four years, and next to be awarded in June, 1923, £60. (e) Mabel Sharman-Crawford Scholarship, tenable for four years, £20 a year. (f) Sir Owen Roberts Scholarship, £75 a year for four years. (g) Mabel Webb Research Scholarship, tenable for one year and renewable, £30, Physiology, Chemistry, or Pathology. (h) Fanny Butler Scholarship, tenable for four years; next award in July, 1922, £14 10s. (i) John Byron Bursary, tenable from two to four years, for students already in the School requiring assistance for the prosecution of their medical studies, application to the Secretary by March 31st; next award in March, 1921, £20. (k) Ellen Walker Bursary tenable for two years, awarded to a student beginning fourth year of medical study, £25 a year. (l) Helen Prideaux Scholarship, awarded every second year to a student who has become qualified during the two years immediately preceding the award, and to be spent in assisting the holder to further study, £40. (m) Agnes Guthrie Bursary, value £50, is offered annually to students who desire to pursue a full course of study for the Licentiate in Dental Surgery. (n) Dr. Edith Pechey Phipson Post-graduate Scholarship of the value of £40, awarded annually in June. It is open to all medical women, preferably coming from India, or going to work in India, for assistance in Post-graduate study. (o) Sarah Holborn Scholarship, value £20 a year for three or five years, awarded every alternate year; next award in 1921. (p) Dr. Margaret Todd Scholarship, tenable for four years, £37 10s. a year, awarded in alternate years; next award in July, 1921. (q) Lieutenant Edmund Lewis and Lieutenant Alan Lewis Memorial Scholarship, tenable for four years, awarded every four years; next award in July, 1920. Two Richardson-Kuhlmann Prizes are given each year, value £12, for proficiency in Clinical Obstetrics, value £8, for proficiency in senior subjects respectively. Two Evans Prizes of £2 2s. and £1 1s. are given each year on the results of the class examination in Midwifery. The Evans Prize for Operative Midwifery, value £5 5s., is awarded yearly. The Edith Pechey Phipson Prize in Pharmacology, value £3 3s., is awarded annually. There is also a small loan fund from which assistance can occasionally be given to students and to graduates who specially require pecuniary help. Prizes and Certificates of Honour are awarded in each class at the end of the session.

The Dean of the Medical School is Miss Aldrich-Blake, M.D., M.S.; the Honorary Secretary, Dr. May Thorne; and the Warden and Secretary, Miss L. M. Brooks, to whom inquiries may be addressed.

#### UNIVERSITY OF DURHAM.

Two Diplomas, one Licence, and six degrees are conferred—viz., the Diploma in Public Health, Diploma in Psychiatry, the Licence in Dental Surgery, and the degrees of Bachelor of Medicine, Bachelor of Surgery, Master of Surgery, Doctor of Medicine, Bachelor of Hygiene, and Doctor of Hygiene.

For the degree of *Bachelor of Medicine* there are four professional examinations. The subjects of the

First Examination are—Elementary Anatomy, Elementary Biology, Chemistry, and Physics. The subjects of the Second Examination are—Anatomy and Physiology. The subjects for the Third Examination are—Materia Medica and Pharmacy, Pathology, Medical Jurisprudence, Public Health, and Pathology and Elementary Bacteriology. The subjects of the Fourth Examination are—Medicine, Clinical Medicine and Psychological Medicine, Surgery and Clinical Surgery, Midwifery and Gynaecology, Therapeutics, and Diseases of the Skin, of the Throat, Nose, and Ear, and of Children.

It is required that at least one of the five years of professional education shall be spent in attendance at the University College of Medicine, Newcastle-upon-Tyne. Candidates who have passed the First and Second Examinations of the University will be exempt from First and Second Examinations of the Conjoint Board.

For the degree of *Bachelor of Surgery* every candidate must have passed the examination for the degree of Bachelor of Medicine of the University of Durham and must have attended one course of lectures on Operative Surgery and one course on Applied Anatomy. Candidates will be required to perform operations on the dead body and to give proof of practical knowledge of the use of surgical instruments and appliances.

For the degrees of *Doctor of Medicine* and *Master of Surgery* a candidate must not be less than 24 years of age and must satisfy the University as to knowledge of Greek or German. If he has not already satisfied the Matriculation Examiners in either Greek or German he must pass in one of these subjects at one of the ordinary matriculation examinations of the Newcastle division of the University. He must also have obtained the degree of Bachelor of Surgery of the University of Durham and must have been engaged for at least two years subsequently to the date of acquirement of the degree of Bachelor of Surgery, in attendance on the practice of a recognised hospital, or in the naval or military services, or in medical or surgical practice. The candidate for the M.D. degree must present an essay. The subjects of examination for the M.S. are:—Principles and Practice of Surgery, Surgical Pathology, Surgical Anatomy, Surgical Operations, Clinical Surgery.

*Doctor of Medicine* (without residence).—The University of Durham has instituted a special examination whereby the degree of Doctor of Medicine may be obtained without residence. Candidates shall not be under 40 years of age and shall have been in active practice for 15 years as registered medical practitioners. They shall produce certificates of moral character from three registered members of the medical profession. The fee will be 50 guineas, of which 20 guineas will be retained if the candidate fails to satisfy the examiners.

Candidates for any of the above degrees, diplomas or licence, must give at least 28 days' notice to Professor Howden, Secretary, College of Medicine, Newcastle-upon-Tyne. In the case of the M.D. (essay) examination candidates must send in their essays six weeks before the date of the examination.

*Scholarships and Prizes.*—In connexion with this University the following Scholarships and prizes are awarded:—(a), (b), (c), and (d). Four Scholarships of £25 a year each, tenable for four years; the examination will be the September Matriculation Examination. Candidates must take English, Latin, Arithmetic, Euclid, Algebra, Geography, English History, and one, or two, of the three languages—French, Greek, German. (See College Calendar for special books.) Open to candidates desirous of being admitted as Medical Students. The successful candidates must take out their entire curriculum at the University of Durham College of Medicine, Newcastle-upon-Tyne. (e) Pears Scholarship of £50 a year (when vacant), tenable for three years; Matriculation Examination.—At the College of Medicine are: (f) Dickinson Scholarship, interest on £400 and gold medal; examination in Medicine, Surgery, Midwifery, and Pathology. Open to full students of the College of Medicine who have passed the third M.B. Examination. (g) Tulloch Scholarship, interest on £400; examination in Elementary Anatomy, Biology, Chemistry, and Physics. (h) Charlton Memorial Scholarship, interest on £700; examination in Medicine. Open to full students of the College entered for the class on the



Principles and Practice of Medicine. (i) Gibb Scholarship, interest on £500; awarded annually as a Scholarship in Pathology to full student who passes the best examination in that subject. No student is eligible after completion of his curriculum. (j) Luke Armstrong Memorial Scholarship, interest on £680: Original Essay on some subject in Comparative Pathology. (If no essay of sufficient merit be presented the scholarship may be awarded to the candidate who, in passing the first part of the Examination for the B.Hy. Degree, obtains the highest number of marks in Comparative Pathology during the year.) Open to all Graduates in Medicine or Hygiene and candidates for these degrees who have spent six months at the University and whose age does not exceed 30 years. (k) Stephen Scott Scholarship, interest on £1000; Original Essay on any Surgical subject. Open to any graduate in Medicine or Surgery of the University or any student of the College of Medicine. Student's age must not exceed 30 years. (l) Heath Scholarship in Surgery, of the value of £200, awarded every second year. All Graduates in Medicine or Surgery of the University are eligible. (m) Philipson Scholarships (2). The interest on £1800 to the candidates who obtain the highest marks in the Final M.B. Examinations held in March and June respectively. (n) Gibson Prize, interest on £250 stock; examination in subject of Midwifery and Diseases of Women and Children. Open to students who have attended one course of lectures on Midwifery and Gynaecology. (o) Outtersen-Wood Prize, interest on £250, in Psychological Medicine. (p) Turnbull Prize and Medal; examination in Surface Anatomy. Open to students at end of their second winter session.—At the Royal Infirmary is (q) Goyder Memorial Scholarship, interest on £325; awarded annually to student who most distinguishes himself in Clinical Medicine and Clinical Surgery at the Royal Infirmary. For further information apply to Professor R. Howden, Secretary of the College.

*Hygiene.*—The regulations with regard to the degrees in Sanitary Science will be found under the section on Public Health.

THE COLLEGE OF MEDICINE, Newcastle-upon-Tyne.—Clinical instruction is given at the Royal Victoria Infirmary, containing 600 beds. In it adequate accommodation is provided for the study of the various special subjects, in addition to the ordinary clinical work.

NEWCASTLE-UPON-TYNE ROYAL VICTORIA INFIRMARY.—The Infirmary was founded in 1751, but has been entirely rebuilt, the new hospital being opened by His late Majesty King Edward VII. in 1906. The number of beds is 585. The number of in-patients annually is 9200 and of out-patients 69,000. The medical students of the University of Durham attend the practice of this hospital. Clinical Lectures are delivered by the Physicians and Surgeons weekly and ward demonstrations are given daily. Tutorial classes are held by the Assistant Physicians, Assistant Surgeons, and Surgical Registrars weekly, and demonstrations are given in the several out-patient departments daily. Pathological demonstrations are given by the Pathologist daily or as opportunity occurs, and in the new buildings nothing has been spared in perfecting scientific equipment. In addition to medical and surgical in-patient and out-patient departments the following special departments are fully equipped for teaching students: Ophthalmic, Throat, Nose, and Ear, Skin, Gynaecological, and Electrical. The hospital building contains the following laboratories: 1. Special Pathological Laboratory, attached to the post-mortem rooms. 2. Bacteriological Laboratory, in which all clinical bacteriological investigations are carried out—opsonic indices estimated with a view to treatment by vaccines and serums, &c. 3. There is in addition a Clinical Laboratory attached to each ward and to the out-patient department. There are five operating theatres in use in the hospital. The surgical practice is especially good. The session opens on April 17th and Oct. 2nd of each year. Applications for detailed information should be made to the Dean, Dr. Horsley Drummond, at the hospital.

There are other institutions in addition to the Royal Victoria Infirmary at which the student of medicine of the University of Durham can receive clinical instruction. Practical Midwifery can be studied at the Newcastle Lying-in Hospital. Instruction is given in Psychological

Medicine at the Sunderland Mental Hospital, Ryhope. A special course of instruction is given in the City Hospital for Infectious Diseases by the City Officer of Health. Ophthalmology is further taught at the Northumberland, Durham, and Newcastle Infirmary for Diseases of the Eye. Secretary: Mr. Richard Smith, 61, Westgate-road, Newcastle-on-Tyne.

#### UNIVERSITY OF BIRMINGHAM.

The University of Birmingham grants the degrees of M.B., Ch.B., M.D., Ch.M., and Ph.D. (for Research Study), and also a degree and a diploma in Public Health. The course for the Bachelors' degrees extends over five years from the date of commencement of professional study. As a rule the first four of these years must be spent in the University, but the Senate has power of recognising attendance at another University as part of the attendance qualifying for these degrees and of recognising examinations passed at such other Universities as exempting from the examinations in Chemistry, Physics, and Elementary Biology. In the case of such students at least three years must be spent in attendance upon classes at the University. The fifth year may be spent at any other school or schools of medicine recognised by the University. The students of the Medical Faculty can be members of the University Club, the University Athletic Club, and the University Officers' Training Corps, while they possess a guild—the Guild of Undergraduates—which is designed to be a recognised medium of communication between the teachers and the taught. The University Medical Society and the Dental Students' Society also offer opportunities of coöperation for mutual benefit.

*Degrees of Bachelor of Medicine and Bachelor of Surgery.*—The student must have passed the Matriculation Examination of the Joint Board or an examination accepted in lieu thereof. All communications respecting the Matriculation Examination, and examinations accepted in lieu thereof, must be sent to the Secretary to the Board, Joint Matriculation Board, 315, Oxford-road, Manchester. First Examination.—Chemistry and Physics and Elementary Biology. Second Examination.—Anatomy and Physiology. Third Examination.—General Pathology and Bacteriology, Materia Medica, and Practical Pharmacy. Fourth Examination (at the end of the fourth year).—Forensic Medicine, Toxicology, Public Health, Therapeutics, and Special Pathology. Two years' hospital work must have been accomplished. Final Examination.—Medicine, Surgery, Midwifery, Diseases of Women, Mental Diseases, and Ophthalmology. Attendance at a general hospital for a year after the passing of the fourth examination will be required, also attendance at a fever hospital three months, maternity hospital one month, and lunatic asylum three months. Vaccination instruction must be taken out and courses of Ophthalmology, Medical and Surgical Anatomy, and Operative Surgery.

*Degrees of Doctor of Medicine and Master of Surgery.*—At the end of one year from the date of having passed the final M.B., Ch.B. examination the candidate will be eligible to present himself for the higher degrees of either Doctor of Medicine or Master of Surgery or both.

Candidates for either of these degrees have to present a thesis embodying observations in some subject embraced in one of the departments of the medical curriculum, and in addition pass a general examination in Principles and Practice of Medicine for the M.D., and general examination in Principles and Practice of Surgery, including operations on the cadaver for the M.Ch. It will be in the power of the Board of Examiners to exempt from the practical parts of the examination a candidate whose thesis is of exceptional merit from any part of these examinations.

*Degree of Ph.D.*—The Degree of Doctor of Philosophy in the Faculty of Medicine is conferred under the following regulations:—(1) Candidates must possess a medical degree of a British, Colonial, or other university approved of by the Senate of the University. (2) Candidates must have been engaged, to the satisfaction of the Medical Faculty, in advanced study and research for a period of not less than two years, either in a laboratory of the University or in one or more of the hospitals associated with the University, provided that after the first year of the course candidates may be permitted to devote such periods as may be deemed desirable by the University to research elsewhere, under approved conditions. (3) On completing the course of



advanced study and research candidates are required (a) to present a thesis on the subject of their advanced study and research, and to satisfy the examiners that it contains original work worthy of publication; (b) to submit themselves for an oral examination on the subject of the thesis and on the general field to which their subject belongs, and, if required, for a written examination and to satisfy the examiners in the examination as well as in the thesis presented. (4) The minimum fee payable by candidates to be 10 guineas for each academic year, exclusive of laboratory fees. As in the case of other doctorates, a fee of £10 to be payable for the examination.

*Fees.*—Matriculation, £2; First Examination, £2; Second Examination, £2; Third Examination, £2; Fourth Examination, £2; Final Examination, £8; M.D. or Ch.M., £10.

At the University of Birmingham the following Scholarships are awarded:—(a) Myers Travelling Studentship of £150, tenable for one year, awarded by vote of committee to M.B., Ch.B. Birm., B.Sc. candidates, tenable at some University or Hospital not in Great Britain or Ireland; (b) Ingleby Scholarship of £10, awarded to the candidate at Final Examination obtaining highest "first-class" marks in the subjects of Midwifery and Diseases of Women; (c) Sydenham Scholarship of £42, tenable for three years, award of Council to orphan sons of medical practitioners; (d) Sands Cox Scholarship of £42, tenable for three years, awarded to the candidate, not being more than 19 years of age, taking the highest marks at the July Matriculation; (e) Dental Scholarship of £37 10s., Open Competitive Examination in subjects learned during apprenticeship; (f), (g), (h), and (i) Four Queen's Scholarships of £10 10s. each. In the Second and Fourth Examinations the Scholarship is awarded respectively to the student taking the first place and obtaining "first-class" marks. In the Third Examination the Scholarship is awarded to the student obtaining the highest "first-class" marks in Pathology and Bacteriology, provided that such student passes at the same examination in the subjects of *Materia Medica* and *Practical Pharmacy*. In the Final Examination the Scholarship is awarded to the candidate taking the first place in the examination—that is, obtaining the greatest aggregate number of marks—provided that in each of the subjects of Medicine, Surgery, and Midwifery he gains not less than 60 per cent. of the total available marks; (j) George Henry Marshall Scholarship of £10, awarded annually, for the encouragement of Research Work in Ophthalmology; and (k) Russell Memorial Prize, a prize of books, value about £2, awarded annually to the student who, not being of more than six years' standing as a student of the School of Medicine of the University, shall pass the best examination in the subject of Nervous Diseases.

*Clinical Instruction.*—The medical students of the University receive their clinical instruction by attending the amalgamated practice of the General Hospital and the Queen's Hospital, details of which follow.

The clinical instruction of the Birmingham medical students is carried on under the direction of the University Clinical Board. The hospitals present an excellent field for clinical work, possessing more than 500 beds, treating annually over 8000 in-patients and 100,000 out-patients. The students spend part of their curriculum in each hospital, and thus have every opportunity of acquiring a varied, full, and practical knowledge of their professional work. The curriculum is adapted in the first place to meet the needs of the students of the University of Birmingham, but it is also well adapted to the requirements of students preparing for the examinations of all other universities and licensing bodies. At the General Hospital there are open to the students the following appointments: A surgical registrar, £200 per annum; a resident medical officer, elected annually (£155); a resident surgical officer, elected annually and eligible for re-election for three years (£180); a resident pathologist, elected for six months (£100); three surgical casualty officers, elected annually and eligible for re-election (£50); three house physicians and four house surgeons hold office for six months, receiving board, residence, and salaries at the rate of £100 a year; two house surgeons to the gynaecological, ophthalmic, and aural departments are elected every six months, receiving board, residence, and a salary of £100 a year; two assistant house surgeons are elected every three months, receiving board,

residence, and salaries at the rate of £40 a year; a resident medical officer at the Jaffray Hospital, who is elected annually but is eligible for re-election, and who receives £150 a year; and a resident medical assistant at this hospital, who is not necessarily qualified, is provided with board and residence, and holds office for three months. At the Queen's Hospital there are open to the student the following appointments: Three house physicians, three house surgeons, and one obstetric and ophthalmic house surgeon, who hold office for six months and have salaries at the rate of £90 a year. Thirty-eight other appointments of varying value are at the City Workhouse and Workhouse Infirmary, at the Birmingham General and Branch Dispensaries, at the Birmingham Lunatic Asylums, at the City Fever Hospitals, at the Children's Hospital, at the Birmingham and Midland Eye Hospital, at the Orthopaedic and Spinal Hospital, at the Maternity Hospital, and at the Ear and Throat Hospital.

*Post-graduate Courses.*—A "Lectureship in Psychotherapy" has recently been established in the University, the first annual lecturer being Dr. Bernard Hart, of University College Hospital, who gave a course of ten lectures during the Summer Session for practitioners and students of the University Medical School. The Lecturer for 1920 has not yet been appointed.

A course of six lectures (with clinical demonstrations) on "Venereal Diseases" was also held during the Summer Session for practitioners and students, the lecturer being Dr. A. Douglas Heath, Physician to Skin Department of the Birmingham General Hospital. It is proposed to provide a further course of instruction in this subject during the ensuing session.

THE BIRMINGHAM GENERAL HOSPITAL.—360 beds are in daily use, 5620 in-patients per annum. Special wards for children, gynaecological, septic and infectious cases; special beds for eye, ear, and skin cases. About 50,000 out-patients per annum. Laboratories for bacteriology and morbid histology. Separate rooms adjoin the medical and surgical wards for clinical pathology. Five operating theatres (one for out-patients), all designed and fitted on the most modern lines. In addition to clinical teaching given in the wards and out-patient department by the honorary staff, medical and surgical tutorial classes are held for senior and junior students. Clinical instruction in all the special departments. The Jaffray Branch Hospital contains 54 beds.

THE QUEEN'S HOSPITAL.—Similar arrangements for clinical teaching are made here, and the material also is excellent. Ward and tutorial classes are regularly conducted by the staff, there are daily clinics in the out-patient department, while teaching duties are definitely assigned to the house physicians and house surgeons. There are also special departments for gynaecology and ophthalmology.

BIRMINGHAM AND MIDLAND EYE HOSPITAL, Church-street, Birmingham.—This hospital possesses 120 beds, and there is an average daily attendance of out-patients of over 250. This institution is recognised by Universities and the Royal College of Surgeons, England, and Royal College of Physicians, London, as an ophthalmic hospital at which clinical instruction in ophthalmology may be received. Students attending for a period of three months will be granted certificates which will qualify for the University and Conjoint Board examinations.

#### UNIVERSITY OF LIVERPOOL.

The degrees in the Faculty of Medicine are Bachelor of Medicine and Bachelor of Surgery (M.B. and Ch.B.), Doctor of Medicine (M.D.), Master of Surgery (Ch.M.), and Master of Hygiene (M.H.).

*Degrees of Bachelor of Medicine and Bachelor of Surgery.*—Candidates for the degrees of Bachelor of Medicine and of Surgery must have attained the age of 21 years on the day of graduation. At least two of the five years of medical study must have been passed in the University, and one year at least must have been passed in the University subsequently to the date of passing the First Examination. The other three years may be passed at any college or medical school recognised for this purpose by the University. Candidates must pass three examinations entitled respectively: the First Examination, the Second Examination, and the Final Examination. The fee is £5 for each examination. The subjects of the First Examination are:



(1) Chemistry, Inorganic, Organic, and Physical; (2) Biology (Zoology and Botany); and (3) Physics. The examination is divided into two parts—namely, (1) Chemistry and Physics, and (2) Biology; and candidates may present themselves in these parts separately. The subjects of the Second Examination are (a) Anatomy and Physiology (including Physiological Chemistry and Histology), and (b) *Materia Medica*, Pharmacy, and Pharmacology. Candidates may present themselves in (a) or (b) separately. The subjects for the Final Examination are: (1) General Pathology, Morbid Anatomy, and Bacteriology; (2) Forensic Medicine, Toxicology, and Public Health; (3) Obstetrics and Diseases of Women; (4) Surgery, Systematic, Clinical, Operative, and Practical, including Ophthalmology; (5) Medicine, Systematic and Clinical, including Mental Diseases and Diseases of Children, and Therapeutics. The Final Examination is divided into three parts, the first consisting of subject (1), the second of subject (2), the third of subjects (3), (4), and (5). Candidates may present themselves in these parts separately. Candidates for the third part must have completed the fifth year of medical study.

*Degrees of Doctor of Medicine and Master of Surgery.*—No candidate will be admitted to the degree of Doctor of Medicine or Master of Surgery unless he has previously received the Degrees of Bachelor of Medicine and Bachelor of Surgery, and at least one year has elapsed since he passed the examinations for those degrees. Candidates for the degree of Doctor of Medicine are required to present a dissertation embodying the results of personal observations or original research, either in some department of medicine or of some science directly relative to medicine: provided always that original work published in scientific journals or separately shall be admissible in lieu of, or in addition to, a dissertation specially written for the degree.

At this University the following Scholarships and Fellowships and Prizes are awarded:—(a) and (b) Robert Gee Entrance Scholarships, two annually, of £25 each, tenable for two years, Joint Matriculation Board Examination held in July, open to First M.B. Course Students; (c) Lyon Jones Scholarship, No. 1, of £21 per annum, tenable for two years, Competitive Examination among Junior Students in First M.B. Subjects, Perpetual Course at the University; (d) Lyon Jones Scholarship, No. 2, of £21, Competitive Examination among Senior Students in Anatomy, Physiology, Pharmacology, and *Materia Medica*; (e) Derby Exhibition of £15, Competitive Examination among Fourth- or Fifth-year Students in Clinical Subjects, and Clinical School Exhibition of £15 annually for Fourth- or Fifth-year students; (f) University Scholarship of £25 for one year, awarded on results of Second Examination for the degrees; (g) Holt Fellowships, Physiology and Pathology, of £100 each, for one year; (h) Gee Fellowship, Anatomy, of £100, for one year; (i) Alexander Fellowship, Bacteriology and Pathology, of £100, for one year; (j) Johnston Colonial Fellowship, Bio-Chemistry, of £100, for one year; (k) John W. Garrett International Fellowship, Bacteriology, of £100, for one year; (l) Thelwall Thomas Fellowship, Surgical Pathology, of £100, for one year; (m) Ethel Boyce Fellowship in Gynaecological Pathology, of £100, for one year; numerous prizes and medals; (n) Mary Birrell Davies Memorial Fund Scholarship, of the value of £60, tenable for four years, offered for competition in alternate years; open only to women students who will have attained the age of 19 on the first day of October next following the award; students who are or have been registered day students of the University are eligible for election; holder to proceed to a University degree in Medicine; candidates must apply in writing to the Registrar, forwarding evidence of their qualifications, on or before July 1st.

*Medical School Buildings.*—Medical research has also been endowed with several new laboratories in which students can pursue research work after graduation. All the laboratories and class-rooms are situated close together, communicating with one another, and are made up of four large blocks of buildings which form one side of the College quadrangle. There are the Johnston Laboratories for Experimental Medicine, Bio-Chemistry, and Tropical Medicine; the Medical School for Anatomy, Surgery, Toxicology, and Ophthalmology; and the Thompson-Yates Laboratories for Physiology and Pathology.

*Clinical Instruction.*—The Clinical School of the University now consists of four general hospitals—the Royal Infirmary,

the David Lewis Northern Hospital, the Royal Southern Hospital, and the Stanley Hospital; and of five special hospitals—the Eye and Ear Infirmary, the Hospital for Women, the Infirmary for Children, St. Paul's Eye Hospital, and St. George's Hospital for Skin Diseases. These hospitals contain in all a total of about 1134 beds. The organisation of these hospitals to form one teaching institution provides the medical student and the medical practitioner with a field for clinical education and study which is unrivalled in extent in the United Kingdom. All the hospitals are within easy access of the University. There are a large number of appointments to house physicianships and surgeonships both at the general and special hospitals which are open to qualified students of the school.

*School of Veterinary Science.*—There is a school of Veterinary Science in connexion with the University which provides full courses of instruction for the M.R.C.V.S. Degrees of B.V.Sc., M.V.Sc., and D.V.Sc., together with a diploma in Veterinary Hygiene, are also granted by the University.

*Public Health Department.*—This is located in a separate building known as Ashton Hall, in which full courses of instruction are given to students for the Diplomas and Degrees of the University and of other Examining Boards.

Prospectuses and further information may be had on application to the Dean of the Faculty of Medicine, University of Liverpool.

#### THE VICTORIA UNIVERSITY OF MANCHESTER.

Four degrees in Medicine and Surgery are conferred by the University—viz., Bachelor of Medicine and Bachelor of Surgery (M.B. and Ch.B.), Doctor of Medicine (M.D.), and Master of Surgery (Ch.M.). A Diploma in Psychological Medicine is awarded by examination to registered medical practitioners.

*Degrees of Bachelor of Medicine and Bachelor of Surgery.*—Before admission to the degree of M.B. or Ch.B. candidates are required to present certificates that they will have attained the age of 21 years on the day of graduation and that they have pursued the courses of study required by the University Regulations during a period of not less than five years subsequently to the date of their registration by the General Medical Council, two of such years having been passed in the University and one year at least having been passed in the University subsequently to the date of passing the first M.B. Examination. All candidates for the degrees of Bachelor of Medicine and Bachelor of Surgery are required to satisfy the examiners in the several subjects of the following examinations. (These are now under revision.)

*The First Examination.*—(1) Inorganic Chemistry and Physics; (2) Biology; and (3) Elementary Organic Chemistry and Bio-Chemistry. Candidates must have attended during at least one year courses both of lectures and of laboratory work in each of the above-named subjects. The Examination is divided into three parts: Part 1, Inorganic Chemistry and Physics; Part 2, Biology; Part 3, Elementary Organic Chemistry and Bio-Chemistry; and the candidates may pass in these parts separately under certain conditions.

*The Second Examination.*—(1) Anatomy; (2) Physiology, including Physiological Chemistry and Histology. Candidates may pass in (1) and (2) separately under certain conditions.

*The Third Examination.*—(1) Pathology; (2) Pharmacology and Therapeutics; (3) Hygiene. These subjects may be taken separately under certain conditions.

*The Final Examination.*—(1) Medicine, Systematic and Clinical (including Mental Diseases and Diseases of Children); (2) Surgery, Systematic, Clinical, and Practical; (3) Obstetrics and Gynaecology (including Clinical and Practical); (4) Forensic Medicine (including an Oral Examination). These subjects may be taken separately under certain conditions.

Candidates for the Final Examination must have completed the fifth year of medical study.

*Degree of Doctor of Medicine.*—Candidates are not eligible for the degree of Doctor of Medicine unless they have previously received the degrees of Bachelor of Medicine and Bachelor of Surgery and at least one year has elapsed since they passed the examination for those degrees. Candidates may elect either (1) to present an original dis-



sertation; or (2) to undergo an examination. The dissertation must embody the results of personal observation or original research, either in some department of medicine or of some science directly relative to medicine. The examination, which will be partly written, partly practical, is in the Principles and Practice of Medicine, in Pathology, and in some other subject to be selected by the candidate.

*Degree of Master of Surgery.*—Candidates are not eligible for the degree of Master of Surgery unless they have previously received the degrees of Bachelor of Medicine and Bachelor of Surgery and at least one year has elapsed since they passed the examination for those degrees. The subjects of examination are as follows: (1) Surgical Anatomy; (2) Surgery; (3) Operative Surgery; (4) Clinical Surgery; (5) Ophthalmology; and (6) Pathology and Bacteriology.

Communications should be addressed to the Registrar, The University, Manchester.

*Scholarships, Fellowships, and Prizes.*—At this University there are 22 Foundation Scholarships, 12 Exhibitions, five being for subjects connected with medical study, a Surgical Prize, a University Fellowship (Leech Fellowship, £100), Research Fellowships in Public Health, and Honorary Research Fellowships. 13 Entrance Scholarships are tenable for Medical courses; one Scholarship is offered in Surgery, Biology, Physiology, and Diseases of Children respectively, and one General Medical and Surgical. Exhibitions are offered in Physiology and Anatomy, and one for French and German. "The Dumville" Surgical Prize is awarded on the results of the Final Examination in Surgery in the Summer Term, £15. The Leech Fellowship (£100) is for the encouragement of study and research, and is open to persons who have graduated M.B., Ch.B., in the University not more than 18 months previously. The Honorary Research Fellowships, tenable for two years, conferring the right of free use of the laboratories, are awarded generally in October on application, with evidence of capacity for independent investigation.

There are many entrance scholarships, the examinations for which are held in the month of May. Full particulars can be obtained from the Dean.

*The Medical School.*—This medical school, largely extended in 1895, is provided with dissecting-rooms, physiological laboratories, private laboratories, and work-rooms, besides lecture-rooms, a museum, and a library. A special laboratory is equipped for experimental work on the central nervous system. In the pathological laboratories ample provision is made for the teaching of pathology and bacteriology and for the prosecution of original research. The Helen Swindells Laboratory is specially equipped for cancer research and investigation in general pathology. Ample facilities for investigation are provided in Anatomy, Physiology, and Materia Medica. In the public health department, which is lodged in a separate institute in York Place, near the Royal Infirmary, suitable laboratory accommodation is provided for the study of sanitary chemistry, physics, and practical bacteriology in the departments of chemistry and physics and in that of pathology.

*Clinical Studies.*—The clinical and practical departments of medical study are taught partly in the Medical School and partly in the Royal Infirmary and St. Mary's Hospitals for Women and Children, a fever hospital, a lunatic asylum, and a convalescent home, and other special hospitals. Medical and Surgical Clinical Classes are conducted in the Infirmary, which together with the associated hospitals at Cheadle contains 1109 beds, exclusive of those reserved for military cases, and separate instruction is afforded in the elements of Medical and Surgical Physical Diagnosis, in Obstetric Medicine, Ophthalmic Surgery, and Pathological Anatomy by the different members of the staff of the Medical School and Infirmary.

*Clinical Instruction.*—THE MANCHESTER ROYAL INFIRMARY.—The Royal Infirmary is built on the pavilion system, near the University, and has accommodation for 884 (including 472 temporary military beds). The remaining beds are allocated to civilians. The medical side consists of five units, each unit having a testing room for the scientific investigation of morbid products and a class-room. The surgical beds are also arranged in five units, each unit having its own operation theatre, with anæsthetising, recovery, sterilising, testing, and apparatus rooms, and its own class-room attached.

Of these units all are occupied. The fine educational block provides very handsomely for the wants and comforts of the students, there being separate suites of rooms for the men and the women, and also a large common reading room, a lecture theatre, and a museum. The present annual average number of in-patients is 12,500, of out- and home-patients 25,000, and the list of casualties in the accident room has averaged 17,000 per annum. About 8200 operations are performed annually in the operation theatres. Associated with the infirmary are: (1) the Convalescent Hospital at Cheadle, containing 136 beds; (2) the Royal Lunatic Hospital at Cheadle, accommodating with its branches 430 patients; and (3) the Central Branch in the city for casualty and out-patient work, and 62 temporary military beds. The Associated Hospitals thus contain 1450 beds and are under the same management. Women students are admitted to the practice of the Infirmary on the same terms as men.

*Fees.*—Medical Practice: Three months, 5 guineas; six months, 8 guineas; 12 months, 12 guineas; full period required by the Examining Boards, 42 guineas.

Two Entrance Scholarships in Medicine of the value of £100 each are offered annually by the Council of the Manchester University and the Medical Board of the Manchester Royal Infirmary for proficiency in Arts and Science subjects respectively. Other scholarships and prizes are in the College Syllabus. Numerous annual appointments and junior appointments may be held by those who have attended the practice of the Infirmary.

The secretary to the Infirmary is Mr. F. G. Hazell.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury, Gartside-street, Manchester, and St. Anne's-on-the-Sea.—The hospital contains 188 beds and 24 in the Convalescent Home, St. Anne's-on-the-Sea. The medical staff visit the hospital daily at 10 A.M. Clinical instruction is given by the medical staff at the Hospital and Dispensary. Out-patients are seen daily at 9 A.M. at the new Out-patient Department, Gartside-street, Manchester. Secretary: Mr. W. M. Humphry.

THE MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Park-place, Cheetham Hill-road, Manchester.—The hospital contains 70 beds. Out-patients are seen daily from 8.30 to 10 A.M.

#### UNIVERSITY OF LEEDS.

Four degrees in Medicine and Surgery are conferred—viz.: Bachelor of Medicine and Bachelor of Surgery (M.B. and Ch.B.), Doctor of Medicine (M.D.), Master of Surgery (Ch.M.), also Degrees and Diplomas in Dental Surgery and Diplomas in Public Health and in Psychological Medicine.

*Degrees of Bachelor of Medicine and Bachelor of Surgery.*—Candidates for these degrees are required to present certificates showing that they will have attained the age of 21 years on the day of graduation, and have attended courses approved by the University extending over not less than five years, two of such years at least having been passed in the University subsequently to the date of passing the First Examination. Candidates must also satisfy the examiners in the several subjects of the following examinations entitled respectively: the Matriculation Examination, or such other examination as may have been recognised by the Joint Matriculation Board in its stead; the First Examination; the Second Examination; and the Final Examination.

*The First Examination.*—The First Examination consists of: Part I., Physics and Chemistry; Part II., Biology. Candidates will be allowed to pass the two parts separately.

*The Second Examination.*—The Second Examination consists of: Part I., Anatomy and Physiology; Part II., Materia Medica and Pharmacy. Candidates will be allowed to pass the two parts separately.

*The Final Examination.*—The Final Examination consists of: Part I., Pathology and Bacteriology. Part II., Forensic Medicine and Public Health. Part III., Medicine: Systematic and Clinical, including Mental Diseases and Diseases of Children; Surgery—Systematic, Clinical, and Practical; Obstetrics, and Gynaecology—Systematic, Clinical, and Practical; Pharmacology and Therapeutics. Candidates will be allowed to pass Parts II. and III. separately or together, and they may present themselves for examination in Part I. at the end of the tenth term.



*Degree of Doctor of Medicine.*—Candidates are not eligible for the degree of Doctor of Medicine or Master of Surgery unless they have previously received the degrees of Bachelor of Medicine and Bachelor of Surgery and at least one year has elapsed since they passed the examination for those degrees. Candidates for the degree of Doctor of Medicine are required to present a dissertation and, if the dissertation be accepted, to pass an examination.

The first term commences on Oct. 1st. Prospectus, &c., can be obtained from the Dean of the Medical School.

*Clinical Instruction.*—THE LEEDS GENERAL INFIRMARY, in connexion with this medical faculty, has accommodation for 620 in-patients, including 88 beds at branch hospitals in the country. During the last year 9910 in-patients and 34,143 new out-patients were treated. Clinical teaching takes place daily in the wards, and Clinical lectures are given in Medicine and Surgery by the Physicians and Surgeons. There are Medical, Surgical, Ophthalmic, Aural, Electro-therapeutic, and Radiographic Departments, in each of which special instruction is imparted to students. A Gynæcological and Extern Obstetric Department, together with Laryngeal and Skin Clinics, are in operation. Several valuable prizes are given at the end of each session. Numerous appointments at the Infirmary are annually open to students after qualification.

#### UNIVERSITY OF SHEFFIELD.

The Degrees in the Faculty of Medicine are Bachelor of Medicine and Bachelor of Surgery (M.B., Ch.B.), Doctor of Medicine (M.D.), and Master of Surgery (Ch.M.). The courses and degrees in the Faculty of Medicine are open to men and women alike.

Candidates for a medical degree shall have matriculated in the University or have passed such other examination as may be recognised for this purpose by the University and sanctioned by the Joint Matriculation Board.

A candidate for the degrees of M.B., Ch.B. shall produce certificates that he will have attained the age of 21 years on the day of graduation; that he has pursued the courses of study required by the University regulations during a period of not less than five years subsequently to the date of his matriculation, three of such years at least having been passed in the University, one at least being subsequent to the passing of the First Examination.

*Degrees of Bachelor of Medicine and Bachelor of Surgery.*

*The First Examination.*—The subjects of the examination are Chemistry, Physics, and Biology. The Intermediate B.Sc. Examination in these subjects will, on payment of the required additional fee, be accepted instead of this examination. Candidates must, after matriculation and registration as medical students, have attended courses of instruction (lectures and laboratory work) in chemistry, physics, and biology for one year each.

*The Second Examination.*—The subjects of the examination are Anatomy and Physiology.

*The Third Examination.*—The subjects of the examination are Pathology and Pharmacology. A candidate entering for the first, second, or third examination, who shall pass creditably in one subject of either examination and obtain a certain minimum of marks in the other, may enter for such other subject separately in a subsequent examination. Candidates must have completed the fourth year of professional study.

*The Final Examination.*—The subjects of the examination are Medicine (including Forensic Medicine, Public Health, Mental Diseases, and Diseases of Children); Surgery; and Obstetrics (including Gynæcology). Candidates must satisfy the examiners in all subjects at the same examination. Candidates must have completed the fifth year of professional study.

*Degree of Doctor of Medicine.*—Candidates for the degree of Doctor of Medicine must have passed the examination for the degrees of M.B., Ch.B. at least one year previously, must present a thesis embodying observations in some subject approved by the professor of medicine, and must pass an examination in the Principles and Practice of Medicine.

*Degree of Master of Surgery.*—Candidates for the degree of Ch.M. must have passed the examination for the degrees of M.B., Ch.B. at least one year previously, and must, since taking the degrees of M.B., Ch.B., have held for not less than six months a surgical appointment in a public hospital

or other public institution, affording full opportunity for the study of Practical Surgery.

The subjects of examination are Systematic, Clinical, and Operative Surgery, Surgical Anatomy, Surgical Pathology, and Bacteriology.

*Scholarships, &c.*—At this University, in addition to four Edgar Allen scholarships of £100 a year for three years, holders of which can take the courses in the Faculty of Medicine, there are 8 scholarships and a Town Trust Fellowship. Full particulars as to curriculum, scholarships, &c., may be had on application to the Registrar or to the Dean of the Medical Faculty.

*The Medical School.*—The new buildings of the University opened in 1905 are situated at the west end of the city, adjoining Weston Park, and the Medical Department occupies the entire north wing of the University quadrangle. The various athletic and other students' societies are under the management of a Students' Representative Council, elected annually. There are large and comfortable common rooms both for men and women students. A refectory is open daily at the University where students may obtain refreshments, lunch, dinner, &c., at extremely moderate prices. The University journal, *Floreamus*, edited by a committee of staff and students, is published each term. The University Hostel, "Oakholme," Clarkehouse-road, is recognised by the Senate as a residence for women students, full particulars of which may be obtained of the tutor for women students.

*Clinical Instruction.*—The University is within easy reach of the various hospitals with which it is connected for clinical purposes. These are as follows: The Royal Infirmary (Secretary, Mr. J. W. Barnes), containing 320 beds, with an annual average number of over 3800 in-patients, over 11,500 out-patients, and over 23,000 casualties; the Royal Hospital (Hon. Sec., *pro tem.*, to the medical and surgical staff, Mr. Vincent Townrow), with 191 beds, and an annual number of 3000 in-patients, over 20,000 out-patients, and nearly 20,000 casualties; and the Jessop Hospital for Diseases of Women, with 80 beds, about 750 in-patients, and over 3000 out-patients; also a Maternity department, with about 450 in-patients per annum and about 700 out-patient cases attended. Special courses on Fevers are held at the City Fever Hospitals (570 beds) and on Mental Diseases at the South Yorkshire Asylum (1610 beds). For purposes of clinical practice the practices of the Royal Infirmary and Royal Hospital are amalgamated, giving a total of 511 beds for the treatment of medical, surgical, and special cases. There are special departments for the treatment of Diseases of the Eye at each institution, with wards assigned to them. In addition to these the Royal Infirmary has special departments for the treatment of Diseases of the Skin and Ear, with beds assigned to them, whilst at the Royal Hospital there are special out-patient departments for Diseases of the Throat, Ear, Skin, Orthopædics, and Mental Diseases. During the last year over 6000 patients passed through the wards of the two institutions, while those attending as out-patients numbered over 45,000. The department of Pathology and Bacteriology in the University is fitted with every requirement for the most advanced work in these subjects.

*Fees.*—The Composition Fee is £30 a year for each of the five years and entitles the student to attendance on all the Lectures, Laboratory Classes, and Hospital practice required for a Medical and Surgical Degree in the University or for the ordinary qualifying examinations of the various Examining Boards. The composition fees do not cover the cost of apparatus, instruments, parts for dissection in anatomy, &c., all of which must be provided by the student when and as required. The fees are payable in instalments extending over the five years of the curriculum.

#### UNIVERSITY OF BRISTOL.

In the Faculty of Medicine there are the following degrees:—Bachelor of Medicine and Bachelor of Surgery (M.B. and Ch.B.), Doctor of Medicine (M.D.), Master of Surgery (Ch.M.), Bachelor of Dental Surgery (B.D.S.), and Master of Dental Surgery (M.D.S.). There are also the following diplomas: Diploma in Public Health (D.P.H.), Diploma in Dental Surgery (L.D.S.), and Diploma in Veterinary State Medicine.

All candidates for degrees in Medicine, Surgery, and Dentistry are required to pass an examination called the Matriculation Examination, or to pass such examination as



may be regarded as equivalent by the Senate. All courses, degrees, and diplomas are open to men and women alike. The winter session commences on Oct. 1st, 1919.

*Conjoined Degrees of Bachelor of Medicine and Bachelor of Surgery.*—Candidates shall be not less than 21 years of age and shall have pursued the courses prescribed by University Regulations during not less than five and a half years, of which three shall have been passed in the University, and two of these three subsequent to pass in the second examination. All candidates for the degrees of M.B., Ch.B., are required to satisfy the examiners in the several subjects of three examinations.

*The First Examination.*—The subjects of examination are: Chemistry (Inorganic), Physics, and Biology, the courses pursued being those for the time being approved for the intermediate part of the B.Sc. curriculum. This part of the curriculum shall extend over one year. (Candidates who have passed the Higher School Certificate approved by the Board of Education in these subjects will not be required to sit for the first examination and will be regarded as having completed one year of study.)

*The Second Examination.*—The subjects of examination are: Organic Chemistry and Elementary Anatomy (Part I.) and Advanced Anatomy and Physiology (Part II.). Parts I. and II. may be passed separately or together.

*The Final Examination.*—The subjects of examination are: Materia Medica and Pharmacy, Pharmacology and Therapeutics, General Pathology, Morbid Anatomy, and Bacteriology (Part I.); Special Pathology, Forensic Medicine, Toxicology, and Public Health, Obstetrics (including Diseases of Women), Surgery (Systematic, Clinical, Practical, and Operative), Medicine (Systematic, Clinical, and Practical, including Mental Diseases) (Part II.). Candidates may pass I. and II. together, or separately, and Forensic Medicine and Toxicology may, at the option of the candidate, be taken either with Part I. or Part II.

*Degree of Doctor of Medicine.*—Candidates shall be Bachelors of the University of not less than two years' standing as such and may elect either (1) to pass an examination in General Medicine, or (2) to pass an examination in State Medicine, or (3) to present a Dissertation. The candidate who elects to pass the examination in State Medicine must hold a diploma in Public Health of some University or College, and the candidate who elects to present a Dissertation may be examined in the subject thereof.

*Degree of Master of Surgery.*—Candidates shall be Bachelors of not less than two years as such, during which period they shall have attended the Surgical Practice of an institution approved for the purpose. They shall pass an examination in Surgical Anatomy, Pathology, and Bacteriology, and Operative, Clinical, and General Surgery, and present to the University a Dissertation on some subject of Surgery.

*Clinical Instruction.*—The allied hospitals (Bristol Royal Infirmary and Bristol General Hospital) have between them about 600 beds and extensive out-patient departments, special clinics for Diseases of Women and Children and those of the Eye, Throat, and Ear, in addition to large and well-equipped departments for Dental work and large outdoor Maternity Departments.

At each of these institutions there are well-arranged pathological museums, post-mortem rooms, and laboratories for Morbid Anatomy. There are also laboratories for work in Clinical Pathology, Bacteriology, and Cytology, in which special instruction is given in these subjects. Departments are provided and well-equipped for X ray work, both for diagnosis and treatment, the various forms of Electrical treatment, including High Frequency Currents, Electric Baths, Finsen Light treatment, and Massage.

The students of the school also attend the practice of the Royal Hospital for Sick Children and Women, containing 140 beds, and that of the Bristol Eye Hospital, with 40 beds. The total number of beds available for clinical instruction is therefore about 750.

Further information as to scholarships, curricula, and fees can be obtained from the Dean of the Faculty of Medicine or the Registrar of the University.

#### UNIVERSITY OF WALES.

This University has the privilege of granting degrees in Medicine and Diplomas in Public Health. At the three constituent Colleges of Aberystwyth, Bangor, and Cardiff there are Professors of Chemistry, Botany, Zoology, and

Physics, so that the students of the University can obtain proper instruction in the ancillary subjects. The foundation of a Medical Faculty has been laid at University College, Cardiff, where there is a recognised school of medicine.

*University College, Cardiff: School of Medicine.*—All classes are open to both men and women students who may spend three or four out of their five years of medical study at Cardiff. The courses of instruction given at Cardiff are recognised as qualifying for the examinations of the Universities, Royal Colleges, and other licensing bodies of Great Britain and Ireland, and they are specially adapted to meet the needs of those University students studying for Cambridge and London degrees. Students who are preparing for these examinations may compound for their courses by paying a fee of £63, while a composition fee of £41 10s. includes all the necessary courses for the first and second examinations for the Diploma of the Conjoint Board. In all cases the composition fees may be paid by instalments. Hospital instruction is given at the King Edward VII.'s Hospital, Cardiff. The attention of students about to matriculate is drawn to the numerous entrance scholarships offered for competition at University College, Cardiff, in April next, most of which may be held by medical students. Full particulars of the examination for these may be obtained by application to the Registrar. In the department of Public Health established in 1899 instruction is given qualifying for the D.P.H. examinations. Further information may be obtained from the Dean of the Faculty of Medicine.

*Clinical Instruction.*—KING EDWARD VII.'S HOSPITAL, CARDIFF.—Students can attend the practice of this Hospital, which contains 320 beds, 104 beds for military patients. Founded 1837. In-patients, 2830; out-patients, 16,303.—SWANSEA GENERAL AND EYE HOSPITAL.—Hospital, 238 beds, 183 civilian, 100 (sailor and soldier pensioners); Convalescent Home, 27 beds. In-patients, 2516; out-patients, 7953.

#### ENGLISH MEDICAL CORPORATIONS GRANTING DIPLOMAS.

##### EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGE OF PHYSICIANS OF LONDON AND THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

Under this heading we give the regulations for the examinations enjoined by the Conjoint Examining Board of the Royal Colleges of Physicians of London and Surgeons of England and of the Society of Apothecaries upon students desiring their respective diplomas of qualification. We do not give any list of schools recognised by these bodies as eligible to prepare students for their examinations beyond mentioning that all the schools which we have already described (under the heading of the Universities to which they are attached) are recognised as suitable places of instruction by the corporations granting medical diplomas. The courses of study at the principal colonial medical schools are also recognised as qualifying for the examinations of these corporations.

Any candidate who desires to obtain both the Licence of the Royal College of Physicians of London and the diploma of Member of the Royal College of Surgeons of England is required to complete five years of professional study at recognised Medical Schools and Hospitals and to comply with the following regulations and to pass the examinations hereinafter set forth. Six months of the curriculum may be spent in an Institution recognised by the Board for instruction in Chemistry, Physics, Practical Chemistry, and Biology.

*Professional Examinations.*—There are three Examinations, called herein the First Examination, the Second Examination, and the Third or Final Examination, each being partly written, partly oral, and partly practical. These examinations will be held in the months of January, April, July, and September or October unless otherwise appointed. Every candidate intending to present himself for examination is required to give notice in writing to Mr. F. G. Hallett, O.B.E., secretary of the Examining Board, Examination Hall, Queen-square, Bloomsbury, W.C., 14 clear days before the day on which the examination



commences, transmitting at the same time the required certificates.

The subjects of the *First Examination* are—Chemistry, Physics, Elementary Biology, and Practical Pharmacy. A candidate may take this examination in three parts at different times (Chemistry and Physics must be taken together until the required standard is reached in both or in one of these subjects, but a candidate will not be allowed to pass in one without obtaining at the same time at least half the number of marks required to pass in the other). A candidate will be admitted to examination in Chemistry and Physics, in Practical Pharmacy, and Elementary Biology on producing evidence of having passed the required Preliminary Examination and of having received instruction in these subjects at a recognised institution, but he may take Pharmacy at any time during the curriculum. A candidate rejected in one part or more of the *First Examination* will not be admitted to re-examination until after the lapse of a period of not less than three months from the date of rejection, and he will be re-examined in the subject or subjects in which he has been rejected. If referred in Chemistry, Physics, or Biology he must produce evidence of further instruction at a recognised institution. Any candidate who shall produce satisfactory evidence of having passed an examination for a degree in Medicine on any of the subjects of this examination conducted at a university in the United Kingdom, in India, or in a British colony will be exempt from examination in those subjects in which he has passed.

*Note.*—Candidates who have not passed Parts I., II., and III. by May 1st, 1920, will be examined in *Materia Medica* and *Pharmacology* as part of the *Second Examination* instead of *Practical Pharmacy*. The new regulations and the synopsis of the examination will be issued shortly.

The fees for admission to the *First Examination* are as follows: For the whole examination, £10 10s.; for re-examination after rejection in Parts I. and II., £3 3s.; and for re-examination in each of the other parts, £2 2s.

The subjects of the *Second Examination* are Anatomy and Physiology. Candidates will be required to pass in both subjects at one and the same time. Candidates will be admissible to the *Second Examination* on production of the required certificates of professional study. The study of Anatomy and Physiology before passing in two of the first three parts of the *First Professional Examination* is not recognised.

A candidate referred on the *Second Examination* will be required, before being admitted to re-examination, to produce a certificate that he has pursued, to the satisfaction of his teachers, in a recognised place of study, his Anatomical and Physiological studies during a period of not less than three months subsequently to the date of his reference.

The fees for admission to the *Second Examination* are: £10 10s. for the whole examination and £6 6s. for re-examination after rejection.

The subjects of the *Third or Final Examination* are: Part I. Medicine, including Medical Anatomy, Pathology, Practical Pharmacy, Therapeutics, Forensic Medicine, and Public Health. Candidates who have passed in Practical Pharmacy at the *First Examination* will not be re-examined in that subject at the *Third Examination*. Part II. Surgery, including Pathology, Surgical Anatomy, and the use of Surgical Appliances. Part III. Midwifery and Diseases Peculiar to Women. Candidates may present themselves for Parts I., II., and III. of the examination separately or together at the expiration of not less than two years (24 months) from the date of passing the *Second Examination* on production of the certificates of study required for the respective parts, provided that the examination is not completed before the expiration of five years from the date of passing the Preliminary Examination.

The fees for admission to the *Third or Final Examination* are as follows: For the whole examination, £21. Part I. For re-examination in Medicine, including Medical Anatomy, Pathology, Therapeutics, Forensic Medicine, and Public Health, £5 5s.; for re-examination in Practical Pharmacy (if taken at this examination), £2 2s. Part II. For re-examination in Surgery, including Pathology, Surgical Anatomy, and the use of Surgical Appliances, £5 5s. Part III. For re-examination in Midwifery and Diseases Peculiar to Women, £3 3s.

A candidate referred on the *Third or Final Examination* will not be admitted to re-examination until after

the lapse of a period of not less than three months from the date of rejection and will be required, before being admitted to re-examination, to produce a certificate, in regard to Medicine and Surgery, of having attended the Medical and Surgical Practice, or the Medical or Surgical Practice, as the case may be, during the period of his reference; and in regard to Midwifery and Diseases Peculiar to Women a certificate of having received, subsequently to the date of his reference, not less than three months' instruction in that subject by a recognised teacher.

Students of recognised universities in England, Scotland, and Ireland, who have passed examinations for a degree in Medicine at their universities in the subjects of the *First* and *Second Examinations* of the Examining Board, may enter for the *Final Examination* at the expiration of two years from the date of passing in Anatomy and Physiology on production of the required certificates.

Members of certain recognised Indian, Colonial, and Foreign universities who have passed examinations for the Degree of Doctor or Bachelor of Medicine or Surgery in the subjects of the *First* and *Second Examinations* of the Examining Board may present themselves for the *Final Examination* under special conditions which can be ascertained on application to the Secretary.

#### ROYAL COLLEGE OF PHYSICIANS OF LONDON: THE MEMBERSHIP AND FELLOWSHIP.

In addition to the diplomas granted by the English Conjoint Board, the Royal College of Physicians of London and the Royal College of Surgeons of England grant honour diplomas, which no longer give the right to practise professionally if held separately. The Royal College of Physicians of London has two such diplomas, the *Fellowship* which is a purely honorary distinction and the *Membership* which is obtained by examination.

*Membership.*—Every candidate for the Membership of the College must furnish proof of having attained the age of 25 years. Candidates must not be engaged in trade, dispense medicine, make any arrangement with a chemist or any other person for the supply of medicine, or practise medicine or surgery in partnership, by deed or otherwise. Any candidate being already registered or having passed a qualifying examination in accordance with the Medical Act of 1886, who has obtained the degree of Doctor or Bachelor of Medicine at a University in the United Kingdom, in India, or a British colony, or who has obtained a foreign qualification entitling him or her to practise medicine or surgery in the country where such qualification has been conferred, wherein the courses of study and the examinations to be undergone previously to graduation have been adjudged by the Censors' Board to be satisfactory, will (if the Censors think fit) be admitted to the Pass Examination. The nature and extent of this examination will, in the case of each candidate, be determined by the Censors' Board. All other candidates must produce proof of having passed the examinations required for the Licence of the College. The examination is directed partly to pathology and partly to the practice of medicine and may be modified in circumstances to be ascertained by application to the Registrar. For example, candidates under 40 years of age are examined in an ancient and a modern language, a test from which their seniors are exempt. The fee for admission as a Member of the College is 40 guineas, except when the candidate for Membership is a Licentiate of the College, in which case the fee already paid for the Licence shall be deducted from the 40 guineas. The fee for the examination is £6 6s.

*Fellowship.*—The Fellows are selected annually from the ranks of the Members by the Comitia of the College.

#### ROYAL COLLEGE OF SURGEONS OF ENGLAND: THE FELLOWSHIP.

The Royal College of Surgeons of England confers its diploma of Fellowship on a few distinguished persons in an honorary capacity. Two Members of long standing may also be elected to the Fellowship annually. But the bulk of the Fellows obtain the diploma as the result of examination.

*Fellowship.*—The examination for the Fellowship is divided into two parts—viz., the *First Examination* and



the Second Examination. The subjects of the First Examination are Anatomy and Physiology, and the questions on these subjects may require an elementary acquaintance with Comparative Anatomy and Physiology. The examination is partly written and partly *vivâ voce*. The subjects of the Second Examination are Surgery, including Surgical Anatomy and Pathology. The examination is partly written and partly *vivâ voce* and includes the examination of patients and the performance of operations on the dead body. The examinations are held during the months of May and November of each year.

The fees for examination are:—First Examination, each admission, 5 guineas. Second Examination, each admission, 12 guineas. Of such examination fees 17 guineas will be reckoned as part of the fee payable upon admission to the Fellowship. The fee to be paid upon admission to the Fellowship is 30 guineas, except when the candidate is a Member of the College, in which case the fee is 20 guineas.

A Member of the College is admissible to the First Examination at any time after receiving his Diploma of Membership. A candidate who is not a member of the College is admissible to the first Professional Examination for the Fellowship on the production of evidence of having passed the First and Second Examinations of the Examining Board in England by the Royal College of Physicians of London and the Royal College of Surgeons of England (or, if a member of a University recognised by the College for the purpose, of having passed the Examinations in his University equivalent to the First and Second Examinations of the Board) and on the production of certificates of attendance upon certain courses of study described in the Regulations.

A Member of the College is admissible to the Second Examination at any time after having passed the First Examination, on producing satisfactory evidence of having been engaged not less than six years in the study (or study and practice) of the profession.

A candidate who is not a Member of the College must possess the registrable surgical and medical degrees of universities recognised by the Council and must have been engaged in the study (or study and practice) of the profession for not less than four years subsequent to the date of obtaining the recognised qualification, one year of which shall have been spent in attendance on the Surgical Practice of a recognised hospital. The diploma of Fellow is not conferred upon successful candidates until they have attained the age of 25 years.

The Regulations may be obtained on application to the Director of Examinations, Examination Hall, Queen-square, Bloomsbury, London, W.C. 1.

#### SOCIETY OF APOTHECARIES OF LONDON.

There are two examinations—Primary and Final. The Final examination is divided into Section I. and Section II. The Primary examination is held quarterly. Final examinations are held monthly. No examinations are held in the month of September.

The Primary examination consists of two parts. Part I. Elementary Biology; Chemistry, Chemical Physics, including the Elementary Mechanics of Solids and Fluids, Heat, Light, and Electricity; Practical Chemistry; and Materia Medica and Pharmacy. Part II. includes Anatomy, Physiology, and Histology. This examination cannot be passed before the completion of twelve months' Practical Anatomy with Demonstrations, and these subjects cannot be taken separately except in the event of the candidate having previously passed in one. A schedule for the Primary examination, to be obtained of the Secretary, must be signed by the Dean of the Medical School or other authority. Section I. of the Final examination consists of three parts. Part I. includes the Principles and Practice of Surgery, Surgical Pathology, and Surgical Anatomy, Operative Manipulation, Instruments, and Appliances. Part II. includes the Principles and Practice of Medicine, Pharmacology, Pathology, and Morbid Histology; Forensic Medicine, Hygiene, Theory and Practice of Vaccination; and Mental Diseases. Part III. includes Midwifery, Gynaecology, and Diseases of New-born Children and the Use of Obstetric Instruments and Appliances. Section I. of the Final examination cannot be passed before the expiration of 45 months from the date of commencement of

medical study, during which time not less than three winter sessions and two summer sessions must have been passed at one or more of the medical schools connected with a general hospital recognised by the Society. Section II. of the Final examination consists of two Parts. Part I. Clinical Surgery; Part II. Clinical Medicine and Medical Anatomy. Section II. cannot be passed before the end of the fifth year.

The course of study for the *Primary examination* is as follows:—Elementary Biology, not less than three months; Chemistry and Chemical Physics, six months; Practical Chemistry, three months; Pharmacy and Dispensing, three months; Anatomy, six months; Practical Anatomy with Demonstrations, 12 months; Physiology, six months; Histology with Demonstrations, three months. The study of these subjects must be pursued at a Medical School recognised by the Society. Instruction in Pharmacy and Dispensing must be given by a registered medical practitioner or by a member of the Pharmaceutical Society by examination, or in a public hospital, infirmary, or dispensary.

The course of study for the *Final examination, Section I.*, includes attendance on the Surgical and Medical Practice (with Post-mortem Examinations) at a hospital connected with a medical school for a period of two winter and two summer sessions; lectures on the Principles and Practice of Surgery, six months; Practical Surgery, three months; Clinical Surgical Lectures, nine months; Dressership, six months; Performance of Surgical Operations on the Dead Body; lectures on Principles and Practice of Medicine, six months; Pathology, three months; Clinical Medical Lectures, nine months; Clinical Clerkship, six months; Forensic Medicine, Hygiene, and Insanity, three months; Midwifery and Gynaecology, three months; Clinical Instruction in the same, three months; a course of Practical Midwifery; attendance on 20 Midwifery cases. The course of medical study must extend over the above-mentioned period of 45 months, and the offices of dresser or clinical clerk must be held at a hospital or other institution recognised by the Society. Two years must elapse after a candidate has passed the examination in Anatomy and Physiology before he is eligible to sit for any part of the Final examination.

The course of study for the *Final examination, Section II.*, includes either attendance on the Practice of Medicine and Surgery at a hospital or other institution recognised by the Society for a further period of 12 months, or six months as above and six months as a pupil of a registered practitioner holding a public medical or surgical appointment, or attendance at two special hospitals for six months (three months at each hospital), and for six months at a general hospital, all such hospitals to be recognised by the Society. Evidence shall also be given of practical instruction in Infectious Diseases and in Mental Diseases (at a lunatic asylum or in the wards of an institution containing a special ward set apart for the treatment of mental diseases), and in any two of the following subjects: Ophthalmic Surgery, Laryngology with Rhinology and Otology, Dermatology, and Diseases of Children. No candidate is eligible for the Final examination who has not completed the curriculum prescribed by the Society, in evidence of which a schedule, to be obtained of the Secretary, must be produced, signed by the Dean of the Medical School or other authority. Prior to Section II. of the Final examination the candidate must produce certificates: (1) of being 21 years of age; (2) of moral character; (3) of the course of medical study; (4) of proficiency in vaccination signed by a teacher authorised by the Local Government Board; and (5) of instruction in the administration of anaesthetics. Candidates intending to present themselves for examination are required to give 14 days' notice. A form for this purpose will be sent on application.

Licentiates are eligible for the Membership of the Society of Apothecaries. Particulars may be obtained on application to the clerk.

The fee for the Licence is 20 guineas. Female candidates are admitted to examinations. The examination offices are open from 10 A.M. to 4 P.M.: on Saturdays from 10 A.M. to 1 P.M. All letters should be addressed to the Secretary, Court of Examiners, Society of Apothecaries of London, Blackfriars, E.C. 4.



### METROPOLITAN ANCILLARY SCHOOLS AND HOSPITALS AFFORDING FACILITIES FOR CLINICAL OBSERVATION.

The institutions which follow provide to the medical student and medical graduate facilities for different forms of instruction and clinical observation. In each case further information can be obtained from the secretary of the hospital.

**THE SEAMEN'S HOSPITAL SOCIETY** possesses two hospitals—the *Dreadnought* Hospital at Greenwich, 250 beds, and the Branch Hospital in the Royal Victoria and Albert Docks, E., 50 beds; and the Angus Home 30 beds. It has also two Dispensaries—one in the East India Dock-road and the other at Gravesend—from which the patients are transferred to the hospitals. Secretary: Mr. P. J. Michelli, C.M.G.

**WEST LONDON HOSPITAL**, Hammersmith, W.—This hospital has 160 beds, all of which are constantly in use. 2440 in-patients and 30,322 out-patients, whose attendances numbered 155,870, were treated last year. Attached to the hospital is the West London Post-Graduate College. The practice of the hospital is reserved exclusively for qualified men, no junior students being admitted. Instruction is given in the medical and surgical out-patient rooms and demonstrations are given in the wards every morning and afternoon. Lectures and demonstrations are in abeyance during the war. Special Classes are held in Diseases of the Throat and Nose, Skin, and Eye, and in Gynaecology, Medical Electricity, Operative Surgery, Bacteriology, Anaesthetics, Intestinal Surgery, Medical and Surgical Diseases of Children, Blood and Urine, Clinical Microscopy, Tropical Medicine, Cystoscopy, Venereal Diseases, and Operative Ophthalmology. The accommodation for post-graduates consists of a large lecture room, together with reading, writing, and class rooms, &c. The hospital has a fully equipped pathological laboratory at which instruction is given in elementary bacteriology, a class being held every month. The fees for hospital practice, including lectures, are £6 6s. for three months, or £15 15s. for one year. The certificate of the hospital is accepted by the Admiralty, War Office, Colonial Office, and India Office in cases of study leave. Further information can be obtained on application to the Dean, Dr. Arthur Saunders, or Vice-Dean, Mr. Bishop Harman, at the hospital. Secretary of the Hospital: Mr. A. Betteridge.

**GREAT NORTHERN CENTRAL HOSPITAL**, Holloway-road, N.—This hospital is recognised by the Examining Board in England of the Royal Colleges of Physicians and Surgeons as a place of study during the fifth year of the medical curriculum. Besides the Honorary Staff there are six Anaesthetists, Pathologist, Resident Medical Officer, one resident House Physician, three resident House Surgeons, and resident casualty officer. The hospital contains 430 beds (including emergency beds), which are fully occupied. There is also a ward for children under five years of age. The large rectangular and circular wards, each of which contains 35 beds, the observation wards, the two operation theatres, general and special out-patient and pathological departments, are specially designed with a view of offering the greatest facilities for clinical work. There is also a well-appointed electro-therapeutic department. The Pathological Department has been extended and is under the control of a Director of Clinical Pathology. The Reckitt Convalescent Home at Clacton-on-Sea belongs to the hospital. It contains 60 beds. Special departments have also been established for the treatment of tuberculosis and venereal diseases. A Hospital of Recovery has now been established at "Summerlee," East Finchley, which is placed at the disposal of discharged soldiers and sailors as well as civilians. Medical practitioners are cordially invited to see the general and special practice of the hospital. Demonstrations are given daily in the wards and out-patient departments. Clinical assistants (qualified), clinical clerks and pathological clerks are appointed in the general and special departments and may receive certificates at the end of their terms of office. Further particulars from the Secretary of the Medical Committee at the Hospital.

**PRINCE OF WALES'S GENERAL HOSPITAL**, Tottenham, N.—This general hospital is in the midst of a densely populated neighbourhood of more than half a million inhabitants. It contains medical, surgical, gynaecological, and children's

wards, having 125 beds. There are special departments for gynaecological cases, diseases of the eye, ear, throat, and nose, skin diseases, medical electricity, radiography, and dentistry. Operations are performed every afternoon of the week (except Saturday) at 2.30 p.m. Clinical instruction, ordinarily including laboratory classes, and lectures are given in the wards and out-patient departments, laboratories, and lecture hall in connexion with the North-East London Post-Graduate College attached. There are four Resident Medical Officers, and Clinical Assistants are appointed under certain conditions. Further particulars in regard to the hospital may be obtained from Mr. H. W. Carson, Secretary to the Medical Committee, 111, Harley-street, W.; or from Dr. A. J. Whiting, Dean of the North-East London Post-Graduate College, 19A, Cavendish-square, W. Secretary: Mr. F. W. Drewett.

**LONDON TEMPERANCE HOSPITAL**, Hampstead-road, N.W. (Established 1873; Incorporated 1917).—The hospital contains 120 beds. The in-patients in 1918 were 1154, and the out-patients and casualties numbered 15,803 new cases. The medical and surgical practice of the hospital is open to students and practitioners. Operations: Mondays at 2 p.m., Tuesdays, Wednesdays, and Fridays at 9 a.m.

**HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL**.—The Hampstead General Hospital (Haverstock Hill) and the North-West London Hospital (formerly at Kentish Town) have been amalgamated since 1907. The Hampstead General Hospital (128 beds—viz., 102 free, 6 isolation, &c., and 20 paying or contributory) accommodates the in-patients from the districts hitherto served by both hospitals. The out-patients, with the exception of Hampstead casualty and emergency cases, attend exclusively at the Out-patients Department, Bayham-street, Camden Town. Further particulars from the secretary at the hospital (Haverstock Hill, N.W. 3).

**ELIZABETH GARRETT ANDERSON HOSPITAL**, 144, Euston-road, N.W.—A considerable number of the students work in the E.G.A. Hospital under the visiting staff, and in return for much valued clinical teaching they perform the duties assigned to students in the wards of a general hospital. Secretary: Miss Imogen H. Murphy.

**THE SOUTH LONDON HOSPITAL FOR WOMEN**, South Side, Clapham Common, S.W.; Out-patient Department: 86-90, Newington Causeway, S.E.—This hospital, officered entirely by medical women, is a general hospital for women, girls, and small children of both sexes, and provides accommodation for 80 patients. All diseases are treated with the exception of acute infectious fevers and mental disease. There are Ophthalmic, X Ray, and Pathological Departments. The provision of additional facilities for post-graduate training for medical women is one of the special objects of the hospital. The number of in-patients treated during the year 1918 was 1173. At the Out-patient Department in Newington Causeway 7386 new cases were treated during the past year, the total number of out-patient attendances amounting to 31,416. Clinical assistants (qualified women only) are from time to time appointed in the Out-patient Department. Secretary: Miss M. E. Ridler.

**FRENCH HOSPITAL AND DISPENSARY**, Shaftesbury-avenue, W.C.—This hospital, which was founded in 1867 to afford medical treatment for poor foreigners who speak the French language, has 74 beds. The Convalescent Home and Retreat for Aged French People at Brighton contains 61 beds. Secretary: Mr. G. Pondepeyre.

**ITALIAN HOSPITAL**, Queen-square, W.C.—This institution was established in 1884 for the maintenance and medical treatment of Italian and Italian-speaking people, irrespective of their religious and political opinions, who may be suffering from sickness or bodily infirmity, but the sick poor of any nationality are also admitted for treatment. The institution also provides surgical and medical relief to Italians and others not being inmates of the hospital. It has 50 beds.

**GERMAN HOSPITAL**, Dalston, E. 8.—This hospital was founded in 1845 with the object of supplying medical aid to poor people speaking the German language and for cases of emergency and of accident. It has 142 beds, including a sanatorium with 10 beds. Also a convalescent home at Hitchin with 40 beds, occupied, since 1915, by convalescent British soldiers.



**NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC** (Albany Memorial), Queen-square, Bloomsbury, W.C.—The hospital, with the Finchley branch, and branches in Bloomsbury, Maidenhead, and Clapham Park, contains 324 beds and cots. The physicians attend every Monday, Tuesday, Thursday, and Friday at 2 p.m. In- and out-patient practice at that hour. Clinical Clerks are appointed under the in-patient and out-patient physicians. Lectures are given on Tuesdays and Fridays at 3.30. The hospital has been recognised by the Conjoint Board for England as a place where part of the fifth year may be devoted to clinical work. All communications concerning clinical appointments, lectures, hospital practice, and fees should be addressed to the Secretary at the hospital.

**HOSPITAL FOR EPILEPSY AND PARALYSIS, &C., Maida Vale, W. (85 beds).**—Both in-patient and out-patient departments of this hospital are open free to students as well as to medical graduates. Secretary and General Superintendent: Mr. H. W. Burleigh.

**WEST-END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM, PARALYSIS, AND EPILEPSY, 73, Welbeck-street, W.**—Graduates in medicine and senior students may attend demonstrations in the Out-patient Department. No fees are charged. The Savill Prize and Medal are at present in abeyance, as well as routine demonstrations by the staff.

**BETHLEM ROYAL HOSPITAL, St. George's-road, S.E.**—This hospital is open for the admission of two Resident House Physicians who have recently obtained their diplomas to practise Medicine and Surgery. They are permitted to reside in the hospital for a term generally not exceeding six months, commencing May 1st and Nov. 1st, and are provided with apartments, complete board, attendance, laundry, and a salary at the rate of £100 per annum. They are under the direction of the Physician Superintendent and are elected by the Committee from candidates whose testimonials appear to be most satisfactory. The students of certain specified London Medical Schools receive Clinical Instruction in the wards of the hospital and qualified practitioners and other students may attend for a period of three months on payment of a fee.

**HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.**—The hospital contains 333 beds. The Sanatorium at Frimley contains 100 beds and 50 beds for paying patients. Six House Physicians reside in the hospital for a term of six months; their duties include attendance in the out-patient department. Pupils are admitted to the practice of the hospital: terms, £1 1s. for one month; three months, £22 2s.; perpetual, £55s. Clinical Demonstrations are given throughout the year by members of the medical staff. Clinical Assistants are appointed to the Assistant Physicians in the out-patient department and Clinical Clerks to the Physicians in the wards. The hospital has been recognised by the Conjoint Board for England as a place where six months of the fifth year may be spent in clinical work. The medical practice of the hospital is also recognised by the University of London, the Apothecaries' Society, and the Army and Navy and Indian Medical Boards. Dean of the Medical School: Dr. L. S. Burrell. Lectures are given on Wednesday afternoons during the terms. Free to students and post-graduates.

**CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.**—During the past year 1083 in-patients have been treated in the wards. The out-patients treated during 1918 numbered 10,596. Address "Secretary of the Medical Committee."

**ROYAL CHEST HOSPITAL** (for all affections of the heart and lungs), City-road, E.C. (80 beds.)—This hospital provides accommodation for 80 in-patients. Expenditure for 1918 £14 409 income £16,375. The attendance of out-patients averages 25,000 annually. Secretary: Mr. A. T. Mays.

**THE MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, NORTHWOOD, CENTRAL OUT-PATIENT DEPARTMENT, Fitzroy-square, W.**—The hospital contains 110 beds. Number of in-patients, 437; out-patients, 3546. Resident Medical Staff. Clinical Demonstrations are given by the Visiting Medical Staff at the hospital at Northwood. Clinical assistants are appointed to physicians in the wards and in the out-patient department. Secretary: Mr. W. J. Morton. Offices: 7, Fitzroy-square, W.

**QUEEN CHARLOTTE'S LYING-IN HOSPITAL AND MIDWIFERY TRAINING SCHOOL, Marylebone-road, N.W.**—This hospital receives about 1800 patients annually, besides having a large out-patient department. Medical pupils are received at all times of the year. Pupils have unusual opportunities of seeing obstetric complications and operative midwifery, on account of the very large number of primiparous cases—nearly one-half of the total admissions. Clinical instruction is given on the more important cases which present themselves. Special Lecture-demonstrations are given by members of the staff. Certificates of attendance at this hospital are recognised by all the Universities, Colleges, and licensing bodies. Pupil midwives and monthly nurses are received and specially trained. A Residential College provides accommodation for five men at a time, students and qualified practitioners and is opposite the hospital, with which it is in telephonic communication. Arrangements have been made for Medical Students to receive the preliminary instruction in Practical Midwifery recommended by the General Medical Council. Women students are received. For further particulars application should be made to Mr. Arthur Watts, Secretary, at the hospital.

**THE HOSPITAL FOR WOMEN, Soho-square, W.**—In connexion with the out-patient department there has been for some years a well-organised Clinical Department. The appointments are open to qualified medical men and women. Every facility is afforded them by the gynaecologists in the out-patient department of obtaining experience in diagnosis and treatment and the practical use of instruments. Fee for one month £22 2s.; for each subsequent month the same. The hospital contains 67 beds. In the out-patient department there were over 4000 new cases during the past year, the total number of out-patient attendances being 14,500. This large number affords exceptional opportunities for examining and studying most of the varieties of the diseases of women. Applications should be made to the Secretary, Mr. Alfred Hayward.

**SAMARITAN FREE HOSPITAL FOR WOMEN, Marylebone-road, N.W.**—Qualified practitioners are admitted as clinical assistants to both the in- and out-patient departments. Demonstrations are given daily in both departments. The fees, payable in advance, are £3 3s. for three months. Full particulars may be obtained on application to the Secretary at the hospital. There are 70 beds. Secretary: Mr. G. H. Hawkins.

**EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Glamis-road, Shadwell, E.**—The hospital maintains 130 cots, and on an average 245 out-patients are seen daily. Clinical instruction is given by the physicians and surgeons to the hospital, which is recognised by the Conjoint Board for England as a school of medical teaching for students in the fifth year of the curriculum. All particulars may be obtained on application to the Secretary. Two clinical clerkships for qualified or unqualified students are open every three months subject to reappointment if desired. Clinical assistants (qualified men only) are from time to time appointed in the out-patient department. Any additional information may be obtained on applying to Mr. W. M. Wilcox, the Secretary, at the hospital.

**THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C. 1,** contains 210 beds, besides 30 beds at the Branch Hospital, Highgate. The hospital having been recognised by the Conjoint Board for England as a place where, under the new curriculum, six months of the fifth year may be spent in clinical work, the practice is arranged to meet this need and is open to students of both sexes who have completed four years of medical study and also to qualified medical men and women. The medical staff are recognised by the University of London as teachers in Diseases of Children. Arrangements have also been made with University College Hospital and the London School of Medicine for Women for the routine admission of their students of both sexes to clerkships and dresserships in the wards. Appointments are made every three months to six medical clerkships, which are open to students of the hospital. Clinical instruction is given daily by members of the visiting staff. Fees for hospital practice, one month, £2 2s.; three months, 5 guineas; perpetual ticket, 10 guineas. Clinical Clerks, 1 guinea for one month. Ophthalmological Clerkships.—Clinical Clerks are



appointed once a month. Fees £1 1s. for one month's attendance. Pathological Clerkships.—Facilities are afforded for obtaining theoretical and practical instruction in Clinical Pathology and Bacteriology in the Pathological Laboratories. Clerks attend for about four hours daily. Fees: For one month, £3 3s.; for two months, £5 5s.; for three months, £6 6s. A reduction is made in the case of those already holding tickets for general attendance at the hospital. Time so spent in clerking and dressing is recognised by the Universities of London, Oxford, and Cambridge, and by the Conjoint Board for England as part of the approved curriculum for students entering for a final examination. These appointments are open to students of all recognised medical schools. In addition, special courses in post-graduate work are held throughout each term of the year, as well as routine post-graduate instruction daily. Details may be obtained by application to the dean or secretary at the hospital. The medical school is a constituent part of the new London Post-Graduate Association. Secretary: Mr. Stewart Darmady.

**EVELINA HOSPITAL FOR SICK CHILDREN**, Southwark Bridge-road, S.E.—This hospital contains 76 cots and a very extensive Out-patient Department. About ten clinical assistants (either sex), to work with the Honorary Medical Staff for Out-patients, are appointed quarterly for a period of three months; there is no salary attached to these posts; but, on the other hand, no fees are charged. Secretary: H. C. Staniland Smith.

**VICTORIA HOSPITAL FOR CHILDREN**, Tite-street, Chelsea, S.W.—The hospital contains 104 beds and has a large out-patient department (over 1200 weekly); the home at Broadstairs has 50 beds. Out-patients are seen as under:—Diseases of the Eye: Tuesday, 2 P.M. Diseases of the Skin: Wednesday, 1.30 P.M. Whooping-cough Cases: Friday, 2.30 P.M. Dental Cases: Thursday, 1.30 P.M. Medical and Surgical Cases: Mornings at 9.30. Accidents and urgent cases are admitted at any time. Post-graduate courses of lectures are being arranged for the winter. Secretary, Mr. H. G. Evered.

**THE QUEEN'S HOSPITAL FOR CHILDREN** (*late North-Eastern Hospital for Children*), Hackney-road, Bethnal Green, E.2 (Telephone 305 Dalston.) For the sick children of the poor under 14 years of age. Established 1867. 134 beds in London and 36 at the seaside branch. "Little Folks" Home, Bexhill.—During the past year 1481 in-patients and 53,119 out-patients (attendance 107 075) were received. The surgeons attend on Tuesdays and Wednesdays at 1.45 P.M. and Fridays and Saturdays at 9.30 A.M.; the physicians daily at 1.45 P.M., except Saturday, 9.30 A.M., and Wednesday and Friday, 9.30 A.M., as well as 1.45 P.M. The practice of the hospital is open to students by arrangement with the medical staff. Applications should be made to the Secretary, Mr. T. Glenton-Kerr.

**THE BELGRAVE HOSPITAL FOR CHILDREN**, Clapham-road, S.W.—Clinical Assistants (men or women) are from time to time appointed to the members of the Visiting Staff attending in the Out-patient Department at this hospital, and facilities are given for attendance in the wards.

**ALEXANDRA HOSPITAL FOR CHILDREN WITH HIP DISEASE**, Queen-square, W.C.—At this hospital students who have obtained a recommendation from their teachers can attend to see the practice. The out- and in-patients' clinic is held on Mondays and Thursdays at 3 P.M.

**ROYAL LONDON OPHTHALMIC HOSPITAL** (Moorfields, 1804-1899), City-road, E.C. 138 beds.—This hospital, known as Moorfields Eye Hospital, was moved in 1899 to larger buildings in City-road. In 1918 there were 2339 in-patients, the out-patients were 41,725, of whom 36,101 were new out-patients, and the attendances were 98,186. Operations are performed daily from 10 A.M. to 1 P.M., and four surgeons attend on each day. Students are admitted to the practice of the hospital. Fee for six months, £3 3s.; perpetual, £5 5s. Special courses of instruction, which extend over a period of five months are given by members of the Surgical Staff; beginning in October and March. A composition fee of 24 guineas (£25 4s.) will entitle students to a perpetual ticket, and will admit them once to all the lectures and classes and to the examination for the hospital's full certificate. Students of the hospital are eligible for the offices of house surgeon or clinical and junior assistants.

Junior assistants are appointed every three months. Any further information will be furnished by Mr. Robert J. Bland, Secretary Superintendent.

**ROYAL WESTMINSTER OPHTHALMIC HOSPITAL**, King William-street, West Strand.—The hospital contains 40 beds. Out-patients, who number over 15,000 annually, are seen at 1 P.M., and operations are performed daily at about 3 P.M. The practice of the hospital is open to practitioners and students, men and women. Fees for six months, £3 3s.; perpetual, £5 5s.; shorter periods by arrangement. Students of the hospital are eligible for the posts of house surgeon, assistant house surgeon, pathologist, and clinical assistants. Secretary: Mr. John Hy. Johnson.

**ROYAL EYE HOSPITAL**, St. George's-circus, Southwark, S.E.—There are 40 beds and 2 cots. There were 56,513 attendances in the Out-patient Department last year, and the new patients numbered 21,848. Out-patients are seen daily 1.30 to 2.30 P.M. Dean: Mr. A. D. Griffith.

**CENTRAL LONDON OPHTHALMIC HOSPITAL**, Judd-street, St. Pancras, W.C.—This Hospital has 40 beds and possesses facilities for clinical teaching daily. Classes of instruction in the use of the ophthalmoscope, with demonstrations on cases, and also classes on refraction and other subjects are given during the winter months, commencing in October. The out-patient work begins at 1 o'clock, and operations are performed daily between 1 and 4 o'clock. Secretary: Mr. H. R. S. Druce.

**WESTERN OPHTHALMIC HOSPITAL**, Marylebone-road, N.W.—16 beds. Out-patient attendances 20 000. Both In-patient and Out-patient Departments of this Hospital are open to medical graduates. Fees £1 1s. per three months.

**HOSPITAL FOR DISEASES OF THE THROAT**, Golden-square, W. (with which is amalgamated The London Throat Hospital, Great Portland-street).—Clinical instruction in the diagnosis and treatment of disease is given daily in the out-patient department from 2 to 5 P.M., and on Tuesdays and Fridays from 6.30 to 9 P.M. The hospital contains 60 beds for in-patients. There is an annual out-patient attendance of over 60 000. Minor operations are performed daily (except Monday) at 9.30 A.M. Major operations are performed on Tuesdays, Wednesdays, Thursdays, Fridays, and Saturdays at 10 A.M. Also Fridays at 2 P.M. Practitioners and medical students are admitted to the practice of the hospital at a fee of £5 5s. for three months, £7 7s. for six months, or £10 10s. for perpetual studentship. From amongst the students junior clinical assistants are appointed periodically. For terms and further information apply to the Dean, Mr. Geo. W. Dawson.

**CENTRAL LONDON THROAT AND EAR HOSPITAL**, Gray's Inn-road.—Clinical lectures: The hospital is open daily to all qualified medical practitioners on presentation of their visiting cards. Demonstrations of the cases and clinical instruction are given daily by the chief surgeon of each clinique. Medical practitioners are invited to visit the wards, and are welcomed both in the operating theatre, when they are desirous of viewing the major operations, and in the out-patient operating room when minor operations are being performed. Clinical lectures are delivered from time to time, particulars of which are given in the medical journals, and at the hospital. Systematic classes and courses of instruction and demonstrations. Three courses of instruction are open to practitioners attending the hospital: First, the course in methods of examination and diagnosis; second, the course of systematic instruction in the diseases of the nose, throat, and ear; and third, the operative surgery class. The course in methods of examination and diagnosis is introductory in character. It comprises lessons of practical teaching in the actual examination of patients and in the manipulation of instruments. Systematic instruction in Diseases is more advanced. It consists of over 30 lessons in all on pathology, diagnosis, and treatment. Minute details in operative surgery are not gone into, as this is left to the operative surgery class. Full syllabus will be sent on application to the Secretary.

**THE METROPOLITAN EAR, NOSE, AND THROAT HOSPITAL**.—The hospital is in Fitzroy-square, W. The Out-patient Department is opened daily at 2.30 P.M. to all medical practitioners and senior students for acquiring clinical instruction and technical knowledge. Operations upon in-patients are performed on Tuesdays, Wednesdays,



Thursdays, and Fridays at 10 A.M. Fee for one month's attendance at the hospital £1 1s., and for three months £2 2s. Clinical Assistants are appointed as vacancies occur, and have responsible duties.

**ROYAL EAR HOSPITAL**, Dean-street, Soho.—Steps are in progress for incorporating this hospital with University College Hospital as an Ear, Nose, and Throat Hospital department of the latter. At present the Hospital is closed.

**ST. MARK'S HOSPITAL FOR CANCER, FISTULA, AND OTHER DISEASES OF THE RECTUM**, City-road, E.C. (Founded 1835).—The hospital contains for men and women 56 beds. Operations are performed on Mondays, Wednesdays, and Thursdays at 2.30 P.M. Medical practitioners and students are invited to the operations and to the clinical instruction in the wards and in the out-patient department. The number of out-patient attendances per year is 4258, and the average number of in-patients 705.

**ST. PETER'S HOSPITAL FOR STONE AND OTHER URINARY DISEASES**, Henrietta-street, Covent Garden. Established 1860. New Hospital opened 1882.—The hospital contains 30 beds for men and 2 beds for women and children. Medical practitioners and students are invited to the clinical instructions which are given in the wards and out-patient department daily, and to the operations in the theatre on Mondays, Wednesdays and Fridays at 2 P.M. Average beds occupied daily, 24; average out-patients seen daily, 100.

**ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN**, 49, Leicester-square, W.C. 2.—The in-patient department, 40 beds, is at 262, Uxbridge-road, W. 12. The out-patient practice is open to the medical profession every day at 2 and every evening (except Saturday) at 6. At the afternoon clinics demonstrations on the different diseases presenting themselves are given. Venereal Diseases, under the Government scheme, are admitted at all clinics. The X ray department is open every afternoon except Saturday. The Chesterfield Lectures are given on Thursdays at 6 P.M., October to March, commencing Oct. 10th. At the end of the course the Chesterfield medal may be competed for by those who have attended three-fourths of the lectures. Special laboratory courses in Pathology and Bacteriology of the Skin may be arranged for.

**LONDON LOCK HOSPITAL AND RESCUE HOME**.—In the Female Hospital at Harrow-road, W., there are 162 beds, and 633 patients were admitted in 1918. In the Male Hospital and Out-patient Department in Dean-street, Soho, W., there are 43 beds, which during 1918 accommodated 351 patients. 40,441 out-patients were treated. 10,000 injections of the substitutes for salvarsan were made in 1918. Male patients are seen at 91, Dean-street, on Mondays and Tuesdays from 1 to 2 P.M. and from 6 to 8 P.M.; on Wednesdays from 6 to 8 P.M.; on Thursdays at 11.30 A.M. and 5.30–7 P.M. (female patients); on Fridays from 5.30 P.M. (female patients); and on Saturdays from 2 to 4 P.M. (males). Pathological Department, Tuesdays at 6.30 P.M. Days for intravenous injections 91, Dean-street, W. 1. Tuesdays and Saturdays at 9 A.M. (men); women, Thursdays 11.30 A.M. and 5.30 P.M., Fridays at 5.30 P.M. Secretary: Henry J. Mason. Head office: 283, Harrow-road, W. 9.

#### ENGLISH PROVINCIAL ANCILLARY SCHOOLS AND HOSPITALS.

Under this heading we include all the hospitals which are recognised by the English Royal Colleges for a part of the required attendance on medical and surgical practice, for medical clerkships, and surgical dresserships. The list includes nearly every hospital of a general character in the country having more than 150 beds, though occasionally a large hospital is admitted because equally good opportunities are afforded to students at other institutions in its neighbourhood, while a small hospital may be included because no such facilities for study are present elsewhere. The list is arranged alphabetically as to the town where the hospital is located.

**BATH ROYAL UNITED HOSPITAL**, Bath.—This hospital contains 130 beds, and possesses a fine library. Secretary: Mr. J. M. Sheppard. V.D. Clinics are held on Tuesdays (for women), and on Fridays (for men) from 5 to 7 P.M.

**BEDFORD COUNTY HOSPITAL**, Bedford.—This hospital has 100 beds, with X Ray and Pathological Departments. Secretary: Mr. Beauchamp Wadmore.

**BRADFORD ROYAL INFIRMARY**, Bradford.—This hospital contains 215 beds. The material passing through the surgical wards consists of major operations, chiefly abdominal, and gynaecological work, and affords excellent facilities for either students or post-graduates. Plans for a new hospital of 382 beds have been adopted, and the building operations will be commenced as soon as the funds in hand will allow.

**THE ROYAL SUSSEX COUNTY HOSPITAL**, Brighton (220 beds).—This hospital affords ample facilities for students, possessing a large out-patient department, a library, and a well-appointed clinical research and bacteriological department. The hospital does not take resident pupils, but out-pupils may attend the practice of the hospital for any period not exceeding two years on payment in advance of such a fee, not exceeding 20 guineas, as the Board of Management shall direct.

**KENT AND CANTERBURY GENERAL HOSPITAL**, Canterbury.—The hospital contains 110 beds. Pupils of the staff are admitted to the practice of the hospital and have the use of the library of the East Kent and Canterbury Medical Society for £7 7s. An X-ray apparatus has recently been given to the hospital. Operation day, Thursday, 11 A.M. Secretary: Mr. Arthur J. Lancaster.

**DERBYSHIRE ROYAL INFIRMARY**, Derby.—This hospital contains 320 beds. It was founded in 1810, and was entirely rebuilt and enlarged 1892–1915 on the most modern lines at a cost of over £144,000. There is a separate ophthalmic block of 33 beds, a separate children's block of 34 beds, and a special department for gynaecological cases. There are three resident house surgeons and a resident house physician. There are also well-equipped orthopaedic, X ray, electrical, and Finsen light departments. Registered medical students are admitted to witness the medical and surgical practice on payment of 10 guineas annually.

**ROYAL DEVON AND EXETER HOSPITAL**, Exeter.—The hospital contains 200 beds (including special children's ward) and has a good library, museum, dissecting room, and post-mortem room. Attendance on the practice of this hospital qualifies for all the examining boards. There is also a Private Nursing Staff attached to the hospital. For particulars as to fees, &c., apply to the Matron. A new wing was added in 1897. Arrangements may be made by which gentlemen in practice desiring to increase their qualifications may have the use of the museum and library and other facilities and by which students may attend midwifery. A new Operating Theatre was opened in 1906 (the gift of Mrs. Nosworthy of Newlands, Dawlish, Devon). The Electrical Treatment Department (the gift of Mrs. M. A. Sanders) was opened in 1907 by Lady Duckworth-King. A department was opened in 1917 for the treatment of genito-urinary diseases; there are three sessions per week, two for men at 4 P.M. and 7 P.M., and one for women at 4 P.M.

**WEST OF ENGLAND EYE INFIRMARY**, Exeter.—Secretary: Mr. W. W. Beer. The infirmary contains 64 beds. Students of the Exeter Hospital can attend the practice of the Eye Infirmary. Patients for the year ending Michaelmas, 1918, 2724.

**THE GLOUCESTERSHIRE ROYAL INFIRMARY AND EYE INSTITUTION**, Gloucester.—This hospital, which was granted the title of "Royal" on the occasion of King Edward VII.'s visit to Gloucester in the year 1909, has 140 beds. Secretary: Mr. H. P. Pike. In-patients, 1683; out-patients, 6739. An electrical and massage department has been established and venereal and neurological clinics opened.

**NORTH STAFFORDSHIRE INFIRMARY**, Hartshill, Stoke-on-Trent.—The New Infirmary, opened in 1869, is built on the pavilion plan, has accommodation for about 250 patients, including Children's wards, and a special department for the treatment of Diseases of the Eye, a special X Ray and Electrical Department, a special department for the treatment of Diseases of the Ear, Nose, and Throat, a special orthopaedic department, and venereal diseases clinics, so that there are excellent facilities for acquiring a practical knowledge of the profession. During the last six years the sum of £35,000 has been spent on new buildings and alterations. A new Out-patient Department, costing £12,000, a new Children's Ward of 30 beds, a new Pathological Department, and a second large Operation Theatre amongst the structural improvements already completed.



The whole institution is now equipped in a thoroughly up-to-date manner. Secretary and House Governor: Mr. W. Stevenson.

**HULL ROYAL INFIRMARY, Hull.**—This hospital contains 256 beds, and since its establishment in 1782 until the erection of the circular wards in 1907 has undergone steady additions and improvements. A branch convalescent home and sanatorium for consumption at Withernsea are special features of the charity.

**LEICESTER ROYAL INFIRMARY, Leicester.**—Instruction in the infirmary for first-year students is duly recognised by the various examining bodies. At the General Infirmary there are 230 beds, and at the Children's Hospital in connexion 70; total 300. A new wing containing 100 beds was recently opened by H.R.H. the Duchess of Argyll, and a new Nurses' Home containing separate accommodation for 100 nurses has also been opened. A reconstruction scheme has been carried out, and £120,000 spent on bringing the accommodation of the institution to a modern standard of efficiency. This scheme has included the provision of two modern operating theatres, and a self-contained out-patients' department. The Children's Hospital has been reconstructed and enlarged by the addition of a third ward at a cost of £14,500. Open-air balconies on all three floors are a feature. A central sterilising department has been provided. A new Pathological Laboratory and post-mortem rooms at an estimated cost of £8000 are now in course of construction, also an orthopaedic out-patients department at a cost of £8000, £5000 of which is being provided by the Freemasons of the province as their war memorial. Further additions are in contemplation. A city university will not unlikely be the town's memorial of the war, and a splendid site has just been presented by Mr. J. Fielding Johnson, J.P., an ex-chairman of the Royal Infirmary. There are eight resident medical officers—viz., four house surgeons, one house physician, one assistant house physician, and two dressers. All receive salaries. The dressers are given an honorarium. House Governor and Secretary: Mr. Harry Johnson.

**NORTHAMPTON GENERAL HOSPITAL, Northampton.**—Two new wings were opened in 1904 and the old buildings entirely renovated and rearranged. The number of beds is 298, 120 of which are occupied by wounded soldiers. Non-resident pupils are received and have every opportunity of acquiring a practical knowledge of their profession. The fee is £10 10s. Pupils can be received at any time. An up-to-date Pathological Laboratory is now being erected.

**NORFOLK AND NORWICH HOSPITAL, Norwich.**—This hospital has at present 350 beds. There is a convalescent home at Cromer, and a large staff of visiting nurses is maintained. Secretary: Mr. F. Inch.

**NOTTINGHAM GENERAL HOSPITAL.**—At the present time there are 233 beds available for civilian patients. The accommodation of sick and wounded soldiers from overseas was a great feature at this hospital, which is fully equipped in every branch of medicine and surgery.

**SOUTH DEVON AND EAST CORNWALL HOSPITAL, Plymouth.**—This hospital contains 183 beds (12 of which are for Venereal Diseases in a separate building). There is also an Out-patient Venereal Diseases Clinic.

**THE ROYAL HOSPITAL, Portsmouth (founded 1847).**—The number of beds is 160. The hospital has X Ray and Massage Departments. The hospital is a preparatory School of Medicine and Surgery; the attendance of pupils at this hospital is recognised by the Examining Boards. Particulars of the Secretary at the hospital.

**ROYAL BERKSHIRE HOSPITAL, Reading.**—This hospital, which contains 220 beds, has been recently enlarged, the additions including a new Out-patient Department, a Casualty Department, an X Ray Department, a Laboratory, an Eye Theatre, and Eye Wards.

**SALISBURY GENERAL INFIRMARY, Salisbury.**—This hospital contains 145 beds. In-patients, 160 daily average; out-patients, 550, including ophthalmic cases 185 and X Ray cases 1073; attendances on 4683 casuals. Secretary, Mr. S. B. Smith.

**ROYAL SALOP INFIRMARY, Shrewsbury.**—This hospital has 160 beds. In-patients, 1472; out-patients, 1030; out-patients' attendances for the year, 16,542. Secretary: Mr. Alfred Sugden.

**ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL, Southampton.**—This hospital contains 130 beds. In-patients, 1969; out-patients, 7843. Secretary: Mr. T. A. Fisher Hall.

**STAFFORDSHIRE GENERAL INFIRMARY, Stafford.**—This hospital has 80 beds. In-patients, 854; out-patients, 2205. Secretary: Mr. R. Battle.

**ROYAL HANTS COUNTY HOSPITAL, Winchester.**—This hospital has 160 civilian beds. Secretary: Mr. Herbert Maslen.

**WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL, Wolverhampton.**—There are 262 beds. Special departments for Children, Gynaecology, Ear, Throat, and Nose Diseases, Electro-therapeutic and X ray and Pathological departments. There is an excellent library. The resident officers are a resident medical officer and three house surgeons. Pupils are allowed to witness the whole of the practice of the hospital and to be present at operations and have every opportunity of acquiring a practical knowledge of their profession. A course of Practical Pharmacy is given by the dispenser. Fees on application. Applications should be made to the Secretary of the Medical Committee.

**WORCESTER GENERAL INFIRMARY, Worcester.**—This hospital has 132 beds (temporarily reduced to 70). Pupils are taken by members of the Honorary Medical and Surgical Staff. Number of operations last year 891. New X Ray and Electrical Departments have been recently erected and are now in use. Additional accommodation for the Honorary Staff and Out-patients and also an Outdoor Shelter in connexion with the Children's Ward have been built as a memorial to King Edward VII. In-patients, 966; out-patients, 2990. Secretary: Mr. E. J. Holland.

**YORK COUNTY HOSPITAL, York.**—This hospital contains 170 beds. There are balconies for outdoor treatment and two installations of X Ray apparatus. A Venereal Diseases Clinic is held.

**SCHOOL OF THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.**—The subjects of the Qualifying examination of the Pharmaceutical Society (for registration as "chemist and druggist") are botany, chemistry and physics, materia medica, pharmacy, and pharmacy law. Fee, 12 guineas; for each subsequent examination after failure, 3 guineas. The advanced or Major examination (for registration as "pharmaceutical chemist") includes botany, chemistry and physics, practical chemistry, and materia medica. Fee, 3 guineas. The inaugural address will be delivered on Wednesday, Oct. 1st. Medical students are admitted to the lectures and laboratory work in any or all the courses. Certificates of instruction in this school are received by the Conjoint Board of the Royal Colleges and by the University of London. Application for admission to the school, or for further information, may be made to the Dean, Professor Greenish, 17, Bloomsbury-square, London, W.C.1. There are no vacancies for October, 1919.

**THE TRAINING OF MASSEUSES.**—In order to meet the need for a more thorough training of masseuses, and to secure in the future a uniform course of instruction in massage and medical gymnastics, it has been decided by the Council of the Incorporated Society of Trained Masseuses that from Sept. 1st no new schools will be recognised as teaching centres by the Council unless the school authorities undertake to give not less than one year of training (48 weeks). No new teacher of massage will be accepted by the Council unless he or she hold the Society's certificates, or other specially approved certificates. From Jan. 1st, 1921, no candidate will be admitted to the Society's examinations unless they have fulfilled one year of training.

**DEATH OF DR. W. H. PEILE.**—William Hall Peile, M.A. Cantab., M.A., M.D. Dub., L.R.C.P., M.R.C.S., D.P.H., died recently at his residence, Sidmouth, Devon, in his fifty-first year, after a long illness. Dr. Peile was formerly medical officer of health for Sidmouth, and did much useful work in connexion with the housing question, and was largely instrumental in bringing about the erection of 48 cottages in Sid Park-road. He was greatly respected and esteemed, especially among the poor, to whom he was always kind and generous. The funeral was largely attended, the deceased's brother, Bishop Peile, being one of the officiating clergy.



## II.—SCOTLAND.

## THE UNIVERSITIES.

## UNIVERSITY OF EDINBURGH.

Four Degrees in Medicine and Surgery are conferred by the University of Edinburgh—viz., Bachelor of Medicine (M.B.), Bachelor of Surgery (Ch.B.), Doctor of Medicine (M.D.), and Master of Surgery (Ch.M.). The degree of Bachelor of Surgery cannot be conferred on any person who does not at the same time obtain the degree of Bachelor of Medicine, and similarly the degree of Bachelor of Medicine is not conferred on any person who does not at the same time obtain the degree of Bachelor of Surgery.

No one is admitted to the degrees of *Bachelor of Medicine* and *Bachelor of Surgery* who has not been engaged in Medical and Surgical study for five years. No course of lectures will be allowed to qualify unless the lecturer certifies that it has embraced at least 100 lectures, or 50 lectures, as may be required by the regulations, and that the student has also duly performed the work of the class.

Candidates for the degrees of M.B. and Ch.B. must have attended for at least three academic years the medical and surgical practice either of the Royal Infirmary, Edinburgh, or of a general hospital elsewhere which accommodates not fewer than 80 patients and possesses a distinct staff of physicians and surgeons. They must have attended Clinical Surgery during a course or courses extending over not less than nine months, and courses of instruction in all the subsidiary subjects. They must have personally conducted, under the superintendence of a registered medical practitioner, 20 cases of labour at least.

With respect to the places and institutions at which the studies of the candidate may be prosecuted the following regulations have effect:—Two of the five years of medical study must be spent in the University of Edinburgh. The remaining three years may be spent in any University of the United Kingdom, or in any Indian, Colonial, or Foreign university recognised for the purpose by the University Court, or in such medical schools or under such teachers as may be recognised for the purpose by the University Court. Of the subjects of study—viz., Anatomy, Practical Anatomy, Chemistry, Practical Chemistry, Materia Medica, Physiology, Practical Physiology, Practice of Medicine, Surgery, Midwifery and Diseases of Women, Pathology, Practical Pathology, Physics, Botany, Zoology, Medical Jurisprudence, and Public Health—not less than one-half must be taken in the University of Edinburgh, which corresponds to the two years above referred to.

Women are admitted to graduation in medicine under practically the same conditions as men.

The fee to be paid for the degrees of Bachelor of Medicine and Bachelor of Surgery is £23 2s., and the proportion of this sum to be paid by a candidate at each division of the examination shall be as follows—viz.: For the First Division of the Examination (Botany, Zoology, Physics, and Chemistry), £6 6s.; for the Second Division (Anatomy and Physiology), £5 5s.; for the Third Division (Pathology and Materia Medica and Therapeutics), £4 4s.; and for the Final Division (Surgery and Clinical Surgery, Medicine and Clinical Medicine, Midwifery, Clinical Gynaecology, and Forensic Medicine and Public Health), £7 7s.

*Bachelors of Medicine* and *Bachelors of Surgery* may proceed to the degrees of *Doctor of Medicine* and *Master of Surgery* after they have spent one year in the medical or surgical wards respectively of a hospital, or the Military or Naval Medical Services, or in scientific work bearing directly on their profession, or two years in practice. In each case an examination must be passed and a thesis submitted for approval of the Faculty. The fee to be paid for the degree of M.D. is £15 15s., and the fee to be paid for the degree of Ch.M. is £15 15s.

A diploma in Tropical Medicine and Hygiene (D.T.M. and H.) is granted to graduates in Medicine and Surgery of the University of not less than six months' standing, and to Registered Medical Practitioners who, having resided in a tropical country, may be approved by the Senatus, on the recommendation of the Faculty of Medicine.

*Diploma in Psychiatry.*—Courses of instruction have also been instituted for a Diploma in Psychiatry, open to all

legally qualified Medical Practitioners who conform with the Regulations. There shall be two examinations for the Diploma, the first comprising the subjects of Anatomy of the Nervous System; Physiology, Histology, and Chemistry of the Nervous System; Pathology of the Brain and Nervous System; and Practical Bacteriology in its relation to Mental Diseases; and the second examination comprising the subjects of Psychology with Experimental Psychology, Clinical Neurology, and Psychiatry (systematic and clinical). The fee for each examination shall be £5 5s.

*Diploma in Public Health* (D.P.H. Univ. Edin.)—Courses of instruction are also being instituted as from October next for a Diploma in Public Health.

The University of Edinburgh is especially rich in scholarships and prizes in medical subjects. Full particulars can be obtained from the Dean of the Medical Faculty.

**SCHOOL OF MEDICINE OF THE ROYAL COLLEGES, Edinburgh.**—The number of students varies much in the classes and subjects. It is within the limit to say that before the war about 1000 students availed themselves each session of the opportunity of attending the school. The lectures qualify for the University of Edinburgh and other Universities, the Royal Colleges of Physicians and Surgeons of London, Edinburgh, and Dublin, the Faculty of Physicians and Surgeons of Glasgow, and other Medical and Surgical and Public Boards.

The practical classes and laboratories will open and the lectures commence on Oct. 7th.

In accordance with the statutes of the University of Edinburgh one-half of the qualifying classes required for graduation may be attended in this school. The regulations require that the fee for any class taken for graduation in Edinburgh shall be the same as that for the corresponding class in the University. The whole education required for graduation at the University of London may be taken in this school.

Special courses of instruction for dental students are also included in the curriculum of this school.

The minimum cost of the education in this School of Medicine for the Triple Qualification of Physician and Surgeon from the Royal Colleges of Physicians and Surgeons of Edinburgh and the Faculty of Physicians and Surgeons of Glasgow, including the fees for the Joint Examinations, is about £130, payment of which is distributed over the period of study. There is no composition fee.

Further particulars regarding the school, also its calendar, may be had on application to the Dean of the School, 11, Bristo-place, Edinburgh.

*Clinical Instruction.*—**ROYAL INFIRMARY, Edinburgh.**—This hospital has 921 beds and 42 cots for children. Courses of Clinical Medicine and Surgery are given by the physicians and surgeons to male and female students. Special instruction is given on Diseases of Women, Physical Diagnosis, Diseases of the Skin, Diseases of the Eye, the Ear, the Larynx, and the Teeth. Separate wards are devoted to Venereal Diseases, Diseases of Women, Diseases of the Eye, the Ear, Throat and Nose, and the Skin, and also to cases of Incidental Delirium or Insanity. There are also large and complete Medico-Electrical and X Ray and Bathing Departments. Post-mortem examinations are conducted in the anatomical theatre by the pathologist and his assistants, who also give practical instruction in Pathological Anatomy and Histology. The fees for hospital attendance are as follows—viz.: Perpetual ticket, in one payment, £12; annual ticket, £6 6s.; six months, £4 4s.; three months, £2 2s.; monthly, £1 1s. Separate payments amounting to £12 12s. entitle the student to a life ticket. No fees are paid for any medical or surgical appointment. The appointments are as follows: 1. Resident physicians and surgeons are appointed and live in the house free of charge. The appointment is for six months, but may be renewed at the end of that period by special recommendation. 2. Non-resident house physicians and surgeons and clinical assistants are appointed for six months. The appointment may be renewed for a like period by special recommendation. 3. Clerks and dressers are appointed by the physicians and surgeons. These appointments are open to all students and junior practitioners holding hospital tickets. 4. Assistants in the Pathological Department are appointed by the pathologist.



ROYAL HOSPITAL FOR SICK CHILDREN, Sciennes-road, Edinburgh.—This hospital contains 120 beds, and is fitted with every modern improvement. A fully equipped out-patient department (medical and surgical) is conducted daily in a building adjoining the hospital. Systematic courses of instruction, which qualify for graduation in the Edinburgh University and elsewhere, are given from time to time throughout the year by the staff. Students may enter at any time. Full particulars can be obtained from the Registrar at the hospital.

EYE, EAR, AND THROAT INFIRMARY OF EDINBURGH, 6, Cambridge-street, Lothian-road.—Clinical Lectures and Instruction are given in this institution, which is open at 1 o'clock daily for outdoor patients for Eye Diseases; Mondays, Thursdays, and Saturdays at 12 noon, and Tuesdays and Fridays at 4 p.m. for outdoor Ear, Nose, and Throat Patients. Special Practical Ophthalmoscopic Classes by arrangement. Patients whose diseases require operations or more than ordinary care are accommodated in the house. Secretary: Mr. J. P. Watson, W.S., 33, Charlotte-square.

*Post-Graduate Instruction*—In connexion with the University and Royal Colleges post-graduate courses of lectures in medicine have been arranged for the special needs of graduates returned from active service on demobilisation. These courses are open to women. Three courses have been arranged. Courses in Clinical Medicine and Clinical Surgery are conducted during each of the academic terms, the next commencing on Oct. 14th, and the Winter Term (January to March) commencing Jan. 6th, 1920. A course in Obstetrics, Gynaecology, and Child Welfare is conducted during the summer vacation (August and September) only. As the work of each course occupies the greater part of each day only one course can be taken at a time. The instruction is given conjointly by the Professors in the Faculty of Medicine, the University lecturers and assistants, the lecturers in the Extra-Mural School, and the members of the honorary staffs of the hospitals. The course in Clinical Medicine includes a series of daily lecture-demonstrations on General Medicine, Medical Diseases of Children, Tuberculosis, Medical Ophthalmology, Neurology, Dermatology, Infectious Diseases, Mental Diseases, &c. Arrangements are made by which members of the course may follow the general medical practice of the Royal Infirmary and Royal Hospital for Sick Children in the wards and out-patient departments. Those members of the course who desire to concentrate their attention on a special subject may, by arrangement, be attached as extra clinical assistants in the medical wards of the Royal Infirmary, the Royal Hospital for Sick Children, the Royal Victoria Dispensary for Tuberculosis, the Eye Department or the Skin Department of the Royal Infirmary. Provision is also made for practical instruction in Applied Anatomy, Physiology, Pathology, Bacteriology, and a limited number of members of the course may, by arrangement, act as assistant-demonstrators in the practical classes on these subjects under the professors and lecturers. Members who desire to act as Demonstrators in practical classes and Clinical Assistants in special departments are allocated to these in order of application up to the number of vacancies. Similar provisions are made for the courses in Clinical Surgery and in Obstetrics, Gynaecology, and Child Welfare.

The fee for each of the two first courses is 25 guineas, including hospital tickets, and for the third course 20 guineas. All particulars may be had on application to the Secretary, Post-Graduate Courses in Medicine, University New Buildings, Edinburgh.

#### UNIVERSITY OF GLASGOW.

The University of Glasgow is both a teaching and a degree-granting body, but admits to graduation only candidates whose preliminary examination and course of study conform to its own regulations. Within certain limits instruction given by recognised medical schools and teachers may be accepted, but not less than one-half of the subjects other than clinical must be taken in this or some other recognised university, and at least two years of the course must be taken in Glasgow University. Six degrees, open both to men and women, are conferred: M.B. and Ch.B. (always conjointly), M.D. and Ch.M.; B.Sc. in Public Health; D.Sc. in Public Health; and B.Sc. in Pharmacy. A Preliminary Examination must

be passed in (1) English, (2) Latin, (3) Elementary Mathematics, and (4) Greek, or French, or German, or Italian, with possible options to students whose native language is not English. Candidates taking the University preliminary examination are not obliged to pass in all the four subjects at one examination, but must do so at not more than two occasions.

*For the degrees of M.B. and Ch.B.* a curriculum of five years is required. The candidate must, during his curriculum, have attended a course or courses of instruction in each of the following subjects of study, extending over not less than the number of terms specified in each case, and including such class examinations as may be prescribed in connexion with the several courses:—Chemistry (including Organic Chemistry), two terms; with Practical Chemistry, one term; Physics (with practical work), one term; Botany (with practical work), one term; Zoology (with practical work), one term; Anatomy and Practical Anatomy, five terms; Physiology and Practical Physiology, three terms; Materia Medica and Therapeutics (together or separately), each subject, one term; Pathology and Practical Pathology, three terms; Medical Jurisprudence and Public Health (together or separately), each subject, one term; Midwifery and Diseases peculiar to Women and to Infants, two terms; Surgery, two terms; Medicine, two terms. Candidates must attend at least three years the Medical and Surgical Practice of a recognised hospital accommodating at least 80 patients and having a distinct staff of physicians and surgeons. At least nine months' hospital attendance is required on both Clinical Surgery and Clinical Medicine, and the student must have acted for six months as clerk in medical and dresser in surgical wards, and must have had six months' outdoor practice; he must also have attended a course of Mental Diseases and of Practical Pharmacy (25 meetings), must have been properly instructed in Vaccination at a public vaccination station, and must have attended at least 20 cases of labour and the Practice of a Lying-in Hospital. The University also requires further study in various special subjects.

There are four Professional Examinations, the first comprising Botany, Zoology, Physics, and Chemistry; the second comprising Anatomy and Physiology; the third comprising Materia Medica and Therapeutics and Pathology; and the fourth or final, comprising Medical Jurisprudence and Public Health, Surgery and Clinical Surgery, Practice of Medicine and Clinical Medicine, and Midwifery and the Diseases peculiar to Women and to Infants.

*The degrees of M.D. (Doctor of Medicine) and Ch.M. (Master of Surgery)* are higher degrees in Medicine and Surgery respectively, and candidates (not under 24 years of age) who have previously obtained the double bachelorship may be admitted to either M.D. or Ch.M. on completing the after course prescribed, including an examination in Clinical Medicine for M.D. and an examination in Surgical Anatomy, operations on the dead body, and Clinical Surgery for Ch.M.

*Fees.*—The Fees for M.B. and Ch.B. are £23 2s. The class fee in each subject of the curriculum for M.B. and Ch.B. is £2 2s., £3 3s., or £4 4s., and the present fee for hospital attendance is £7. The fee for M.D. is £15 15s., and for Ch.M. £15 15s.

The great majority of the students take their hospital course at the Western Infirmary, or the Royal Infirmary, where clinical instruction is given by professors of the University and others. Clinical instruction on Fevers is given at Ruchill and Belvidere Hospitals, while special courses, largely of a practical nature and embracing work in Hospital or Asylum wards, are conducted by University Lecturers on the Ear, the Throat and Nose, Dermatology, Ophthalmology, Venereal Diseases, and Insanity. Queen Margaret College, sometime conducted as a separate institution for the higher education of women, was made over to the University in 1892, and in it medical classes for women are conducted under University professors and other lecturers appointed by the University Court, whilst for clinical instruction female students are admitted to the Royal Infirmary.

In this University Bursaries and Prizes to the annual amount of over £1000 are appropriated to students in the Medical Faculty, and there are also several Scholarships and Fellowships which may be held by medical



students who have gone through the Arts course. A full list will be found in the University Calendar.

**THE ANDERSON COLLEGE OF MEDICINE, Dumbarton-road, Glasgow, W.**—Courses are given which qualify for all the licensing boards and for the Universities of London, Durham, Edinburgh, and Glasgow (the latter two under certain conditions). Candidates for the Licence in Dental Surgery can obtain the full medical curriculum in Anatomy, Chemistry, Physiology, Surgery, Practice of Medicine, and Materia Medica. The courses special to Dentistry are also conducted in the Anderson College of Medicine.

The buildings are situated in Dumbarton-road, immediately to the west of the entrance to the Western Infirmary, and adjoining the University. Extensive accommodation is provided for Practical Anatomy, Practical Chemistry, Practical Botany, Practical Zoology, Practical Physiology, Practical Pharmacy, Operative Surgery, and Public Health. Ample provision has also been made for the comfort of students.

Women students are admitted on the same terms as men.

The Carnegie Trust extends its benefactions to students of the Anderson College of Medicine. Full particulars may be obtained from Sir W. S. McCormick, the Carnegie Trust Offices, Merchants' Hall, Edinburgh.

Communications relating to the College to be addressed to the Secretary of the Medical Faculty, The Anderson College of Medicine, Glasgow, W. Communications relating to the Preliminary Examination in General Education to be addressed to Mr. Hugh Cameron, M.A., F.R.I.S., Educational Institute Office, 34, North Bridge-street, Edinburgh. Communications relating to the Triple Qualification to be addressed to Mr. Walter Hurst, Royal Faculty Hall, 242, St. Vincent-street, Glasgow.

The Winter Session will open on Monday, Oct. 13th, 1919, and will close on Thursday, March 18th, 1920.

The Summer Session will open on Wednesday, April 21st, 1920, and will close on Wednesday, June 30th, 1920.

**ST. MUNGO'S COLLEGE AND GLASGOW ROYAL INFIRMARY.**—The classes in St. Mungo's College qualify for the English, Scotch, and Irish Conjoint Boards and, under certain conditions, for the various universities, including the University of London. Students who have fulfilled the conditions of the Carnegie Trust as regards Scottish birth or extraction, age (16 years), and Preliminary Examination, are eligible for the benefits of this Trust during the whole course of their studies at St. Mungo's College. The classes are open to male and female students equally. The minimum fees for all the lectures, including hospital attendance, necessary for candidates for the Diplomas of the English or Scotch Colleges of Physicians and Surgeons, amount to £100. Further particulars can be obtained from a syllabus which may be procured free on application to the Secretary of the Medical Faculty, 86, Castle-street, Glasgow.

**QUEEN MARGARET COLLEGE (Women's Department of the University).**—This is an integral part of the University of Glasgow. The classes are taught by professors of the University and other lecturers appointed by the University Court, and it is governed by the University Court and Senate. The curriculum, regulations, and fees are the same as those of the male students, and the University degrees are open to women on the same conditions as to men. They have access to the University Museum and can borrow books from the University Library, besides having a library of reference in Queen Margaret College. The School of Medicine is a special feature of the College, and gives full preparation for the medical degrees of the University. In July, 1894, for the first time in the history of any Scottish University, women students graduated in medicine in Glasgow University. Over 300 women have now taken the degree of M.B., C.M., or M.B., Ch.B. of the University of Glasgow and 24 the degree of M.D. The women students attend classes in the various University Buildings at Gilmore-hill, Queen Margaret College, and the Royal Infirmary. Excellent facilities for clinical work are given in the Royal Infirmary, in the Maternity, and other hospitals. The Arthur Scholarship is open every third year to students of first year; other Bursaries are open in Arts and Medicine; and by an ordinance of the Universities Commissioners women are admitted to certain University bursaries, scholarships, and fellowships. The Winter Session

will open on Oct. 14th, but owing to the pressure upon accommodation in classes no new students of Medicine are to be admitted until April, 1920. Applications for entrance at that date should be made before Feb. 1st, 1920.

**ROYAL INFIRMARY, Glasgow.**—The ancient connexion between the University of Glasgow and the Royal Infirmary was revived in 1911, when four University Chairs and several University Lectureships were established at the infirmary. St. Mungo's College is situated in the infirmary grounds. The infirmary has, including the Ophthalmic Department, 700 beds. There are special beds and wards for diseases of women, of the throat, nose, and ear, skin, venereal diseases, burns and septic cases. The wards are open to Women Students. At the Out-door Department the attendances in 1918 numbered about 114,000. In addition to the large medical and surgical departments there are departments for special diseases—viz., diseases of women, of the throat and nose, of the ear, of the eye, of the skin, and of the teeth. Five house physicians and 12 house surgeons, having a legal qualification in medicine and surgery, who board in the hospital free of charge, are appointed every six months. Clerks and dressers are appointed by the physicians and surgeons. As a large number of cases of acute diseases and accidents of a varied character are received these appointments are very valuable and desirable. There is a modern and fully equipped Electrical Pavilion, and year by year the latest and most approved apparatus for diagnosis and treatment has been added. The fees are as follows: (a) For hospital practice, including attendance at the out-door department, at the pathological department, post-mortem examinations, and the use of the museum: Perpetual ticket, £7; six months, £2 2s.; three months, £1 1s.; separate payments amounting to £7 7s. entitle the student to a perpetual ticket, on return of previous season tickets; (b) for Clinical Lectures, six months, £3 10s.; three months, £1 15s.; (c) Vaccination, £1 1s.; Pathology, £4 4s.; Bacteriology, £2 2s.

**GLASGOW WESTERN INFIRMARY.**—This hospital adjoins the University of Glasgow. Number of beds upwards of 600. Special wards are set apart for Diseases of Women, Throat, Nose, and Ear, and for Affections of the Skin. In the out-patient department there are special clinics for Diseases of Women and for Diseases of the Throat, Ear, Teeth, Skin, and Venereal Disease. The Clinical Courses are given by the physicians and surgeons, each of whom conducts a separate class, and students require to enter their names at the beginning of the session for the class which they propose to attend. Special instruction is given to junior students by tutors or assistants, and clinical clerks and dressers are selected from the members of the class. All the courses of clinical instruction are recognised by the University of Glasgow and the other boards in the kingdom. In the Pathological Department the course is both systematic and practical, also post-graduate courses, and extends through the winter and following summer; these are likewise recognised by the University for graduation. Eighteen resident assistants are appointed annually, without salary, from those who have completed their course. The fee for hospital attendance is £7, and the fees for clinical instruction are £3 3s. for the Winter Session and £2 2s. for the Summer Session. A Clinical Laboratory has been opened, and students receive laboratory instruction from the lecturer on clinical methods. Secretary: J. Matheson Johnston, C.A., 87, Union-street.

A School of Massage, Medical Electricity, and Swedish Remedial Exercises has been established to qualify for the Certificate of the Incorporated Society of Trained Masseuses.

**ROYAL HOSPITAL FOR SICK CHILDREN, Yorkhill, Glasgow.**—This institution, which was founded in 1882, consists of: (1) a hospital at Yorkhill containing 204 cots built on an elevated and central site close to the University and opened in July, 1914; (2) a Dispensary, or Out-patient Department, in West Graham-street, opened in October, 1888; and (3) a country branch at Drumchapel, Dumbartonshire, containing 24 cots, opened in 1903. Children treated must be under 12 years of age and suffering from non-infectious diseases. In the hospital about 5000 children are treated annually. In the Out-patient Department over 12,000 are treated annually, involving nearly 50,000 attendances. In the present year two lectureships in the University of Glasgow have been founded in connexion with the hospital, one on



the Medical Diseases of Infancy and Childhood, and the other on Surgery and Orthopaedics in Relation to Infancy and Childhood. These lectureships are held by the Visiting Physician, Dr. Leonard Findlay, and the Visiting Surgeon, Mr. Alexander MacLennan. The lectures are both systematic and clinical, but particularly and chiefly the latter. Information with regard to clinical instruction, lectures, demonstrations, &c., may be obtained from the Medical Superintendent.

GLASGOW ROYAL MATERNITY AND WOMEN'S HOSPITAL, Rottenrow.—The new hospital, which was opened in 1908, is in point of size the largest of its kind in Britain and has accommodation for 108 patients. A Maternity and Child Welfare Centre has been established in connexion with the hospital, consisting of a complete In-door and Out-door Ante-natal Department and an Infant Consultation Clinic. In 1918 2158 normal cases and 1369 abnormal cases were treated by the hospital in the In-door and Out-door Departments. Secretary: Mr. William Guy, 146, Buchanan-street. Full particulars as to fees and accommodation may be obtained from the House Superintendent at the Hospital.

THE ROYAL SAMARITAN HOSPITAL FOR WOMEN, GLASGOW.—This hospital, founded in 1886, is one of the largest purely gynaecological hospitals in Great Britain, possessing, as it does, over 90 beds. It offers excellent facilities for clinical instruction in the diseases peculiar to women, treating in the wards and in the out-patient department some 4000 cases per annum. The surgeons, four in number, visit the wards in the mornings. For further information application may be made at the Hospital, or to Thos. Macquaker, honorary secretary, 89, West Regent-street, Glasgow.

GLASGOW LOCK HOSPITAL, Rottenrow.—The Hospital contains 83 beds. During 1918 426 patients were admitted to the wards; 9109 visits were made by out-door patients at the Dispensary. Classes are held for the clinical instruction of medical students and practitioners.

GLASGOW OPHTHALMIC INSTITUTION, 126, West Regent-street (29 beds and six cots).—Clinical and systematic course of lectures for students during the winter and summer sessions. In-patients, 812; out- or dispensary patients, 13,927; total attendances, 31,553. Operations on Wednesdays and Saturdays. This institution is the Ophthalmic Department of the Royal Infirmary. Clinical instruction is given during both summer and winter sessions to men and women students attending the University. Secretary and Cashier: R. Morrison Smith, C.A., 135, Buchanan-street, Glasgow.

GLASGOW EYE INFIRMARY, Berkeley-street and Charlotte-street.—This institution, the largest of its kind in Scotland, was founded in 1824. The average number of new patients for the last ten years has been 26,837 and the total number of cases in 1918 was 27,303. The wards and dispensary are recognised by the University of Glasgow for the purpose of instruction in ophthalmology for graduation in medicine. Secretary and Acting Treasurer: Harold John Black, 88, West Regent-street, Glasgow. The medical session opens in October. A Post-graduate Class will be held.

GLASGOW HOSPITAL FOR DISEASES OF THE EAR, NOSE, AND THROAT, 27 and 28, Elmbank-crescent.—12 beds and two cots. New patients, 4096. Attendances at out-patient department 16,188. Admitted to in-door department 331. Clinical instruction is given in connexion with Dr. Connal's course on Diseases of the Ear at Anderson's College and Dr. Syme's course on Diseases of the Throat and Nose at the Western Medical School. A course of post-graduate study has been conducted by the staff of the hospital. Secretary: Mr. P. T. Young.

#### UNIVERSITY OF ST. ANDREWS (UNITED COLLEGE, ST. ANDREWS AND UNIVERSITY COLLEGE, DUNDEE).

Four degrees in Medicine and Surgery are conferred by the University of St. Andrews—viz., Bachelor of Medicine (M.B.), Bachelor of Surgery (Ch.B.), Doctor of Medicine (M.D.), Master of Surgery (Ch.M.), a Diploma in Public Health, and Diploma in Dental Surgery (I.D.S.). The whole curriculum may be taken at University College, Dundee, or the first two years of the course may be taken at St. Andrews and the remaining three years in Dundee. The degrees of M.B. and Ch.B. shall always be conjoined. Before commencing his medical studies each student shall pass a Preliminary Examination

in (a) English, (b) Latin, (c) Elementary Mathematics, and (d) one of the following optional subjects: (a) Greek, (β) French, (γ) German, (δ) Italian, (ε) any other approved Modern Language. A degree in Arts or in Science in any of the Universities of the United Kingdom and in some colonial and foreign universities shall exempt from the Preliminary Examination. The Preliminary Examination for graduation in Medicine and Surgery, Arts or Science, of the University of St. Andrews is accepted as equivalent to the Registration Examination required by the General Medical Council (the certificate to include the required subjects). Also the Final Examination for a degree in Arts or Science and the Final Examination for the Diploma of LL.A.

*Degree of Bachelor of Medicine and Bachelor of Surgery.*—Candidates must have been engaged in medical study for at least five years. In each of the first four years the candidate must have attended at least two courses of instruction in one or more of the subjects of study specified below, each course extending over a session of not less than five months, either continuous or divided into two terms, or, alternatively, one such course along with two courses, each extending over a session of not less than two and a half months. During the fifth or final year the candidate shall be engaged in clinical study for at least nine months at the Infirmary of Dundee or at one or more of such public hospitals or dispensaries, British or foreign, as may be recognised for the purpose by the University Court. The candidate must have received instruction in each of the following subjects of study, including such examinations as may be prescribed in the various classes—viz.: Anatomy, Practical Anatomy, Chemistry, Materia Medica, Physiology, or Institutes of Medicine, Practice of Medicine, Surgery, Midwifery and the Diseases peculiar to Women and Infants. Pathology, Practical Chemistry, Physics (including the Dynamics of Solids, Liquids, and Gases, and the Rudiments of Sound, Heat, Light, and Electricity), Elementary Botany, Elementary Zoology, Practical Physiology, Practical Pathology, Forensic Medicine, and Public Health. The candidate must have attended for at least three years the Medical and Surgical Practice either of the Infirmary of Dundee or of a General Hospital elsewhere which accommodates not fewer than 80 patients and possesses a distinct staff of physicians and surgeons and is recognised for the purpose by the University Court. Additional subjects of study are Practical Pharmacy, Mental Diseases, Practical Midwifery, Operative Surgery, Vaccination, Children's Diseases, Fevers, Ophthalmology, Diseases of the Ear, Throat, and Nose, Anesthetics, and Post-mortem Examinations.

With respect to the places and institutions at which the studies of the candidate may be prosecuted the following regulations shall have effect:—1. Two of the five years of medical study must be spent in the University of St. Andrews. 2. The remaining three years may be spent in any University of the United Kingdom or in any Indian, Colonial, or Foreign University recognised for the purpose by the University Court, or in such medical schools or under such teachers as may be recognised for the purpose by the University Court. Women are admitted to graduation in Medicine, subject to certain provisions.

*Professional Examinations for the Degrees of Bachelor of Medicine and Bachelor of Surgery.*—Each candidate will be examined both in writing and orally, and also clinically where the nature of the subject admits, in the following divisions—viz., first, in Botany, Zoology, Physics, and Chemistry; second, in Anatomy and Physiology; third, in Materia Medica and Pathology and Forensic Medicine and Public Health; and fourth, in Surgery, Clinical and Operative Surgery, Practice of Medicine and Clinical Medicine, and Midwifery and Gynaecology (Systematic and Clinical).

The fee to be paid for the degrees of Bachelor of Medicine and Bachelor of Surgery shall be 22 guineas, and the proportion of this sum to be paid by a candidate at each division of the examination shall be regulated from time to time by the University Court. The fee to be paid for the degree of Doctor of Medicine shall be 15 guineas, and for the degree of Master of Surgery 15 guineas. The whole medical curriculum can be taken in University College, Dundee, or the first two years in United College, St. Andrews.

For further particulars and details as to scholarships and bursaries application should be made to Professor Kynoch, Dean of the Medical Faculty, University College, Dundee.



UNIVERSITY COLLEGE, Dundee.—This College is one of the constituent colleges of the University of St. Andrews. In the medical buildings there are spacious and well-equipped laboratories. The complete medical curriculum can be taken in Dundee. For classes, fees, &c., see under University of St. Andrews.

ROYAL INFIRMARY, Dundee.—The Infirmary contains 408 beds, including special wards for the Diseases of Women, Children, Eye, Ear, and Throat, Skin, and for Obstetric cases. There is in addition an Extern Obstetric Department. There were during last year 13,895 out-patients and 471 home (maternity) patients. The Royal Infirmary offers facilities for practical work to students. Appointments: Six qualified Resident Medical Officers (Male or Female) are appointed every six months and one Obstetric Assistant. Clinical Clerks and Dressers are attached to the Physicians and Surgeons, and students are appointed as assistants in the Pathological Department. There are in connexion with the clinical courses Tutorial Classes in Medicine and Surgery. Instruction is also given in Practical Pharmacy and Materia Medica. Further information can be obtained from the Medical Superintendent.

#### UNIVERSITY OF ABERDEEN.

The University of Aberdeen grants four degrees in Medicine and Surgery—viz., Doctor of Medicine (M.D.), Master of Surgery (Ch.M.), Bachelor of Medicine (M.B.), and Bachelor of Surgery (Ch.B.).

*Degrees of M.B. and Ch.B.*—Before commencing his medical studies each student must pass a Preliminary Examination in (1) English, (2) Latin, (3) Mathematics, and (4) Greek, or French, or German. The curriculum for the degree extends over a period of five years, during which attendance is required in the following subjects: Botany, Zoology, Physics, Chemistry (Systematic and Practical), Anatomy (Systematic and Practical), Physiology (Systematic and Practical), Materia Medica and Therapeutics, Practical Pharmacy, Pathology (Systematic and Practical), Medical Jurisprudence, Public Health, Surgery, Medicine, and Midwifery.

Candidates must attend for at least three years the medical and surgical practice of a recognised hospital; they must have attended courses of at least nine months in clinical medicine and clinical surgery, and have acted as clerk in the medical and dresser in the surgical wards of a hospital. Attendance is required on the practice of a dispensary or the out-practice of a hospital and also on courses in Mental Diseases, Fevers, Ophthalmology, Post-mortem examinations, Venereal Diseases, and other special subjects. The candidate is also required to have been properly instructed in Vaccination and to have attended at least 20 Midwifery cases.

The fee for the degrees of M.B. and Ch.B. amounts to £23 2s.

Besides the Royal Infirmary (270 beds), students have the opportunity of attending the following institutions: City Fever Hospital, Sick Children's Hospital, General Dispensary, and Lying-in and Vaccine Institutions, Royal Lunatic Asylum, Ophthalmic Institution, &c.

*Degrees of M.D. and Ch.M.*—Candidates for either of these degrees must already hold the degrees of M.B. and Ch.B. of Aberdeen. A thesis has to be presented and an examination has to be passed in Clinical Medicine (or in some special Department of Medical Science) or Clinical Surgery, as the case may be.

A diploma in Public Health is granted by the University to graduates in Medicine of a University in the United Kingdom, after a special examination.

Application for further information should be addressed to the Secretary of the Medical Faculty.

*Scholarships and Prizes.*—In the Faculty of Medicine of the University of Aberdeen there are the following Bursaries, Scholarships, and Prizes:—Bursaries: about 15 Bursaries (competition and presentation) are open each year, of £15 to £30 per annum in value, most of them being tenable for three years. Scholarships: five Post-Graduate Scholarships, value £36 to £160 per annum. Prizes and Medals: 13 Gold Medals and Prizes for proficiency in special departments, &c.

*Clinical Instruction* is given in the Aberdeen Royal Infirmary (270 beds) by the physicians and surgeons on the staff.

ABERDEEN ROYAL ASYLUM.—Contains, with hospital attached to main institution and agricultural branch, about 986 beds. Clinical instruction is given to students during three months in summer. Clerk and Treasurer, Mr. A. Scott Finnie, 343, Union-street, Aberdeen.

#### SCOTTISH MEDICAL CORPORATIONS GRANTING DIPLOMAS.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

These Colleges have made arrangements by which, after one series of examinations, held in Edinburgh or Glasgow, or both, the student may obtain the diplomas of the three Bodies.

The three Bodies grant their Single Licences only to candidates who already possess legal qualifications in Medicine or Surgery. Copies of the Regulations for the Single Licence of any of the Bodies may be had on application to the respective secretaries.

*Professional Education.*—The candidate must produce certificates or other satisfactory evidence of having attended the following separate and distinct courses of instruction: Physics, three months; Elementary Biology, three months; Chemistry, six months; Practical or Analytical Chemistry, three months; Anatomy, during at least six months; Practical Anatomy, twelve months; Physiology, six months; Practical Physiology, three months; Materia Medica, three months; Pathology (including Practical Pathology), nine months; Practice of Medicine, six months; Clinical Medicine, nine months; Principles and Practice of Surgery, six months; Clinical Surgery, nine months; Midwifery, three months; Gynaecology, one course of not less than 13 meetings; Diseases of Children, one course of not less than 13 meetings. Medical Jurisprudence and Public Health, three months. The certified attendance on lectures, demonstrations, and practical work must not be less than three-fourths of the total number of roll-calls. Every student undergoes a course of Practical Midwifery, but before attending at labours he is required to attend a course of lectures on Surgery and Midwifery and to hold the offices of Clinical Medical Clerk and Surgical Dresser. He must also attend for two and a half months instruction in Practical Pharmacy; the certificate to be signed by the teacher, who must be a member of the Pharmaceutical Society of Great Britain, or the superintendent of the laboratory of a public hospital or dispensary, or a registered practitioner who dispenses medicines to his patients, or a teacher of a class of Practical Pharmacy.

The student must attend for 27 months the Medical and Surgical practice of a public general hospital containing on an average at least 80 patients available for clinical instruction and possessing distinct staffs of physicians and of surgeons. He must act as Surgical Dresser and Medical Clinical Clerk for not less than six months in the wards in each case, and receive practical instruction in administration of anæsthetics. He must attend for six months the practice of a public dispensary especially recognised by any of the above authorities, or the out-patient practice of a recognised general hospital or act for six months as pupil to a registered practitioner who either holds such a public appointment, or has such opportunities of imparting practical knowledge as shall be satisfactory to the coöperating authorities; this attendance should be made after the student has passed the First and Second examinations.

Candidates are also required to attend the following courses: Diseases and Injuries of the Eye, three months; Insanity, three months; Infectious Diseases, three months; Gynaecology, three months; Diseases of Children, three months.

The curriculum lasts for five years, the fifth year being devoted to clinical work.

There are four professional examinations:—

*First Examination* includes Physics, Chemistry, and Elementary Biology.

*Second Examination* includes Anatomy and Physiology and Histology; and candidates may be admitted to this examination at the end of the second year of medical study.



*Third Examination* includes Pathology and Materia Medica with Pharmacology.

*Final Examination.*—The Final examination shall not be taken earlier than the end of the fifth year of study and shall embrace the following subjects:—Medicine, including Therapeutics, Medical Anatomy, and Clinical Medicine; Surgery, including Surgical Anatomy, Clinical Surgery, and Diseases and Injuries of the Eye; Midwifery and Diseases of Women; and, if not passed previously, Medical Jurisprudence and Public Health, but it is optional to candidates who have passed the Third Examination to be admitted to the subject of Medical Jurisprudence and Public Health on lodging certificates of having attended the necessary course in that subject at any time; but the subjects of Medicine, Surgery, and Midwifery shall be taken together at any time after the end of the fifth Winter Session, provided that a period of 24 months has elapsed since passing the Second Examination. All candidates shall be subjected, in addition to the written and oral examinations, to clinical examinations in Medicine and Surgery, which shall include the Examination of Patients, Physical Diagnosis, the Clinical use of the Microscope, Examination of the Urine and Urinary Deposits, Surgical Appliances, Bandages, Surface Markings, &c. The fees payable for the Final Examination shall be—for the whole examination, £15, for re-entry after rejection, £5, and for the subjects of Medical Jurisprudence and Public Health when taken separately, £5, with £3 for re-entry in that subject.

There are four periods of examination annually during the present reconstruction period, two in Edinburgh and two in Glasgow, in 1919-20. The Registrar in Edinburgh is Mr. D. L. Eadie, 49, Lauriston-place, and the Registrar in Glasgow, Mr. Walter Hurst, 242, St. Vincent-street, to whom fees and certificates must be sent for the respective examinations, and from whom further particulars concerning fees can be obtained.

#### ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH: THE MEMBERSHIP AND FELLOWSHIP.

In addition to the diplomas granted by the Scottish Conjoint Board the Royal College of Physicians grants its Single Licence to candidates already possessing legal qualifications for professional practice.

The Royal College of Physicians of Edinburgh grants a *Membership* and a *Fellowship*.

*Membership.*—A candidate, who must be a Licentiate of a British or Irish College of Physicians, or a graduate in medicine of a University within the British Empire, approved by the Council and 24 years of age, is examined in medicine, therapeutics, and in any branch of the departments of medicine specially professed, such as general pathology, psychology, public health, obstetrics, gynaecology, diseases of children, tropical medicine, or medical jurisprudence. The fee for the Membership is £36 15s., 15 guineas of which will be returned to any successful candidate who was already a Licentiate of the College at the time of qualifying for the Membership.

*Fellowship.*—The Fellows are selected from the ranks of the *Members*. The fee is £64 18s.

#### ROYAL COLLEGE OF SURGEONS OF EDINBURGH: THE FELLOWSHIP.

The Royal College of Surgeons of Edinburgh also admits to the examination for its Single Licence any candidates who hold a Diploma in Medicine of any British, Indian, or Colonial university or of any British or Colonial College of Physicians, or of the Society of Apothecaries of London or Apothecaries' Hall, Dublin, granted under the provisions of the Medical Act, 1886, whose preliminary examination and course of professional study is proved to be sufficient to fulfil the requirements of the College, or to those who have passed a full examination for any of the above. Female practitioners are now admitted to the Licence of the College but not to the Fellowship, and the regulations for the Licence apply to practitioners of either sex.

The Royal College of Surgeons of Edinburgh grants a diploma of Fellowship after examination to the holders of the surgical degrees or diplomas of such British examining bodies, as well as of the holders of such surgical degrees of the Universities of Canada, Australia, New Zealand, and the Indian Empire as are recognised by the College.

*The Fellowship.*—Candidates for the examination must be 25 years of age and must have been engaged in practice for at least two years. The examination is of a practical nature, partly written and partly *viva voce*, and must include surgery and surgical anatomy, operative surgery, and clinical practice. One optional subject must also be taken, the range of these specialisms covering nearly every branch of medicine. The fee to be paid on entering for examination for Fellowship is £45, £10 of which is remitted to those who already hold the Licentiate of the College. Candidates rejected at the examination obtain repayment of fee less £10 retained for examination expenses. One month's notice of intention to present himself for examination must be given by the candidate to Mr. D. L. Eadie, 49, Lauriston-place, Edinburgh, clerk to the College, together with credentials signed by two Fellows of the College, one of whom must be a resident in Edinburgh, unless a special application, with testimonials, be made to the President and the Council of the College.

#### THE ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

Like the preceding corporations, the Royal Faculty of Physicians and Surgeons of Glasgow grants a Fellowship and a Licence to be held as separate qualifications.

*Fellowship.*—The Fellowship of the Faculty is granted after examination in medicine or surgery, together with an optional subject, which may be anatomy or physiology or be selected from any special branch of medicine or surgery. 14 days' notice must be given by the candidate of his intention to present himself to Mr. Walter Hurst, the Faculty Hall, 242, St. Vincent-street, Glasgow. The fee for the Fellowship is £30, £10 of which sum are returned to any successful candidate who already holds the Licence of the Faculty. An additional sum of £20 is required in the case of candidates resident within seven miles of Glasgow. In certain circumstances Fellows may be elected as a mark of distinction.

*Licence.*—The Licence of the Royal Faculty is granted as a separate qualification to qualified practitioners in Medicine after examination in surgery, including surgical anatomy and clinical surgery. The fee is 15 guineas.

#### SCOTTISH PROVINCIAL ANCILLARY SCHOOLS AND HOSPITALS.

The hospitals which are recognised by the Scottish Conjoint Board, as places where professional study for their diplomas can be pursued are all those institutions which feed the medical faculties of the universities. In addition the Scottish Boards recognise all the places which are recognised by the English Conjoint Board (see p. 379) and the Irish Conjoint Board (see p. 391).

### III.—IRELAND.

#### THE UNIVERSITIES.

##### UNIVERSITY OF DUBLIN, TRINITY COLLEGE (SCHOOL OF PHYSIC).

*Matriculation.*—In order to join the School of Physic students pass a matriculation examination. University students take the Entrance of Trinity College and a Junior Freshman Term or a special Medical Preliminary; Extern Students, any examination recognised by the General Medical Council. The winter courses begin on Oct. 1st.

*Degrees in Medicine (M.B.), Surgery (B.Ch.), and Midwifery (B.A.O.).*—Candidates for these degrees must be of B.A. standing and must be for at least five academic years on the books of the Medical School, reckoned from the date of matriculation. The Arts course may be taken concurrently with the Medical course, and the B.A. degree need not be taken before the final medical examinations, but the Medical degrees are not conferred without the Arts degree. The following courses must be attended:—(1) Lectures—Systematic, Descriptive and Applied Anatomy, Chemistry and Practical Chemistry, Surgery and Operative Surgery, Histology, Botany, Zoology, Physics and Practical Physics, Physiology and Practical Physiology, Practice of Medicine, Midwifery, Pathology, Materia



Medica and Therapeutics, Medical Jurisprudence and Hygiene; (2) three courses of nine months' attendance on the Clinical Lectures of Sir Patrick Dun's or other recognised Hospital; (3) Practical Vaccination, one month's instruction; (4) Mental Disease, three months; (5) Practical Midwifery with Clinical Lectures, including not less than 30 cases, six months; (6) Ophthalmic Surgery, three months. Three groups of examinations have to be passed. Preliminary Scientific Examination, including Physics and Chemistry, Botany, and Zoology. The Intermediate Medical, Part I., including Anatomy and Physiology. The Intermediate Medical, Part II., including Applied Anatomy and Applied Physiology; and the Final Examination, which is divided into Part I., *Materia Medica*, Hygiene and Jurisprudence, and Pathology; and Part II., Medicine, including Clinical, Surgery, Midwifery, Gynaecology, Mental Diseases, Operations, and Clinical Ophthalmology. Part I. may be passed in the fourth year and Part II. completed at the end of the fifth year.

*Doctor in Medicine.*—A Doctor in Medicine must have passed all the qualifying examinations and must be a B.A. of three years' standing. He must also read a thesis before the Regius Professor of Physic.

*Master in Surgery.*—A Master in Surgery must be a Bachelor in Surgery of the University of Dublin of not less than three years' standing, and must produce satisfactory evidence of having been engaged for not less than two years from the date of his registration in the study, or study and practice, of his profession. He must then pass a special examination.

*Master in Obstetric Science.*—A Master in Obstetric Science must be a Bachelor of two years' standing and produce evidence of having been engaged in the study of Obstetric Medicine and Surgery during two years. He is then required to pass a special examination.

*Diploma in Gynaecology and Obstetrics.*—A post-graduate is conferred upon registered medical practitioners who take a six months' course at the Rotunda Hospital and a six months' course in Trinity College when they have passed a special examination.

*Bachelor in Dental Science and Master in Dental Science.*—The regulations under which these degrees are awarded can be obtained by application to the Registrar of the School of Physic.

All Degrees and Courses of Instruction are open to women students.

*Clinical instruction.*—The hospital facilities for clinical instruction available in Dublin will be described below.

#### THE NATIONAL UNIVERSITY OF IRELAND.

*Matriculation.*—All students intending to proceed to the medical degree of the University of Ireland must pass a matriculation examination, the examination taking place in June and September in Dublin and at certain local centres. All students must pass in five subjects (three of which must be Irish, English, and mathematics). All students must pass in Irish<sup>1</sup> except students not born in Ireland, and other students whose home residence shall have been outside Ireland during the three years immediately preceding their matriculation; but all such students will be expected to attend a course of instruction in Irish Literature and History prior to obtaining any degree in the University. The following are the subjects for examination:—1. Irish. 2. Latin or Greek. 3. French, German, Italian, Spanish, Portuguese, Welsh, or any other language approved by the Senate. 4. English. 5. Mathematics. 6. Latin, Greek, French,

German, Welsh, Spanish, Italian, Portuguese, or any other modern language approved by the Senate. History and Geography (*as a composite subject*), Natural Philosophy, or Physics as an alternative, Chemistry, Botany, and for women candidates only, Physiology, and Hygiene. Candidates who under the regulations are exempted from the necessity of presenting Irish as one of their subjects may present as their fifth subject either a second language or a second science subject. Students entering for degrees in Medicine or Dentistry, if already registered by the General Medical Council, may be accepted as matriculated students of the Faculty of Medicine on passing the matriculation examination in any faculty of the University.

The medical degrees granted are:—

*M.B., B.Ch., and B.A.O.; and M.D., M.Ch., and M.A.O.*—

Printed forms of application for admission to any medical examination may be had from "The Registrar, The National University of Ireland, Dublin."

The Constituent Colleges of the National University of Ireland at which the full curriculum for medical degrees can be obtained are University College, Dublin; University College, Cork; and University College, Galway.

UNIVERSITY COLLEGE, DUBLIN.—The University and the College were created by the Irish University Act, 1908, and by Charters issued in December, 1908. Former students of the Cecilia-street School of Medicine who graduated in the Royal University may become graduate members of the new College. The constitution of the College, like that of the Constituent Colleges of Cork and Galway, provides for a governing body, an academic council consisting of professors and co-opted lecturers, a body of graduate members, and a body of student members matriculated in the University. The first professors and lecturers were appointed by the Dublin Commissioners Irish Universities Act, 1908.

*Matriculation.*—Almost all the students of the College are matriculated students of the National University of Ireland.

*University Examinations in Medicine.*—The First Examination includes Physics, Chemistry, Botany, and Zoology. The examination may be taken in two parts: Part I., Physics and Chemistry; Part II., Botany and Zoology. Honours may be obtained only when both parts are taken as one examination. The Second Examination includes Anatomy and Physiology. Both must be passed at the same time. The Third Examination includes Pathology, Medical Jurisprudence and Hygiene, and *Materia Medica*.

*Degrees of M.B., B.Ch., and B.A.O.*—The Examination in Medicine, Midwifery, Surgery, and Ophthalmology includes both the theoretical and the clinical branches. No student can enter for the M.B., B.Ch., or B.A.O. until the end of the fifth year when the curriculum has been completed. The course of study is as follows:—First year.—Winter: Anatomy and Practical Anatomy (required for the Second Examination), Chemistry, Practical Chemistry, and Experimental Physics (with Laboratory Course). Summer: Zoology, Practical Zoology, Botany, and Practical Botany. Second year.—Winter: Anatomy, Practical Anatomy, Physiology, and Practical Physiology (physical and chemical). Summer: Anatomy, Practical Anatomy, Physiology, and Practical Histology. Third year.—Winter: Pathology, Surgery or Medicine, Hygiene, Medical Jurisprudence, and Practical Pharmacy. Summer: *Materia Medica* and Therapeutics, and Practical Pathology. Candidates are also required to attend a General Hospital for nine months (winter and summer). Fourth year, or fourth and fifth years.—Winter: Medicine or Surgery (the subject to be that not taken in the third year), and Midwifery and Gynaecology. Summer: Operative Surgery, Applied Anatomy, and Ophthalmology and Otology. Candidates are also required to attend a General Hospital for nine months (winter and summer), and to take instruction in Vaccination, and three months Fever Hospital. Fifth year.—If the Academic (Cillegiate) Courses are taken as above, the Courses of the fifth year will be the following: Hospital Attendance, General Hospital, nine months; Clinical Ophthalmology and Otology, three months; Practical Midwifery and Gynaecology, six months; Mental Diseases, to be attended at a Lunatic Asylum, three months. (Note.—Practical Midwifery and Gynaecology may be taken in

<sup>1</sup> The Senate has directed that candidates who presented themselves for the Matriculation Examination and who passed in certain subjects in 1912 or any previous year, may, when presenting themselves in 1920, in the remaining subjects necessary to complete the examination, select such completing subjects in accordance with the regulations as to groups of subjects which were in force in 1912. Such candidates will not be obliged to present themselves for examination in Irish. Such candidates, however, while they may select the completing subjects as above, must present themselves for examination in these subjects on the courses prescribed in each by the Regulations in 1920. Candidates who presented themselves for the Matriculation Examination, and who passed in certain subjects in 1913, when presenting themselves in 1920 in the remaining subjects necessary to complete the examination, must select such completing subjects in accordance with the regulations as to groups of subjects which were in force in 1913. The courses in such completing subjects will be the courses prescribed in those subjects respectively for 1920.



the fourth year after the Systematic Course of Midwifery but it must not be taken concurrently with the period of attendance at Fever Hospital.) The degree of M.D. may be obtained either by examination or on published work.

*Fees.*—The fees for Courses are similar to those of the other Dublin Medical Schools.

Information concerning these, and the numerous scholarships and exhibitions of the College can be obtained from the Dean of the Faculty, Professor E. P. McLoughlin.

#### UNIVERSITY COLLEGE, CORK: THE SCHOOL OF MEDICINE.

—The building is provided with a very large, well-ventilated dissecting room supplied with electric light, with physiological, toxicological, pathological, and pharmaceutical laboratories, materia medica, anatomical and pathological museums, as well as a collection of surgical and obstetrical instruments and appliances. There are well-appointed physical, chemical, and biological laboratories, and a large natural history museum in the adjoining building, and part of the College ground is laid out as a botanical garden. The plant houses are well filled with plants and are open to the students in the class of Botany. The Library contains over 50,000 volumes and is open daily during term time to students. The Medical Museum occupies a large room erected at the northern end of the medical buildings. There are Students' Clubs for men and women students of the College and various athletic clubs, the last of these holding a public meeting once in each year in the Mardyke grounds.

All students who have been admitted as matriculated students are required to attend before the President and sign the Roll of Matriculated Students. Students who may be candidates for degrees in the National University of Ireland must have passed the Matriculation Examination of that University or other recognised examination, and medical students must have passed a preliminary examination recognised by the General Medical Council. Candidates will be examined in Irish, Greek, or French or German, Latin, History, Geography, English, and Mathematics.

*Admission of Medical Students.*—Students in the Faculty of Medicine who have passed the First Professional Examination of the Conjoint Examinations of the Royal College of Physicians and the Royal College of Surgeons in Ireland, or of the Royal College of Physicians and Royal College of Surgeons of Edinburgh and the Faculty of Physicians and Surgeons of Glasgow, or of the Royal College of Physicians, London, and Royal College of Surgeons, England, may be admitted to the rank of second-year students on making application to the Council and submitting a certificate of having passed the examination. Similarly, students who have passed the Second Professional Examination of the same Colleges may be admitted to the rank of third-year students; and those who have passed the Third Professional Examination of the Dublin Colleges, or of the Edinburgh Colleges and Glasgow Faculties, may be admitted to the rank of fourth-year students.

*Residence of Students.*—There is no accommodation for the residence of students within the College, but students not living at home, or with relatives or friends, sanctioned by their parents or guardians, are required to live in a hostel or in recognised lodgings, a list of which can be obtained from the Secretary. All students are required to register their addresses each session in the book kept for that purpose in the hall porter's office, and to notify immediately to the Registrar any change of address during the session. The Honan Hostel, adjoining the College, is equipped by private endowment. A number of sets of rooms, together with recreation and common rooms, are provided for lay students who may desire to live there. For full particulars apply to the Warden. The Ursuline Convent, Blackrock, has a house of residence, quite separate from their Secondary School, for Catholic women students.

*Clinical Instruction.*—Students may attend the South Infirmary, Cork North Charitable Infirmary, the Mercy Hospital, the Cork District Lunatic Asylum, the Victoria Hospital for Diseases of Women and Children, the County Lying-in Hospital, the Cork Maternity, the Cork Fever Hospital, the Cork District Hospital, and the Cork Ear, Eye, and Throat Hospital.

Complete information with regard to class fees, scholarships, and prizes can be obtained from the Dean of the College, Professor A. E. Moore.

*South Infirmary and County of Cork General Hospital* (100 beds).—Clinical instruction is given daily in the wards. Special instruction on Diseases of Women and Children will be given in the special wards for such cases. Fee for perpetual ticket, £22 1s.; for nine months, £9 9s.; for six months, £6 6s.; for three months, £3 3s. Two resident pupils will be appointed by competitive examination. Honorary Secretary: Dr. N. I. Townsend.

*Cork North Charitable Infirmary and County and City of Cork General Hospital* (112 beds).—Clinical instruction is given daily in the wards by the physicians and surgeons. Special instruction is given to Junior Students on two days weekly. Fee for perpetual ticket, £22 1s.; for 12 or nine months, £9 9s.; for six months, £5 5s.; and for three months, £3 3s. Two resident pupils are appointed quarterly by the medical staff. All resident pupils are required to be registered pupils of the hospital. There is a special department for treatment of the eye, ear, throat, and nose, under the charge of Mr. J. Bowring Horgan, and a special dental department. Honorary Secretary: Mr. R. B. Dalton. A fully equipped Pathological Department has recently been added to the hospital.

*Mercy Hospital.*—This hospital contains 130 beds for medical and surgical cases. There is also a daily extern for medical and surgical cases, as well as for diseases of the eye, ear, and throat. Extern medical attendances for 1917 and 1918, 10,935; surgical attendances, 2361; eye, ear, nose, and throat attendances, 7200; intern patients 1918, 1558. Major operations, 698; minor operations, 643. Minor accidents, 3310. Total extern free attendances, 36,105. Two resident students. Honorary Secretary to the Staff: Dr. D. J. O'Connor.

*Cork District Lunatic Asylum.*—Psychological Medicine: A course of Clinical Lectures on Mental Disease and Allied Neuroses will be delivered in the Cork District Lunatic Asylum on Mondays and Thursdays, commencing the first Thursday in May, by the Resident Medical Superintendent. All students wishing to enter for the course are expected to attend at the Asylum at 4 P.M. on that day. All information may be had at the Asylum from the resident medical superintendent.

*Victoria Hospital (Incorporated)* (Cork).—There are 75 beds. Clinical instruction on Diseases Peculiar to Children is given. The extern department is open daily at 9.30.

*County and City of Cork Lying-in Hospital* (Erinville, Western-road; founded 1798).—This hospital contains 22 beds, an Extern Midwifery Department, Gynaecological Department, Extern Department for Women, and Child Welfare Centre. Fee for six months' attendance, including clinical lectures, £3 3s. For further particulars apply to Lucy E. Smith, M.D., secretary to staff.

*Cork Maternity* (Batchelor's Quay).—Three resident pupils are taken into the Maternity. Poor women are attended at their own homes. Clinical lectures are delivered during the session. There is an extern department for the treatment of women's and children's diseases. Fee for attendance at clinical lectures and certificate, £3 3s. Honorary secretary to staff, Dr. Henry Corby.

*Cork Fever Hospital.*—Upwards of 500 cases of various forms of fever and zymotic disease are treated yearly in this hospital. The Resident Medical Officer gives instruction in Practical Pharmacy, a certificate of which is necessary for the National University and Colleges of Physicians and Surgeons of Edinburgh.

*Cork District Hospital* (Douglas-road; 1200 beds).—This hospital includes special buildings for fever and other infectious diseases (100 beds); for children's diseases (100 beds); and a Lock hospital, the only one in the South of Ireland (80 beds). It affords an extensive field for the study of all classes of diseases, acute and chronic, including special departments for gynaecology and diseases of the skin and nervous system. The physicians and surgeons visit the hospitals every morning at 10 o'clock. Lectures and clinical instruction are given daily in the wards by the physicians and surgeons. Further particulars may be obtained from Dr. W. E. Ashley Cummins, 17, St. Patrick's-place, honorary secretary, medical staff.

*Cork Eye, Ear, and Throat Hospital* (Western-road).—This hospital is open to students attending the University College and others. Certificates of attendance for three or



six months can be obtained. The hospital contains 35 beds. Over 4000 cases are treated during the year. A course of Lectures on Ophthalmic Surgery is delivered during the session. For further information apply to Dr. Arthur Sandford, 13, St. Patrick's-place, Cork.

#### UNIVERSITY COLLEGE, GALWAY: SCHOOL OF MEDICINE.

—The College contains a well-lighted and ventilated dissecting-room and an anatomical lecture theatre; physiological, pathological, pharmaceutical, chemical, and physical laboratories; anatomical, pathological, gynaecological, and materia medica museums; as well as large natural history and geological museums and an extensive library in which students can read and from which they can borrow books. There are 12 Entrance Scholarships, value £25 each, for which Medical Students compete with other Students on the Entrance Course. In the Second, Third, and Fourth Years three Scholarships in each year, value £25 each, are reserved for Medical Students. Exhibitions of £10 and £5 are awarded on results of 1st, 2nd, 3rd, and Degree Examinations in Medicine. H. H. Stewart Scholarships (£10 a year for three years) are awarded by the University in Anatomy and Physiology at Second Medical Examination amongst Students of the three constituent Colleges. Travelling Studentships (£200 a year for two years) are offered by the University for competition amongst Medical Graduates of the three Colleges of not more than two years' standing. Women students are eligible for all College and University Degrees, Distinctions, and Prizes. There are extensive grounds, a portion of which is occupied by a Botanic Garden and a portion is at the disposal of the College Athletic Union. There are several student societies in the College, including a Biological Society. There are abundant facilities for research and Post-graduate work in the Chemistry, Physiology, and Pathology departments. There are ample facilities for Women Students. Further information can be obtained from the Registrar of the College.

*Clinical Instruction* is given in the Galway Hospital and in the Galway Union and Fever Hospitals, containing on an average 200 patients.

*Galway County Hospital* (62 beds).—Founded by Act of Parliament.

*Galway Union and Fever Hospitals* (150 beds).—Clinical instruction is given in these hospitals to the Medical Students of University College, Galway. The regulations for Scholarships tenable in the College, and the regulations for degrees and for courses can be obtained from Messrs. O'Gorman and Co., Galway.

#### QUEEN'S UNIVERSITY OF BELFAST.

There are six degrees in the Faculty of Medicine of the University—viz., Bachelor of Medicine (M.B.), Bachelor of Surgery (B.Ch.), Bachelor of Obstetrics (B.A.O.), Doctor of Medicine (M.D.), Master of Surgery (M.Ch.), and Master of Obstetrics (M.A.O.). The University also grants a Diploma in Public Health, particulars of which will be found in the University Calendar. The degrees of M.B., B.Ch., and B.A.O. are the primary degrees in the Faculty of Medicine, and are conferred at the same time and after the same course of study. No student is admitted to the final examination for these degrees until he has shown: (1) that he is a matriculated student of the University; (2) that he has completed the prescribed course of study in the Faculty of Medicine extending over a period of not less than five academic years from the date of his registration as a student of Medicine by the General Council of Medical Education and Registration of the United Kingdom; (3) that he has passed the several examinations prescribed; (4) that he has attended in the University during three academic years at least the courses of study prescribed for such degrees (the Senate may accept, for not more than two academic years of the required five, courses of study pursued in any other University or School of Medicine approved by the Senate); and (5) that he has attained the age of 21 years. Every candidate for admission as a matriculated student of the University shall pass such Matriculation Examination or fulfil such other test of fitness as may be prescribed by the Senate, which may prescribe the conditions under which students who have passed the Matriculation or Entrance Examination of any other University or College approved for

that purpose (or who have fulfilled such other test of fitness as may be prescribed) may be exempted from passing the Matriculation Examination of the University. For information as to Scholarships and Prizes inquiry should be made of the Secretary of the University.

*Primary Degrees of M.B., B.Ch., B.A.O.*—All candidates for these degrees must satisfy the examiners in the subjects of four examinations known as the First, Second, Third, and Fourth Medical Examinations respectively.

*The First Medical Examination.*—The subjects of this examination are Chemistry (Inorganic and Organic), Experimental Physics, Botany and Zoology. The examination will be divided into two parts which may be taken separately: I., Chemistry and Physics; II., Botany and Zoology.

*The Second Medical Examination.*—The subjects are Anatomy and Practical Anatomy, Physiology and Practical Physiology. Candidates who have previously passed the First Medical Examination may present themselves for this examination at the close of their second year.

*The Third Medical Examination.*—The subjects are: (1) Pathology and Practical Pathology; (2) Materia Medica, Pharmacology and Therapeutics; (3) Medical Jurisprudence; (4) Hygiene. Candidates who have previously passed the Second Medical Examination may present themselves for this examination at the close of the third year. Attendance on a course in any subject of the Third Medical Examination shall not entitle a student to a certificate of attendance unless he has previously passed in all the subjects of the First Medical Examination.

*The Fourth Medical Examination.*—The subjects are: (1) Medicine; (2) Surgery; (3) Midwifery; (4) Ophthalmology and Otolaryngology. This examination may be taken in two parts: I., Systematic; II., Clinical, Practical and Oral. Candidates who have previously passed the Third Examination may present themselves for Part I. of the Fourth Examination at the close of the fourth year, provided that they have fulfilled the necessary requirements as to attendance, &c., on the courses of instruction in the subjects of examination. Candidates who have passed Part I. of this examination may present themselves for Part II. at the close of the fifth year, provided that they have fulfilled the necessary requirements as to hospital attendance on the various clinical courses in the subjects of examination. Parts I. and II. may be taken together at the close of the fifth year. Attendance on a course in any subject of the Fourth Medical Examination shall not entitle a student to a certificate of attendance unless he has previously passed in all the subjects of the Second Medical Examination.

*Degrees of M.D., M.Ch., and M.A.O.*—These degrees are not conferred until the expiration of at least three academic years, or in the case of graduates of the University in Arts or Science of at least two academic years, after admission to the primary degrees in the Faculty of Medicine. Every candidate must show that in the interval he has pursued such courses of study, or been engaged in such practical work as may be prescribed. These degrees may be conferred by the Senate either (a) after an examination, which includes written, oral, clinical, and practical examinations; or (b) on the submission of a thesis or other evidence of original study or research, to be approved by the Faculty of Medicine after an oral or other examination of the candidate on the subject thereof.

*The Medical School.*—The Donald Currie Chemical Buildings contain a lecture theatre, a preparation room, a chemical museum, a large class-room for elementary practical chemistry, laboratories for qualitative and quantitative analysis, rooms for water and gas analysis, dark room for photographic purposes and balance room, provided with all modern appliances. The Anatomical Department contains a large and well-lighted dissecting-room, a lecture-room, a professor's and demonstrator's room, a bone-room, and a laboratory for microscopic and photographic work. The Medical Museum is in the same building. The Jaffé Laboratories for Physiology comprise a lecture theatre, laboratories for practical work in chemical physiology, histology, and experimental physiology, and in addition small private research rooms, including balance, galvanometer, and centrifuge rooms. The Musgrave Pathological Laboratory.—In this department opportunity is afforded for research in pathology and bacteriology. The department is



in touch with most of the hospitals in Belfast, and there is an ample supply of material for investigation by graduates in morbid histology, clinical pathology, and the bacteriology of infectious diseases. A course in pathology or bacteriology is given to graduates, and members of this class have an opportunity of seeing the methods employed in the various investigations carried out in the department for the Public Health Committee of the corporation in connexion with water-supply, sewage disposal, meat- and milk-supply, the diagnosis of cases of infectious diseases, &c. The certificate issued to members of the class in bacteriology qualifies for the D.P.H. degree. The Pharmaceutical Laboratory is fitted and equipped for the work of practically instructing students in the compounding and dispensing of medicines.

*Clinical instruction.*—The following institutions are recognised by the University as affording proper opportunities for clinical instruction: the Royal Victoria Hospital, the Mater Infirmorum Hospital, the Union Hospitals, the Belfast Hospital for Sick Children, the Belfast Maternity, the Ulster Hospital for Women and Children, the Ulster Eye, Ear, and Throat Hospital, the Belfast Ophthalmic Hospital, the Pardysburn Fever Hospital, and the Belfast District Lunatic Asylum.

*The Royal Victoria Hospital* (300 beds).—Women students are now admitted as resident medical pupils the same as men.

*Mater Infirmorum Hospital* (200 beds).—Honorary Secretary Medical Staff: Mr. J. B. Moore.

*Belfast Union Infirmary and Hospital* (1700 beds).—Clinical courses are given biannually, and Course for D.P.H. in Hospital. Intern. Venereal Clinic in Infirmary under Corporation Scheme. Particulars may be obtained on application, as to classes, to Dr. McLiesh.

*Hospital for Sick Children*, Queen-street (52 beds).—Honorary Secretary, Medical Staff: John McCaw, M.D.

*The Incorporated Belfast Maternity Hospital*, Townsend-street (32 beds).

*Ulster Hospital for Children and Women* (44 beds).

*Benn Ulster Eye, Ear, and Throat Hospital* (30 beds).

*Belfast Ophthalmic Hospital*, Great Victoria-street (30 beds).—Practical demonstrations by the staff and occasional clinical lectures in the subjects of Ophthalmology, Otology, and Laryngology. Clinical instruction is given daily. Fee for three months £2 2s.

*Belfast Fever Hospitals.*—City Fever Hospital, Pardysburn (330 beds); Union Fever Hospital (200 beds). Clinical Classes are held during the winter and summer sessions. Post-Graduate (D.P.H.) Classes are also held.

*Belfast District Lunatic Asylum* (1250 beds).

## IRISH MEDICAL CORPORATIONS GRANTING DIPLOMAS.

### ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

The College issues its Licences in Medicine and in Midwifery to practitioners whose names appear on the Medical Register of the United Kingdom.

*The Licence in Medicine.*—The subjects of examination are: Practice of Medicine, Clinical Medicine, Pathology, Medical Jurisprudence, Midwifery, Hygiene, and Therapeutics.

*The Licence in Midwifery.*—Candidates must produce certificates of registration. A registered medical practitioner of five years' standing may be exempted from the examination by printed questions.

*The Membership.*—Examinations for Membership are held in February, June, and November. The fee for the examination is £21 to Licentiates of the College, or £36 15s. to non-Licentiates. Further particulars can be obtained from the Registrar of the Royal College of Physicians of Ireland, Kildare-street, Dublin.

*The Fellowship.*—Fellows are elected by ballot. Applicants must have been a Member of the College for at least one year and must have attained the age of 27 years. There is a fee of £35 in addition to a stamp duty of £25.

### ROYAL COLLEGE OF SURGEONS IN IRELAND.

*The Licence in Surgery.*—A candidate whose name is entered either on the Medical Register for the United Kingdom, the Colonial Medical Register, or the Foreign Medical Register of the year in which he presents himself for examination, and who satisfies the Council that he has passed through a course of study and Examinations equivalent to those required by the Regulations of the Conjoint Board of the Royal College of Physicians of Ireland and the Royal College of Surgeons in Ireland, preceded by the passing of an Examination in Arts recognised by the General Medical Council, may, at the discretion of the Council, be admitted to the Examination.

Candidates are examined in Surgery, Clinical Surgery, Operative Surgery on the subject, Surgical Appliances, and Ophthalmic Surgery.

*Diploma in Midwifery.*—A diploma in Midwifery is granted after examination to persons possessing a registrable qualification.

*Fellowship Examinations.*—Candidates for the Fellowship shall make application to the President and Council to be admitted to examination. They are required to pass two examinations—Primary and Final. Candidates may present themselves for the Final Examination immediately after passing the Primary part, provided they have complied with the necessary regulations. The subjects for the Primary Examination are (a) Anatomy, including Dissections; and (b) Physiology and Histology. The subjects for the Final Examination are Surgery, including Surgical Anatomy and Pathology. For admission to the Final Examination the candidate must have passed the Primary Examination, and must be a Licentiate or Graduate in Surgery of a university or licensing body recognised by the General Medical Council; all such candidates must not be less than 25 years of age.

Further particulars as to fees and conditions of examination can be obtained from the Registrar of the College, Stephen's-green, West Dublin.

### ROYAL COLLEGE OF PHYSICIANS OF IRELAND AND ROYAL COLLEGE OF SURGEONS IN IRELAND.

Every candidate for the Conjoint Examinations of the Colleges shall produce evidence of having before entering on medical studies passed a Preliminary Examination in general education recognised by the Royal Colleges. Each candidate before receiving his diplomas must produce a registrar's certificate or other satisfactory evidence that he has attained the age of 21 years.

*Preliminary Examination.*—The subjects for examination are identical with those prescribed for the Preliminary Examination by the General Council of Medical Education and Registration.

*Professional Examinations.*—Every candidate must pass four Professional Examinations—at the end of the first, second, third, and fifth years respectively of his professional studies. No candidate shall be admitted to the Final or Qualifying Examination within three months of his rejection at the Final or Qualifying Examination by any other licensing body.

*First Professional Examination.*—Every candidate is required, before admission to the First Professional Examination, to produce evidence—(1) of having passed in the subjects of the Preliminary Examination; and (2) of having attended a course of—(a) lectures on Theoretical Chemistry, six months; (b) Practical Chemistry, three months; (c) Biology, three months; and (d) Physics.

The subjects of the First Professional Examination are the following:—1. (a) Chemistry; (b) Physics. 2. Biology. The fee for this examination is £15 15s.

*Second Professional Examination.*—Candidates are not admissible to this examination till they have passed in the subjects of the First Professional Examination, and they must produce evidence of having attended (a) anatomical dissections, six months; and Lectures on (b) Anatomy, six months; (c) Physiology, six months; (d) Practical Physiology and Histology, three months.

The subjects of the Second Professional Examination are the following:—(1) Anatomy; and (2) Physiology and Histology. The fee for this examination is £10 10s.

*Third Professional Examination.*—Every candidate is required, before admission to the Third Professional Examination,



tion, to produce evidence of having passed the Second Professional Examination, and certificates of having attended courses of instruction in (a) the practice of a medico-chirurgical hospital for nine months; (b) Pathology—(1) Systematic, (2) Practical, three months each; (c) Materia Medica, Pharmacy, and Therapeutics, three months; (d) Forensic Medicine and Public Health, three months. The subjects for the Third Professional Examination are the following:—(1) Pathology; (2) Materia Medica, Pharmacy, and Therapeutics; (3) Public Health and Forensic Medicine. The fee for this examination is £9 9s.

**Final Professional Examination.**—Before admission to the Final Examination candidates must have passed the Third Professional Examination and produced evidence of having attended in Division I. the practice of a medico-chirurgical hospital for two periods of nine months each (unless such evidence has been previously produced for admission in Division II.); the practice of a recognised fever hospital or the fever wards of a recognised clinical hospital, three months; clinical instruction in Mental Diseases, one month (12 attendances); lectures on Medicine, six months at a recognised medical school; of having performed the duties of medical clinical clerk in a recognised hospital for three months; of having attended a course of instruction in post-mortem examinations and demonstrations during one session. In Division II. of having attended the practice of a medico-chirurgical hospital for two periods of nine months each (unless such evidence has been previously produced for admission to Division I.); clinical instruction in Ophthalmic and Aural Surgery, three months; lectures on Surgery, six months at a recognised medical school; instruction in Operative Surgery, three months at a recognised medical school; of having performed the duties of surgical dresser in a recognised hospital for three months; of having attended a course of instruction in the practical administration of general anaesthetics. In Division III. of having attended a midwifery hospital or maternity and having been present at 20 labours, six months; instruction on vaccination, six attendances to be certified by a public vaccinator; lectures on midwifery (including diseases peculiar to women and to new-born children), six months at a recognised medical school. Candidates are recommended to present themselves in all the subjects of the Final Examination at one time, but a candidate at or after the end of the fourth year may present himself in any one of the Divisions I., II., or III., provided he has completed his curriculum as far as concerns the division in which he presents himself. The examination in at least one of the divisions must be deferred till the end of the fifth year.

The subjects of the Final Examination are: (1) Medicine, including Fevers, Mental Diseases, and Diseases of Children; (2) Surgery, Operative and Ophthalmic; and (3) Midwifery and Gynaecology, Vaccination, and Diseases of New-born Children. The fee is £6 6s. Further particulars can be obtained from Alfred Miller, the Secretary of the Committee of Management, Royal College of Surgeons, Stephen's-green, Dublin.

**ROYAL COLLEGE OF SURGEONS IN IRELAND (SCHOOLS OF SURGERY).**—The schools of surgery are attached by Charter to the Royal College of Surgeons and have existed as a department of the College for over a century. They are carried on within the College buildings and are specially subject to the supervision and control of the Council, who are empowered to appoint and remove the professors and to regulate the methods of teaching pursued. The buildings have been reconstructed, the capacity of the dissecting-room nearly trebled, and special pathological, bacteriological, public health, and pharmaceutical laboratories fitted with the most approved appliances in order that students may have the advantage of the most modern methods of instruction. There are special rooms set apart for lady students. The entire building is heated by hot-water pipes and lighted throughout by the electric light. Winter Session commences in October; Summer Session in April. Scholarships and Prizes: Carmichael Scholarship, £15; Mayne Scholarship, £8; Stoney Memorial gold medal; Operative Surgery, gold and silver medals; Barker Prize, £26 5s.; H. Macnaughton-Jones gold medal in Obstetrics and Gynaecology; and class prizes and medals. Prospectuses and guide for medical students can be obtained post free on written application to the Registrar, Royal College of Surgeons, Stephen's-green, W., Dublin.

#### APOTHECARIES' HALL OF IRELAND.

The Licence of this Hall is granted to students who present certificates of having fully completed the course of study as laid down in the curriculum and who pass the necessary examinations. The diploma of the Apothecaries' Hall of Ireland entitles the holder to be registered as a practitioner in medicine, surgery, and midwifery, with also the privileges of the Apothecary's Licence. There are three professional examinations, the total fees for which amount to 30 guineas. Women are eligible for the diploma.

There are four examinations—primary, intermediate, Parts I. and II., and final. They are held three times a year, in March, June, and December. The primary examination comprises biology, physics, theoretical and practical chemistry (with an examination at the bench). Candidates holding a Pharmaceutical licence are exempt from this subject. Intermediate, Part I., Anatomy and Physiology. Intermediate, Part II., Pathology, Medical Jurisprudence, and Materia Medica and Pharmacy. The intermediate examination comprises anatomy of the whole body (including practical dissections), physiology, practical histology, and materia medica. The final examination comprises medicine, surgery, and midwifery.

Each candidate before receiving his diploma must produce evidence that he has attained the age of 21 years. The details of the course of education required and syllabus of the examinations will be supplied on application to the Registrar at 40, Mary-street, Dublin.

#### HOSPITALS AFFORDING PRACTICE RECOGNISED BY THE IRISH UNIVERSITIES AND CORPORATIONS.<sup>1</sup>

**ADELAIDE HOSPITAL**, Peter-street, Dublin.—Fee for nine months' hospital attendance, £12 12s.; six months, £8 8s. Summer, three months, £5 5s. Two resident surgeons are elected yearly and four resident pupils half-yearly. At the termination of the session prizes in Clinical Medicine and Surgery and in Dermatology will be awarded.

**Hudson Scholarship.**—In addition to the junior prizes the Hudson Scholarship, £30 and a gold medal, as well as a prize of £10, together with a silver medal, will be awarded at the end of the session for proficiency in medicine, surgery, gynaecology, and pathology.

The certificates of attendance are recognised by all the Universities and licensing bodies in the United Kingdom. Further particulars may be obtained from Dr. H. Bewley.

**COOMBE LYING-IN HOSPITAL AND GUINNESS DISPENSARY FOR THE TREATMENT OF DISEASES PECULIAR TO WOMEN**, Dublin.\*—This hospital contains nearly 70 beds and consists of two divisions, one of which is devoted to lying-in cases and the other to the treatment of diseases peculiar to women. The practice of this hospital is one of the largest in Ireland. Lectures are delivered, practical instruction given, and gynaecological operations are performed in the theatres daily. There is a general dispensary held daily, at which instruction is given on the Diseases of Women and Children. There is a special afternoon dispensary held by the Master and his assistants, at which practical instruction in gynaecology is given. There is no extra charge for attendance at this dispensary. There is accommodation for intern pupils who enjoy exceptional advantages of acquiring a thorough knowledge of this branch of their profession. Lady medical students can reside in the hospital. The residents' quarters are comfortable. Clinical assistants are appointed from amongst the pupils as vacancies occur. Certificates of attendance at this hospital are accepted by all licensing bodies. Fees: Extern pupils for full course of six months, £8 8s.; three months, £4 4s. Intern pupils, one month, £4 4s.; each consecutive month, £3 3s.; six months, £18 18s.; board and lodging in the hospital, 25s. per week. Lady students, intern, one month, £4 4s.; each consecutive month, £3 3s. Registration fee, in advance, 10s. 6d. Students can enter for attendance at any time, but preference is given to those entering from the first day of the month. Further particulars may be had on application to the Master or the Registrar at the hospital.

<sup>1</sup> This list of the institutions recognised by the Conjoint Board of Ireland is supplemented in the regulations of the Colleges by those hospitals mentioned as recognised institutions in Scotland and England. The recognised facilities for clinical instruction in Belfast, Cork, and Galway have been described in connexion with the Belfast and National Universities.

\* No returns.



**SIR PATRICK DUN'S HOSPITAL**, Grand Canal-street, Dublin.—Classes both in Medicine and Surgery are held each morning from 9 o'clock from Oct. 1st till the end of June. Special classes for junior students will be held in the wards during the months of October, November, and December. A Resident Surgeon, with salary, is appointed annually. Six Resident Pupils are appointed each half-year. Six Surgical Dressers and six Clinical Clerks are appointed each month. There are facilities for women students.

*Prizes and Medals.*—Clinical medals and prizes amounting to about £15 each will be awarded in Medicine and in Surgery respectively in accordance with the will of the late Rev. Samuel Haughton, M.D., S.F.T.C.D. Candidates who fail to obtain these medals and prizes will be awarded special certificates in Medicine and in Surgery provided they show sufficient merit.

*Fees.*—Winter and summer session, £12 12s.; winter session (six months), £8 8s.; and summer session (three months), £5 5s. Special certificate in anaesthetics, £1 1s. The practice of this hospital is open to all students, and the certificates are recognised by Dublin University, the National University and Royal Colleges of Surgeons of England, Ireland, and Scotland.

Further information will be supplied by the Hon. Secretary to the Medical Board.

**JERVIS-STREET HOSPITAL**, Dublin.—Founded 1718; rebuilt 1886. 130 beds. A new out-patient department has been completed and contains all modern requirements. Secretary: Mr. Kieran O'Dea.

**MATER MISERICORDIE HOSPITAL**, Dublin.\*—This hospital, the largest in Ireland, containing 345 beds, is open at all hours for the reception of accidents and urgent cases. Clinical instruction will be given by the Physicians and Surgeons at 9 A.M. daily. Ophthalmic Surgery will be taught in the Special Wards and in the Dispensary. Surgical Operations will be performed daily. Connected with the hospital are extensive Dispensaries, which afford valuable opportunities for the study of general Medical and Surgical Diseases, and Accidents. Instruction will be given on Pathology and Bacteriology. Three House Physicians, six House Surgeons, and 16 resident pupils will be elected annually. Dressers and Clinical Clerks will also be appointed, and certificates will be given to those who perform their duties to the satisfaction of the staff. Leonard Prizes will be offered for competition annually. For further particulars see prospectus. Certificates of attendance upon this hospital are recognised by all the Universities and licensing bodies in the United Kingdom. A Private Hospital has been opened for the reception of Medical and Surgical cases. A Training School and a Home for Trained Nurses have been opened in connexion with the Hospital.

*Terms of attendance.*—Nine months, £12 12s.; six winter months, £8 8s.; three summer months, £5 5s. Entries can be made with any of the physicians or surgeons, or with the Registrar, Dr. Martin Dempsey, 35, Merrion-square. A prospectus containing in detail the arrangements for Clinical Instruction, Prizes, &c., may be obtained from the Secretary, Medical Board, Mr. A. Blayney, 15, Merrion-square.

**MEATH HOSPITAL AND COUNTY DUBLIN INFIRMARY.**—This hospital was founded in 1753 and now contains 166 beds available for clinical teaching. A building containing 40 beds for the isolated treatment of fevers is attached to the hospital. The certificates of this hospital are recognised by all the universities and licensing bodies of the United Kingdom. Six Medical Clinical Clerks and 12 Surgical Resident Pupils and Dressers are appointed every six months, and House Surgeons and Clinical Assistants are elected annually. A prospectus giving the complete arrangements for the coming session may be obtained from the Honorary Treasurer of the Medical Board, Sir L. H. Ormsby, 92, Merrion-square, Dublin.

**MERCER'S HOSPITAL.**\*—This hospital, founded in 1734, is situated in the centre of Dublin, in the immediate vicinity of the Schools of Surgery of the Royal College of Surgeons, the Catholic University School of Medicine, and within five minutes' walk of Trinity College. It contains 120 beds for medical and surgical cases, and arrangements have been made with the medical officers of Cork-street Fever Hospital whereby all students of this hospital are entitled to attend the clinical instruction of that institution and become

eligible for the posts of Resident Pupil, &c. There is a large dispensary for out-patients. Students of the hospital are permitted to attend the gynaecological department, where they receive practical instruction. There are special wards for the treatment and study of children's diseases. During the past few years the hospital has undergone extensive alterations in order to bring it up to modern requirements.

*Appointments.*—A House Surgeon is appointed annually. There are Five Resident Pupils, and Clinical Clerks and Dressers are appointed monthly from amongst the most deserving members of the class. Women students are admitted.

*Fees.*—Winter, six months, £8 8s.; Summer, three months, £5 5s.; nine months, £12 12s.

For further particulars apply to Dr. Bethel Solomons, Hon. Sec., Medical Board, 42, Fitzwilliam-square, Dublin.

**NATIONAL MATERNITY HOSPITAL**, Holles-street, Dublin.—Established 1894. The Hospital consists of an Intern and Extern Maternity, and a Dispensary for the treatment of Diseases of Women and Children. About 1000 cases are admitted and over 300 operations are performed annually. Every facility is given for the carrying out of practical work. Post-graduate and special courses are arranged for at any time. Certificates of attendance at this hospital are recognised by all the licensing bodies. Terms (three months' course) 6 guineas. Board 25s. per week. Further particulars can be obtained from the Masters: Sir Andrew Horne, 94, Merrion-square, Dublin; Dr. Reginald J. White, 23, Merrion-square, Dublin; or from the Secretary, Holles-street, Dublin.

**RICHMOND, WHITWORTH, AND HARDWICKE HOSPITALS** (HOUSE OF INDUSTRY HOSPITALS), Dublin.—These hospitals contain 330 beds—130 for Surgical cases, 80 for Medical cases, 78 for Fever and other Epidemic Diseases, and an Auxiliary Wing of 42 beds for sick soldiers. A Resident Physician and a Resident Surgeon are appointed each half year and are paid for their services. 12 Resident Clinical Clerks are appointed each quarter and provided with furnished apartments, fuel, &c. These appointments are open not only to advanced Students but also to those who are qualified in Medicine and Surgery. The Dressers are selected from among the best qualified of the pupils without the payment of any additional fee. Women students are eligible for election as residents and special apartments are reserved for their use. For prospectuses apply to Mr. Adams McConnell, F.R.C.S.I., Hon. Secretary, 69, Fitzwilliam-square, Dublin. The sad pecuniary position of the House of Industry Hospitals is giving much anxiety to the city of Dublin. It seems that they will have to be closed unless the authorities can find means to support them.

**ROTUNDA HOSPITAL**, Dublin.—This institution is the largest combined gynaecological and maternity hospital in the British Empire. Nearly 4000 confinements attended annually. Students can take out their necessary gynaecological and midwifery practical courses. Appointments open to qualified practitioners as Assistant to the Master and Extern Assistants. Women students can reside in the hospital on terms similar to those for men. For further particulars apply to the Master.

**ROYAL CITY OF DUBLIN HOSPITAL.**—Founded 1832; enlarged 1851; rebuilt 1893. 150 beds. There is a special wing for the treatment of fevers and contagious diseases founded by the late Mr. Drummond. Secretary: Mr. Edw. B. Armstrong.

**ROYAL VICTORIA EYE AND EAR HOSPITAL**, Dublin.—Established 1844. Incorporated 1897. 102 beds. In-patients, 1311; out-patients, 9481. Two house surgeons appointed annually.

**DR. STEEVENS' HOSPITAL**, Dublin.—Established 1720. 250 beds. Patients, 12,834. Secretary: Mr. R. J. Ogden.

**ST. VINCENT'S HOSPITAL AND DISPENSARY**, Dublin.—Established 1834. 200 beds.

WE have received from the Deans and Secretaries of the various centres the corrected lists of the teachers at the schools and of the medical staffs of the hospitals at which clinical education is being carried on. We take the opportunity of thanking these officers for their valuable co-operation, as it enables us to keep the lists revised for reference. We hope to publish the lists in an early issue; they are not yet complete.

\* No returns.



# THE LANCET.

LONDON: SATURDAY, AUGUST 30, 1919.

## The Future of the Medical Profession.

THE educational medical year opens in circumstances so uncertain, so involved, and in many directions so difficult for the medical profession, that those for whom the Students' Number is primarily issued may be excused if they can know little of their worldly prospects. Indeed, we think it is well that this should be so; for the greatest driving force which the medical student can possibly possess is his desire to get into the service of healing, whatever the conditions may be. The best student is he whose first object is to gain admission to this service, influenced by the certainty that he may become a power for good, and undeterred by the warnings of self-interest. We are not, however, suggesting that the conditions of medical service are at the moment particularly unpromising, or even ominous, because they happen to be sharing in an all-pervading social muddle. The whole of our advanced civilisation is in flux, and all the world rings with the cries of reorganisation and reconstruction. In every country leaders of men, made to admit by the revelations of the war the many weak joints in their social armour, have resolved that those joints shall be mended or that armour of a new pattern shall be employed. But for the moment there is necessarily more confusion than reconstruction, and, alas! more words than deeds. This cannot be helped. The necessary qualities in these days of transition are hope and belief—hope that the endurance which has carried us through days of trial will be with us in those of reaction, and belief that knowledge will triumph over ignorance, when inequalities will be righted by a general sense of justice. For there is only a certain amount of happiness to go round. That truism, brought home to us by the necessity of maintaining to-day the food control at first instituted as a war measure, is not sufficiently remembered. It is an unfortunate, though pardonable, fact that the protagonists of different reforms, in single-hearted intent to secure along their own lines the best of everything for everybody, postulate the depriving many other people of things essential to prosperity. Such champions of individual views forget that there may not be enough happiness to go round. There has to be throughout the world an immense amount of give-and-take, or what happiness that exists will undergo no fair division. This is universally true; but medicine is, perhaps, more sorely tried than any vocation in the position thus set out, for medicine enters into all the activities of the world, epitomises by its exploits the most

poignant and permanent virtues which citizens can display for the good of others, and probes in its daily life the wants and miseries of all sorts and conditions of men, codifying, evaluating, and, where possible, remedying them. No class like the medical class is so much part and parcel of the intimate lives of everybody else, and, as a consequence, the muddles of all the other sections of the population are reflected in the life of the general practitioner. The medical student must not at the outset of his career allow his equanimity to be disturbed by prophecies of ill in the future or by fables of the resplendent past. He has chosen a high calling for its own sake, and a high calling it must always be. It is our belief, also, that he has chosen a calling whose value to the State is in a better way to receive public and material acknowledgment than heretofore.

He who joins our ranks to-day begins his medical life under the aegis of the Ministry of Health—a new Government Department designed at one and the same time to provide for the people an efficient and orderly medical service and to secure for the members of that service the best means of discharging their important functions. Such a Government Department has long been desired, and it is impossible that its activities should fail to operate in the near future to the advantage of medicine. There is at the present moment in the country a large number of young medical men at a loose end. Many of them are full of new experiences, and they are not finding opportunities for bringing those experiences to market in such a way that they can obtain good terms. The undoubted hardship felt by many of the medical men returning from war to practice must not dash the spirits of the recruits; and those who in this generation are suffering from the helplessness of medicine as an unorganised calling should be ready for united action, which will be of present worth, but whose benefit to future practitioners must be very great. Some genuine form of union is needed: some way by which we can find out what is the right medical view and what is the proper public claim, and can adjust these two things to the common satisfaction. A number of administrative or subadministrative posts, carrying regular salaries, and graded not only in accordance with the importance of the responsibilities incurred, but in accordance with the time to be taken up, will probably come into being soon; and it may be presumed that many of these posts will be part-time offices. Reorganisation of panel practice, which in some directions is imminent, will certainly place at the disposal of young medical men many chances of obtaining an assured livelihood and good scope for general or special clinical knowledge. When the panel practice, over and above the flat-rate payments of subscribers, brings with it a part-time appointment the aggregate emolument will make the young medical man far better paid at the opening of his career than his father or his grandfather could ever have expected to be, had he joined our profession. Hitherto the one



great and condemnatory criticism of the position has been that while the start is so fair the sequel holds no greater promise. In panel practice a man may make almost at the outset what turns out to be his maximum income. It is clear to everyone that in the public employment of the future some flexible system of promotion will have to be laid down, so that the inexperienced man does not receive as much money as his senior. The income from panel subscribers can only go up if the practitioner increases the size of his panel, and while for physical reasons this may be an impossibility for public as well as scientific reasons, it is an undesirable form of success. Justifiable comment on the position of panel practice has always been that the good start does not necessarily ensure the good future, and if we had come as a profession to any common conclusion we should realise that this is the main direction in which panel practice requires reform, once the question of proper emolument has been settled. But the meaning of all this is that general practice in Great Britain, as we have hitherto understood it, is largely in the melting-pot. In a few years' time there may no longer be a group of family practitioners having sole charge of the health of certain districts, each of them supposed to represent all the medical and surgical wisdom required in that district, save where the Ministry of Health, as medical heir to the Local Government Board or the Board of Education, annexes a portion of the burden and therefore of the remuneration. But the destruction of the old-time practices will go hand-in-hand with added opportunity, both for specialisation and for the passage from the ranks of general practice to those of hospital surgeon and physician and scientific expert. For as there will be no segregated class of general practitioner, so there will be no segregated class of hospital officer and scientific expert. The provincial hospitals, becoming centres of scientific medicine in their localities, will be officered by men who, by fusion of duty with the general practitioners of the neighbourhood, will make of the whole of the medical officers one general scheme for the good of the populace. The medical men of the district will have beds in their own hospitals, and will receive for their patients the consultative advice of their fellows and the assistance supplied by a laboratory of chemical research.

This is rather a picture of the future, but it is not so much an imaginary one as the common derivative from many schemes for reconstruction and reorganisation. The new recruits of medicine will be placed in regard to these large changes in a more favourable position than the young practitioners immediately preceding them, whose professional prospects have been so involved with the struggles of war. Our new students, having at least five years to wait before material conditions of life affect them, will find many modifications of practice, amounting to large revolutions, quietly

arranged, and, we hope, for the common good. The difficulty in which the young practitioners who desire to settle down in general practice are now placed is that they have little evidence which developments are inevitable and which will be for their material good. These young men have seen many things and done many things, and while some find the prospect of private practice humdrum, others find it attractive, but the future depressingly doubtful. To these, as to the students of to-day, we suggest that it requires no great spirit of prophecy to say that all things in the social world are working in favour of a properly treated and properly remunerated medical profession. The position of medicine has risen steadily in public esteem, the association of medicine with every form of domestic, national, and international politics alike has become very close, and the demand for medical counsel in every direction will grow keener. The profession must gain in strength under such public support, and it is impossible that the question of emolument can always be decided in the future against medical interests. These things being so, let us remember that while the medical life has many charms, the work to be done is anxious and exacting beyond the reach of adjectives, while the portals of entrance are strictly kept. For this reason, as well as for reasons connected with the suspension during the war of medical education, it will be a long time before there is an over-supply of medical men. At the present moment young men are sorely needed in civil and in official or service circles. The conditions of service in the Army and Navy, Indian Medical Services, and the Colonial Medical Service have been steadily improved into attractive terms. And just as these services cannot very well challenge each other in rates of pay, so their rates of pay must influence civilian rates and maintain a good standard all round. Thus young men who are choosing the medical profession as a career will find that they have chosen wisely, apart from the delight and utility of the life. They are entering a profession which tends to be well paid, and the advent of the Ministry of Health on the scene must turn all the circumstances to the favour of medicine in the end, even though we have a trying time of transition. It is, however, to be regretted deeply that during this time no form of political union among medical men is really effective to help the profession in arriving at proper terms. The British Medical Association, a powerful body, speaks for half the medical profession, but not, and very properly not, in unanimous sense on many questions. The British Federation of Medical and Allied Societies has a brave programme, and if properly supported should gain for the medical profession a sympathetic hearing from the public, but the size and good sense of its design must make a larger appeal to practitioners before its influence can be felt. Some channel through which the current of medical opinion can reach the stream of public action is needed.



## THE NAVAL, MILITARY, INDIAN, AND AIR FORCE MEDICAL SERVICES.

THE conditions of service in the medical departments of the Royal Navy, the Army, and Indian Army have considerably changed for the better since (and previous to the war) we had occasion to give a résumé of those conditions to our readers. It will be seen that in some particulars our account is imperfect, but formal approval has not yet been received for the revised rate of pay in all three services, and in certain places the conditions are open to change. Common sense, however, tells us that an attempt will be made to equalise the rates of pay.

The medical service of the Royal Air Force had, of course, no existence before the war. The conditions here can only be described in general terms.

### ROYAL NAVAL MEDICAL SERVICE.

#### REGULATIONS.

FOLLOWING are the Regulations for the entry of candidates for commissions in the Medical Department of the Royal Navy. A copy of the regulations can be obtained, together with the form to be filled up, on application to the Medical Director-General.

Every candidate for admission into the Medical Department of the Royal Navy must be not under 21 nor over 28 years of age on the day of the commencement of the competitive examination. He must produce an extract from the register of the date of his birth; or, in default, a declaration made before a magistrate, from one of his parents or other near relative, stating the date of birth.

He must declare (1) his age and date and place of birth; (2) that he is of pure European descent and the son either of natural-born British subjects; (3) that he labours under no mental or constitutional disease or weakness, nor any other imperfection or disability which may interfere with the most efficient discharge of the duties of a medical officer in any climate; (4) that he is ready to engage for general service at home or abroad, as required; (5) whether he holds, or has held, any commission or appointment in the public services; (6) that he is registered under the Medical Act, giving the date of his registration as a medical student, or of his beginning professional study; and (7) whether he has previously been examined for entry in the Naval Service, and, if so, when.

The certificates of registration and birth must accompany the declaration, which is to be filled up and returned as soon as possible, addressed to the Director General, Medical Department, Admiralty, London, S.W., to permit of reference to the candidate's medical school. The Dean or other responsible authority of such school will be requested by the Medical Director-General to render a confidential report as to the candidate's character, conduct, professional ability, and fitness to hold a commission in the Royal Navy. The candidate will then be interviewed by the Medical Director-General, and his physical fitness will be determined by a board of Naval Medical Officers. The Medical Director-General will then decide whether he may be allowed to compete. If accepted, the candidate will be eligible to present himself at the entrance examination, which will be held twice a year. Notification of the exact date of this, as well as the number of commissions to be competed for, will be advertised in THE LANCET. Candidates will be examined in the following subjects: (a) Medicine, including Medical Pathology and Therapeutics; and (b) Surgery, including Surgical Pathology and Clinical Surgery. The examination will be partly written and partly practical, marks being allotted under the following scheme:—

Medicine.				Surgery.			
Paper ... ..	400	Paper ... ..	400	Paper ... ..	400	Paper ... ..	400
Clinical ... ..	400	Clinical ... ..	400	Clinical ... ..	400	Clinical ... ..	400
Oral ... ..	400	Oral ... ..	400	Oral ... ..	400	Oral ... ..	400
Total ... ..	1200	Total ... ..	1200	Total ... ..	1200	Total ... ..	1200

No candidate will be considered eligible who obtains less than 50 per cent. of marks in each subject. The examination will be held in London and will occupy four days.

The appointments announced for competition will be filled from the list of qualified candidates, arranged in order of merit; but should it at any time be considered expedient to grant Commissions beyond those periodically competed for, the Admiralty have power to admit annually not more than six candidates, according to requirements, specially recommended by the governing bodies of such Colonial Universities as may be selected and whose qualifications are recognised by the General Medical Council. Candidates so proposed are to be approved by the Director-General of the Medical Department of the Navy. Colonial candidates will have to pass a physical examination before a board of Naval Medical Officers in their colony, and will be required to register their qualifications on arrival in England. They will be allowed, if they wish it, to compete at the next examination for entrance and take their position according to the order of merit; should they decide not to compete they will be placed at the bottom of the list. It will, however, be necessary in any case for them to pass a qualifying test at the time of the usual half-yearly examinations, when they will be required to obtain a minimum of 50 per cent. of the total marks in each subject. In case of failure in this test examination the Admiralty will not undertake to defray the cost of the return journey to the candidate's colony or other expenses thereby incurred. A fee of £1 will have to be paid by each candidate to entitle him to take part in the competition.

Candidates who have served in the Officers Training Corps, and who are in possession of the certificates laid down in the regulations for

that Corps, will be credited at the entrance examination with additional marks as follows: Candidates in possession of Certificate A will receive 1 per cent., and those who possess Certificates A and B 2 per cent. of the maximum number of marks allotted.

A candidate will not be allowed to compete at more than two examinations.

A candidate successful at the entrance examination will be appointed as Acting Surgeon-Lieutenant in the Royal Navy and will be required to pass through such courses of instruction as the Admiralty may decide. At the end of the courses the acting surgeon-lieutenant will be examined and after he has passed will be given a commission as Surgeon-Lieutenant in the Royal Navy. The commission will date from the day of passing the entrance examination. An acting surgeon-lieutenant who fails to qualify in the above examination (i.e., who fails to get 50 per cent. of marks in each subject of the Greenwich and Haslar courses) will be allowed a second trial at the next examination, the period between the two examinations not being counted as service for either promotion, withdrawal with gratuity, or retirement after 20 years' service, and should he qualify he will be placed at the bottom of his list; should he again fail his appointment will not be confirmed and he will be required to withdraw.

A gold medal, a silver medal, and three navy regulation pocket cases will be awarded as prizes in connexion with these examinations, and the gold medalist will have a distinguishing mark after his name in the Navy List, provided he obtains 75 per cent. of the aggregate maximum.

Surgeon-Lieutenants on entry are only required to provide themselves with a regulation pocket case of instruments. Acting Surgeon-Lieutenants need only provide themselves with undress and mess uniforms.

A candidate, who at the time of passing the examination for entry holds or is about to hold an appointment as Resident Medical or Surgical Officer in a recognised civil hospital, may be allowed to serve in such civil appointment, provided that the period of such service after the date of entry into the Royal Navy does not exceed one year. Pay from Naval funds will be withheld from officers while thus serving, but the time concerned will reckon for increase of full and half pay while on the active list, and retired pay or gratuity on retirement or withdrawal; except that no officer will be allowed to retire on a gratuity until he has completed four years' service, exclusive of the time spent as Resident Medical or Surgical Officer. The eligibility of this appointment to count for time will be decided by the Medical Director-General.

The seniority of Surgeon-Lieutenants on entry will be determined by the sum total of the marks they obtain at the London examination and those at the conclusion of their probationary period as Acting Surgeon-Lieutenant. Their names will then be placed in the official navy list. Candidates who hold, or are about to hold, a post as resident medical or surgical officer to a recognised civil hospital will retain the position in the list which they obtained on entry, and when their period of service as resident officer is over they will join the next Acting Surgeon-Lieutenant's course and will be required to obtain qualifying marks. Surgeon-Lieutenants entered without competition will take seniority next after the last Surgeon-Lieutenant entered at the same time by competition.

A Naval Medical School has been established at the Royal Naval College, Greenwich. As the nucleus of an Instructional Staff two Surgeon-Commanders fill the posts of Professor of Bacteriology and Clinical Pathology and Professor of Hygiene. The course of instruction for Acting Surgeon-Lieutenants is six months in duration, two of which are passed at Greenwich in the study of Tropical Medicine, Bacteriology, Pathology, and Hygiene; and the remaining four at Haslar in the study of Naval Hygiene, Recruiting, Physical Training, Diving, Submarine Work, Radiography, Anaesthetics, Dentistry, &c. A Surgeon-Commander superintends these studies at Haslar and fills the post of Lecturer on Naval Hygiene. At the conclusion of the six months' course an examination is carried out as above mentioned.

#### Post-Graduate Instruction and Examination for the Rank of Surgeon-Lieutenant-Commander.

The post-graduate instruction of Naval Medical Officers consists of two courses: (1) A five months' course before promotion to Surgeon-Lieutenant-Commander; (2) a second course of three months for officers of not less than 14 years' seniority. The first course is compulsory for all Surgeon-Lieutenants, and is followed by examination before the Medical Examining Board in London, in order to qualify for promotion to Surgeon-Lieutenant-Commander. The course is to be taken when the surgeon has between three and five years' seniority, as near the latter date as practicable. These courses take place twice a year. There are six compulsory subjects: Clinical Medicine and Surgery, Operative Surgery, Practical Anaesthetics, Ophthalmology, Clinical Pathology, and Hygiene; and two optional subjects: Diseases of the Throat, Nose, and Ear, and Skiagraphy. A Surgeon-Lieutenant who fails to obtain a pass will be allowed a second trial; if again unsuccessful, he will be compulsorily retired with such gratuity as the Admiralty may see fit to grant.

Instruction in clinical pathology and hygiene, and skiagraphy is given at the Naval Medical School; the other subjects are studied at civil hospitals in London, as may be arranged by the Medical Director-General. The Surgeon-Lieutenants going through the course are accommodated at the Royal Naval College, Greenwich, under the general control of the President; their instruction being supervised by the Professor of Hygiene.

The second course is not compulsory, but is designed to afford senior officers an opportunity for refreshing their knowledge of surgery and medicine, and making themselves familiar with modern advances. There will not be any fixed syllabus, but arrangements will be made to meet individual requirements. The officers attending the course will also be accommodated at Greenwich.

Voluntary classes for instruction of about six weeks' duration are held at the Naval Hospitals at the three home ports (Chatham, Haslar, Plymouth) for the benefit of medical officers of ships and establishments at these ports, to whom every facility will be afforded for the study and practice of bacteriology, clinical pathology, skiagraphy, &c., in the hospital laboratories, a report being forwarded to the Admiralty at the close of each course.

#### Promotion to Surgeon-Lieutenant-Commander.

(a) Rank as Surgeon-Lieutenant-Commander will be granted, subject to their Lordships' approval, to Surgeon-Lieutenants at the expiration of

<sup>1</sup> If any doubt should arise on this question the burden of clear proof that he is qualified will rest upon the candidate himself.



six years from the date of entry, provided they are recommended by the Medical Director General, have served at sea for three years, and have passed the qualifying examination for this rank. (b) Special promotions will be made at their Lordships' discretion to the rank of Surgeon Lieutenant-Commander in cases of distinguished service or conspicuous professional merit. Such promotions will be exceptional and not exceed the rate of one a year. The total number at any one time of Surgeon Lieutenant-Commanders holding that rank by such special promotions will not exceed eight. These limitations do not apply to promotions for gallantry in action.

(c) *Accelerated Promotion.*—Certificates will be granted at the qualifying examination for Surgeon Lieutenant-Commander as follows:—50 per cent. of marks for a pass; 75 per cent. for a first class, and 85 per cent. for a special certificate. An officer obtaining a first class is eligible for an advance of 12 months' seniority, and one obtaining a special certificate for 18 months' seniority; this acceleration will not be granted on examination results alone, and an officer must also be recommended as deserving of advancement. The amount of seniority allowed may be reduced, if considered advisable by the Director General; and if a Surgeon-Lieutenant fails to pass at the first attempt, the results of a second successful trial will not count towards accelerated promotion.

#### *Promotion to Surgeon-Commander.*

(a) Subject to the approval of the Lords Commissioners of the Admiralty rank as Surgeon-Commander will be granted to Surgeon Lieutenant-Commander at the expiration of six years from the date of promotion to Surgeon Lieutenant-Commander, provided they are recommended by the Medical Director General, have served in that rank at sea for three years, and have not declined service except for reasons which in the opinion of the Lords Commissioners of the Admiralty are satisfactory. (b) Special promotions from the rank of Surgeon Lieutenant-Commander to that of Surgeon-Commander will be made at their Lordships' discretion in cases of distinguished service or conspicuous professional merit. Such promotions will be exceptional and will not exceed the rate of one in two years; the total number at any one time of Surgeon-Commanders holding that rank by such special promotions will not exceed six; these limitations do not apply to promotion for gallantry in action.

Promotions to Surgeon Rear-Admiral and Surgeon-Captain will be made strictly by selection, and will be confined to officers who have proved themselves to be fitted, both professionally and as administrators, for these ranks. For advancement to Surgeon-Captain two years' sea service in the rank of Surgeon-Commander will be required, or five years' combined service at sea in the ranks of Surgeon-Commander and Surgeon Lieutenant-Commander.

#### *Miscellaneous.*

The special attention of candidates is directed to the following rules under which officers are allowed to withdraw from the service after four years' full pay service in the Royal Navy, with the advantage of joining the Reserve of Naval Medical Officers:—

After four years' service in the Royal Navy, an officer, if he wishes, may pass from active service to the Reserve of Naval Medical Officers, when he will reap the following advantages:—

- (1) He will be granted a gratuity of £500 on passing into the Reserve.
- (2) His name will be retained in the Navy List; he will retain his naval rank and be entitled to wear his naval uniform under the regulations applying to officers on the retired and reserved lists of His Majesty's Navy.
- (3) If he agree to remain in the Reserve for four years he will receive a retaining fee of £25 per annum. If at the expiration of this period he agree to remain in the Reserve for a further period of four years he will continue to receive the same retaining fee.

Should an officer prefer it, however, he may simply enter the Reserve for a period not exceeding eight years, with power to give six months' notice of his intention to resign his position at any time (in which case he will receive no retaining fee). He may also adopt this method of Reserve service after the expiration of four years served under the conditions referred to in (3), by renouncing his retaining fee for his last four years' service in the Reserve.

No officer will be allowed to remain in the Reserve for a longer period than eight years. Whilst belonging to the Reserve, officers must report any change of address to the Secretary of the Admiralty.

Any officers who from residence abroad, physical disability, or for other reason may be considered by the Admiralty to be not immediately available for service, if required, will be liable to removal from the Reserve and forfeiture of retainer.

Officers of the Reserve will be liable to serve in the Royal Navy in time of war or emergency. When called up for such service they will receive the rate of pay—viz., 23s. a day and allowances—to which they would have been entitled after four years' service on the Active List, and an outfit allowance of £20.

A limited number of active or retired medical officers are appointed Honorary Physician or Honorary Surgeon to the King. There are three good service pensions of £100 a year; two Greenwich Hospital pensions of £100 a year; and 13 of £50 a year awarded to Naval Medical Officers. The Gilbert Blane gold medal is awarded every year to the medical officer who obtains the highest aggregate marks at the promotion examination to Surgeon Lieutenant-Commander, held at the Royal Naval Medical School, Greenwich. Once in every five years a gold medal and £100, the Chadwick Naval or Military Prize, is presented to a naval or military medical officer who has specially assisted in promoting the health of the men in the Navy or Army.

A special cabin will be appropriated to the Surgeon-Commander or Surgeon Lieutenant-Commander, or the Surgeon-Lieutenant in charge of the medical duties in each ship. Medical officers not in charge will select their cabins, according to their rank and relative seniority, with other ward room officers.

Relative rank is accorded to medical officers as laid down in the King's Regulations and Admiralty Instructions.

Temporary Surgeon Lieutenants transferring to the permanent Service will be allowed to count seniority from date of original entry if their application to transfer is approved by the Board of Admiralty.

#### *Retired Pay.*

Surgeon Rear-Admiral, £900; service, 27 years. Addition for each additional year or fraction for each year short, £22.

Surgeon-Captains retire at the age of 55, maximum retired pay, £900.

Surgeon-Commanders retire at 50, maximum retired pay £600. Lieutenant-Commanders and Lieutenants retire at age of 45, maximum retired pay £450.

#### *Widow's Pension.*

Widows' pensions and compassionate allowances for children are given under the conditions as specified in the King's Regulations and Admiralty Instructions.

When an officer retires on a gratuity or withdraws on a gratuity his widow and children will have no claim to pension or compassionate allowance.

The fact of an officer retiring on pension does not deprive the widow or children of any claim to pension if they are so entitled at the time of his retiring.

Officers serving in the Reserve, who during re-employment are injured on duty or lose their lives from causes attributable to the Service, come under the same regulations as regards compensation for themselves or pensions and compassionate allowances for their widows and children as officers of the same rank on the permanent Active List.

#### THE PAY OF NAVAL MEDICAL OFFICERS.

The following improvements in the rates of full, half, and retired pay of naval officers have been approved by the Government after consideration of the report of the Board of Admiralty upon the recommendations of the subcommittee of Admiral Jerram's Committee, presided over by Rear-Admiral Halsey:—

#### *Full Pay.*

The new rates of pay will apply to officers of the Royal Navy and Royal Naval Volunteer Reserve.

Rank.	Before Feb. 1st.	Total Pay plus Bonus Feb. 1st.	New Rate.
	£ s. d.	£ s. d.	£ s. d.
Surgeon-Lt.—On entry ...	0 14 0	0 18 6	1 4 0
After 2 years ...	0 15 0	0 19 6	—
After 3 years ...	—	—	1 9 0
After 4 years ...	0 17 0	1 1 6	—
After 6 years ...	0 18 0	1 2 6	—
Surgeon Lt.-Cdr.—			Becomes
On promotion ...	1 0 0	1 5 0	Surgeon Lt.-Cdr.
After 2 years ...	1 1 0	1 6 0	1 15 0
After 3 years ...	—	—	1 17 0
After 4 years ...	1 4 0	1 9 0	—
After 6 years ...	1 5 0	1 10 0	Becomes
Surgeon-Capt.—			Surgeon-Cdr.
On promotion ...	1 7 0	1 12 6	2 5 0
After 2 years ...	1 8 0	1 13 6	—
After 3 years ...	—	—	2 9 0
After 4 years ...	1 10 0	1 15 6	—
After 6 years ...	1 11 0	1 16 6	2 13 0
After 8 years ...	1 13 0	1 18 6	—
After 9 years ...	—	—	2 17 0
After 10 years ...	1 15 0	2 0 6	—
Surgeon-Capt.—			
On promotion ...	2 5 0	2 11 0	3 5 0
After 3 years ...	—	—	3 10 0
After 6 years ...	—	—	3 15 0
After 9 years ...	—	—	4 0 0
Surgeon R.-Adml. ...	£1300 a year.	£1409 10s. a year.	5 5 0
Medical Director-General	—	—	£2500 a year.
Dental Surgeons—			
Surgeon-Lt. (D).—			
On entry ...			1 1 6
After 3 years ...			1 6 6
Surgeon Lt.-Cdr. (D).—			
On promotion ...			1 12 6
After 3 years ...			1 14 6
After 6 years ...			1 16 6

A Dental Surgeon who is also qualified medically to receive pay on the Medical Officers' scale.

#### *Specialist Allowances.*

Specialist allowances to officers specialised in professional subjects as indicated below. If a Surgeon-Commander is appointed solely for specialist duties he will receive pay as a Surgeon-Commander only. These allowances will not be paid after promotion to Surgeon-Captain, 2s. 6d. Anaesthetists not exceeding six allowances. Ophthalmic not exceeding 13 allowances. Ear and Throat not exceeding 13 allowances. Genito-urinary and Venereal not exceeding six allowances. Physical Training not exceeding six allowances.

#### *Promotion: New Scheme.*

The following alterations are made in the rules regarding promotion:—Medical Officers: (a) Surgeon-Lieutenants will be eligible for promotion after six years, instead of eight as at present, the promotion of those on the list on July 1st, 1919, being antedated as necessary. (b) Surgeon Lieutenant-Commanders will be eligible for promotion to Surgeon-Commander after six years, instead of eight as at present, those on the list on July 1st, 1919, being given two years' seniority. Instructions will be issued to the Fleet as regards the seniority of those Surgeon Lieutenant-Commanders now due for promotion owing to the double acceleration. (c) Surgeon-Commanders on the list on July 1st, 1919, will be given two years' seniority.

#### *Retirement.*

The following alterations in the regulations for retirement will be introduced:—Medical Officers: (a) Compulsory. Surgeon Rear-Admirals in future to be invariably retired at 60, the power of retention to the age of 62 in special cases being abolished. Surgeon-Captains to retire at 55. Surgeon-Commanders to retire at 50. Surgeon Lieutenant-



Commanders to retire at 45. (b) Optional retirement at 40 to be allowed for all ranks at Admiralty discretion. The new ages for compulsory retirement will be worked down to in five years, beginning with January 1st, 1920.

#### Miscellaneous.

*Medical and Dental Attendance.*—Officers on consolidated salary will in future be allowed the benefits of medical and dental attendance under the rules applicable to the Service generally.

*Increase in Higher Ranks of Certain Branches.*—Proposals are under consideration to increase the number in the higher ranks of the Medical Branch.

*Dental Surgeons.*—A branch of Dental Surgeons will be permanently instituted, with pay as shown in Appendix 1. Surgeon-Lieutenants (D) will rank with Surgeon-Lieutenants, and will be eligible for promotion to Surgeon Lieutenant-Commander (D) on attaining six years' seniority. No higher rank than that of Lieutenant-Commander will obtain in this branch. These officers will otherwise conform to the regulations applicable to officers of the Medical Branch. Further instructions will be issued as to the transfer of existing officers to the New Branch.

### ARMY MEDICAL SERVICE.

There has come into existence an alteration in the conditions of service in the Royal Army Medical Corps which constitutes the greatest reform that has taken place in that service for a generation. Moreover, it is a reform of promise as well as of performance. Directorates in Pathology and in Hygiene have now been created within the Army Medical Department, the scheme permitting for specially selected men to rise through all ranks of the Army to Major-General on the strength of their scientific work. Hitherto, a few notable men being excepted, the custom in the R.A.M.C. has been that whatever a man's qualifications, tastes, or abilities, he must, at any rate on attaining the rank of colonel, be prepared to go off into administrative work and leave his scientific duties to his juniors. If he preferred to remain working in bacteriology, in preventive medicine and hygiene, or in tropical diseases, for example, he could do so, but at the risk of losing appointments carrying temporarily higher rank and increased pay. Always young men were being taught, and well taught, how to become the scientific branch of their Corps, and exactly as they had found their *métier*, precisely as they had become valuable advisers of officers, men, the Army, and indeed the nation, they were asked to choose between sacrifice of their scientific work or a career of superintending other people, of giving orders, of supervising hospitals and military establishments generally—in short, a career of what is called administration. How could the younger men be expected to preserve their interest in their scientific studies if such was the outcome? And how could their seniors be expected to remain in touch with the scientific developments in whose working out they no longer had any personal share? This now has all been changed, largely owing to the pertinacious, skilful, and sympathetic work of Sir John Goodwin, Director-General of the R.A.M.C., who has for over a year been preparing his scheme of reform with the assistance of the two principal exponents of scientific work with the Corps, Sir William Leishman and Sir William Horrocks. It is certain that the possibility, and for good workers the probability, of attaining to positions of proper trust and emolument by scientific work will much improve recruiting among the officers of the R.A.M.C.—that will be the immediate outcome of the new scheme; but there will almost certainly follow similar arrangements by which special medical service generally will receive higher consideration in the Corps. Not only is there in the work of the Army Medical Department scope for original labour and research in tropical disease, in preventive medicine, and in bacteriology, but a vast clinical field is also open to the specialist in medicine, surgery, venereal disease, and ophthalmology. Further developments will shortly follow, as well as properly increased rates of pay. These we hoped to have been able to publish this week, but they are not yet made formally available.

#### REGULATIONS.

Following are the Regulations for admission to the Royal Army Medical Corps (issued with Army Orders dated Jan. 1st, 1912).

A candidate for a commission in the Royal Army Medical Corps must be 21 years and not over 28 years of age at the date of the commencement of the entrance examination, and must be unmarried. He must, at the time of his appointment, be registered under the Medical Acts in force in the United Kingdom. A candidate must complete the subjoined form of application and declaration and submit it, together with an extract from the register of his birth, and his medical registration certificate, to the Secretary, War Office, as early as possible before the date on which the entries are closed.

#### APPLICATION OF A CANDIDATE FOR A COMMISSION IN THE ROYAL ARMY MEDICAL CORPS.

(A Candidate will not be permitted to compete oftener than twice.)

1. Name in full.
2. Address.
3. Date of birth.
4. Nature and date of examination qualifying for registration.
5. Date of registration as a medical student.
6. Dates of passing medical examinations—First, Second, Final.
7. Qualifications. (Medical Registration Certificate, or, if not registered, Diplomas to be furnished.)
8. Academic and other distinctions.
9. Medical school or schools in which the candidate pursued his course as a medical student, and name or names of the deans or other responsible authorities.
10. Particulars of any commission or appointment held in the public services, including service in the Officers Training Corps.
11. Date of examination at which the candidate proposes to present himself.

#### Declaration.

(N.B.—A mis-statement by the candidate will invalidate any subsequent appointment and cause forfeiture of all privileges for services rendered.)

I hereby declare upon my honour that the above statements are true to the best of my knowledge and belief and further:—

1. That I am a British subject of unmixed European blood.
2. That I am not, as far as I know, at present suffering from any mental or bodily infirmity, or physical imperfection or disability that is likely to preclude me from efficiently discharging the duties of an officer in any climate.
3. That I will fully reveal to the Medical Board, when physically examined, all circumstances within my knowledge that concern my health.

A candidate will not be permitted to compete oftener than twice.

The Army Council reserves the right of rejecting any candidate who may show a deficiency in his general education.

An entrance fee of £1 is required from each candidate admitted to the examination.

Candidates who have served in the Officers Training Corps will be credited at the entrance examination with additional marks as follows: those having Certificate A will receive 1 per cent., and those having B 2 per cent. of the total. Service marks are also credited to a candidate who has been employed as an officer in consequence of a national emergency, the number of marks depending on the period of employment and the circumstances of the case.

A candidate successful at the entrance examination will be appointed a Lieutenant on probation and will be required to pass through courses of instruction at the Royal Army Medical College, London, and at the Royal Army Medical Corps School of Instruction, Aldershot, and, after passing the examinations in the subjects taught and satisfying the Director-General that he possesses the necessary skill, knowledge, and character for permanent appointment to the Royal Army Medical Corps, his commission as Lieutenant will be confirmed. The commission will bear the date of passing the entrance examination. A Lieutenant who, at the time of passing the examination for admission to the Royal Army Medical Corps, holds, or is about to hold, a resident appointment in a recognised civil hospital, may be seconded for the period, not exceeding one year, of his appointment; he will not receive army pay, but his service will reckon towards pay, promotion, and retirement; he will retain the seniority obtained at the entrance examination.

The precedence of Lieutenants among each other will be in order of merit as determined by the combined results of the entrance examination and the examinations undergone while on probation, except that the position on the list of a Lieutenant on probation, seconded to hold a resident appointment in a recognised civil hospital will be determined by the place he has gained at the entrance examination. He will be required, at the conclusion of his hospital appointment, to attend the courses of instruction at the Royal Army Medical College and at Aldershot; but the subsequent examinations will be of a qualifying character and will not influence his position on the seniority list of the Corps.

Lieutenants when appointed on probation will receive instructions as to the provision of uniform.

On completion of his probationary training an officer is posted for duty to one of the military hospitals: at home, his wishes being met as far as possible in regard to the command to which he is posted.

### INDIAN MEDICAL SERVICE.

#### REGULATIONS.

Following are the Regulations for the examination of candidates for admission to the Indian Medical Service. The grades of officers in the Indian Medical Service are the same as those of the Army Medical Service and Royal Army Medical Corps. The Director-General will rank either as Major-General or Lieutenant-General as may be decided in each case by the Secretary of State for India in Council.

Candidates must be natural-born subjects of His Majesty, of European or East Indian descent, of sound bodily health, and in the opinion of the Secretary of State for India in Council in all respects suitable to hold commissions in the Indian Medical Service. They may be married or unmarried. They must possess under the Medical Acts a qualification registrable in Great Britain and Ireland. No candidate will be permitted to compete more than three times. Examinations for admission to the service are held twice in the year, usually in January and July. Candidates for the January examination must be between 21 and 28 years of age on Feb. 1st, and those for the July examination must be between 21 and 28 on August 1st. The exact date of each examination and the number of appointments, together with the latest date at which applications will be received, will be notified in THE LANCET.

They must subscribe and send in to the Military Secretary, India Office, London, S.W., so as to reach that address by the date fixed in the advertisement of the examination, a declaration according to the annexed form, which is procurable from the Military Secretary.



*Declaration and Schedule of Qualifications to be Filled up by Candidates.*

I, ....., a candidate for employment in His Majesty's Indian Medical Service, do hereby attest my readiness to engage for that service, and to proceed on duty immediately on being gazetted.

I declare that I labour under no mental or constitutional disease, nor any imperfection or disability that can interfere with the most efficient discharge of the duties of a medical officer.

I hereby declare upon my honour that the above statements are true to the best of my knowledge and belief.

I enclose, in accordance with Paragraph 4 of the Regulations, (a) proof of age; (b) two certificates of character; (c) certificate of having attended a course of ophthalmic instruction, showing that the course included instruction in errors of refraction; (d) evidence of a registrable qualification; (e) in case of natives of India or others educated in that country only, a certificate from the Director-General, Indian Medical Service.

Signature ....., 19 .....

Date ....., 19 .....

1. Name in full.
2. Address. (Any alteration to be notified to the Military Secretary, India Office, London, S.W.)
3. Date of birth. (This must be supported by a certificate or statutory declaration. See Paragraph 4 of the Regulations.)
4. Profession or occupation of father, and whether, at the time of candidate's birth, his father was a British subject of European or East Indian descent.
5. Statement as to whether the candidate is married or single.
6. Colleges and Medical Schools at which the candidate has received his medical education.
7. Medical School in which the candidate completed his course as a medical student, and name of the Dean or other responsible authority.
8. Degrees of B.A. or M.A.; details as to any prizes, university honours, &c.
9. Registrable qualifications.
10. Date of examination at which the candidate proposes to present himself.
11. Date of any previous occasions on which the candidate may have presented himself for examination for admission to the Indian Medical Service, or other examination for the Public Services.
12. Particulars of any commission or appointment held in the Public Services.

The declaration must be accompanied by the following documents:—  
a. Proof of age either by Registrar-General's certificate, or, where such certificate is unattainable, by the candidate's own statutory declaration, form for which can be obtained at the India Office, supported, if required by the Secretary of State, by such evidence as he may consider satisfactory. A certificate of baptism which does not afford proof of age will be useless. In the case of natives of India and Tamils of Ceylon it will be necessary for a candidate to obtain a certificate of age and nationality in the form laid down by the Government of India which is obtainable from the Director-General of the Indian Medical Service, Simla. A candidate of East Indian descent, not born in British India, must produce a certificate of age and nationality from the Government of the country where he was born, showing that he is the son or grandson of a person born in British India. b. A recommendation and certificate of moral character from two responsible persons—not members of his own family—to the effect that he is of regular and steady habits and likely in every respect to prove creditable to the service if admitted. c. A certificate of having attended a course of instruction for not less than three months at an ophthalmic hospital or the ophthalmic department of a general hospital, which course shall include instruction in the errors of refraction. d. Some evidence of having obtained a registrable qualification. e. Any European educated in India and every native of that country, whether born or medically educated in India or not, will be required to produce a certificate signed by the Director-General, Indian Medical Service, that he is a suitable person to hold a commission in the Indian Medical Service. A candidate should apply to the Director-General, Indian Medical Service, for the necessary certificate at least three months before the date on which the declaration is to be submitted according to the advertisement of the examination. This rule also applies to Tamils of Ceylon.

The Secretary of State for India reserves the right of deciding whether the candidate may be allowed to compete for a commission in His Majesty's Indian Medical Service.

The physical fitness of each candidate will be determined by a Board of Medical Officers who are required to certify that his vision is sufficiently good to enable him to pass the regulation tests (see under Army Medical Service). Every candidate must also be free from all organic disease and from constitutional weakness or other disability likely to unfit him for military service in India. Candidates will be required to pay a fee of £1 before being examined by the Medical Board. No candidate will be permitted to compete more than three times. More detailed regulations as to the physical requirements can be obtained on application to the India Office.

Candidates for the Indian Medical Service may, if they like, undergo a preliminary examination by the Medical Board which meets at the India Office every Tuesday by applying to the Under Secretary of State, India Office, enclosing a fee of two guineas, and stating the particular appointment which the candidate desires to obtain. They must pay their own travelling expenses. The decision must be understood, however, not to be final. It may be reversed in either direction by the Examining Medical Board immediately prior to the Professional Examination.

On proving possession of the foregoing qualifications the candidate will be examined by the Examining Board in the following subjects and the highest number of marks attainable will be distributed as follows:—

	Marks.
1. Medicine, including therapeutics...	1200
2. Surgery, including diseases of the eye	1200
3. Applied anatomy and physiology...	600
4. Pathology and bacteriology	900
5. Midwifery and diseases of women and children	600
6. Materia medica, pharmacology, and toxicology	600

The examination in medicine and surgery will be in part practical and will include operations on the dead body, the application

of surgical apparatus, and the examination of medical and surgical patients at the bedside. No syllabus is issued in the subjects of the examination, but it will be conducted so as to test the general knowledge of the candidate in all subjects. No candidate shall be considered eligible who shall not have obtained at least one-third of the marks obtainable in each of the above subjects and one-half of the aggregate marks for all the subjects.

After passing this examination the successful candidates will be commissioned as lieutenants-on-probation, and will be granted about a month's leave. They will then be required to attend two successive courses of two months each at the Royal Army Medical College, Millbank, and at Aldershot. The candidate's commission as a lieutenant-on-probation will bear the date on which the result of the entrance examination is announced, but his rank as lieutenant will not be confirmed until he has passed the final examination, held at the conclusion of his period of instruction.

The course at the Royal Army Medical College will be in (1) hygiene, (2) military and tropical medicine, (3) military surgery, (4) pathology of diseases and injuries incidental to military and tropical service; and (5) military medical administration.

The course at Aldershot will include instruction in (1) internal economy, (2) Army Service Corps subjects, (3) hospital administration, (4) stretcher and ambulance drill, and (5) equitation.

Lieutenants-on-probation will receive an allowance of 14s. per diem, and during the period of instruction they will be provided with quarters (where quarters are not provided they will obtain the usual allowances of a subaltern in lieu thereof), to cover all costs of maintenance, and they will be required to provide themselves with uniform; a detailed list of the uniform and articles required will be sent to each successful candidate.

A lieutenant-on-probation who is granted sick leave before the completion of his course of instruction and final admission to the service will receive pay at the rate of 10s. 6d. a day for the period of his sick leave.

Candidates will be required to conform to such rules of discipline as may from time to time be laid down.

At the conclusion of each course the candidate will be required to pass an examination on the subjects taught, and in order to qualify must obtain 50 per cent. of the total marks. If he fails to qualify in either of these examinations he will be liable to removal from the service, but if specially recommended he may be allowed to undergo the course or courses again under certain restrictions as to pay and position.

Officers appointed to the Indian Medical Service will be placed on one list, their position on it being determined by the combined results of the preliminary and final examinations. They will be liable for military employment in any part of India, but in view of future transfers to civil employment, they will stand posted to one of the following civil areas:—(1) Madras and Burma; (2) Bombay with Aden; (3) Upper Provinces—i.e., United Provinces, Punjab, and Central Provinces; and (4) Lower Provinces—i.e., Bengal, Bihar, Orissa, and Assam. The allocation of officers to these areas of employment will be determined upon a consideration of all the circumstances, including, as far as possible, the candidate's own wishes. Officers transferred to civil employment, though ordinarily employed within the area to which they may have been assigned, will remain liable to employment elsewhere according to the exigencies of the service.

A lieutenant who, within a reasonable period before the date at which he would otherwise sail for India, furnishes proof of his election to a resident appointment (or to a preliminary appointment leading in due course to a resident one) at a recognised civil hospital, may be seconded for a period not exceeding one year from the date on which he takes up such appointment, provided that he joins it within three months of passing his final examination, and that he holds himself in readiness to sail for India within 14 days of the termination of the appointment. While seconded he will receive no pay from Indian funds, but his service towards promotion, increase of pay, and pension will reckon from the date borne on his commission. In special cases permission may be granted to lieutenants to delay their departure for India, in order to sit for some further medical examination. Lieutenants remaining in England under such circumstances will receive no pay for any period beyond two months from the date of termination of the course of instruction, unless the period elapsing before the day on which the majority of the lieutenants of the same seniority sail to India exceeds two months, in which case lieutenants allowed to remain in England will receive pay up to that day. In such cases pay will recommence on the day of embarkation for India. All the provisions of this clause are subject to the general exigencies of the service. Before the commission of a lieutenant-on-probation is confirmed he must be registered under the Medical Acts in force at the time of his appointment. Candidates who have been specially employed in consequence of a national emergency, either as an officer, or in a position usually filled by an officer, will be allowed, under certain circumstances, to reckon such service towards pension.

**NEW RATES OF PAY.**

The new rates of pay in the Indian Medical Service, of which particulars follow, have been arrived at by adding approximately 33½ per cent. to that portion of the old rates of pay which represented military grade pay. The old rates are shown in the second column for comparison. The new rates are effective from Dec. 1st, 1918, and the necessary adjustments will be carried out as soon as possible.

**A.—Military Side.**

	(1) New rate.	(2) Old rate.*
	Rs. p.m.	Rs. p.m.
Lieutenants	550	(450)†
Captains	700	(550)
Captains (after 5 years' total service)	750	(600)
Captains (after 7 years' total service)	800	(650)
Captains (after 10 years' total service)	900	(700)
Majors	1000	(800)
Majors (after 3 years' service as such)	1150	(950)
Lieut.-Colonels	1550	(1250)
Lieut.-Colonels (of over 25 years' service)	1650	(1300)
Lieut.-Colonels (selected for increased pay)	1750	(1400)

\* Old rate for charge of a Regiment.

† In the case of a Lieutenant the rate for an officer in officiating charge only has been shown, as this is the most probable position of a Lieutenant.



These rates were previously announced in May, but at that time the rates for the civil side were not available. They are now republished with the civil rates in order that full information for the whole service may be available.

The new rates are consolidated and include charge pay for the command of station hospitals.

The following rates are those for certain of the higher military appointments:—

	(1) New rate. Rs. p.m.	(2) Old rate. Rs. p.m.
D.D.M.S. (if held by a Major-General) ... ..	2650	(2210)
D.D.M.S. and A.D.M.S. (if held by a Colonel) ...	2150	(1800)
A.D.M.S. of Adm. Inspector of Medical Services, Army Headquarters ... ..		
A.D.M.S. in the Field (when held by an officer below Colonel's rank) ... ..	1950	(1600)
Officer Commanding general hospital in the field of 500 beds ... ..		
A.D.M.S., Army Headquarters ... ..	1700	(1400)

B.—Civilian Side.

(1) The rates for certain of the superior appointments are as follows:—

	(1) New rate. Rs. p.m.	(2) Old rate. Rs. p.m.
Director-General ... ..	3500	3300
Deputy Director-General ... ..	2150	1500*
Assistant Director-General ... ..	1700	1400*
Surgeon-General, Bengal, Madras, and Bombay ... ..	3000	2500
Inspectors-General of Civil Hospitals in non-Presidency Provinces† ... ..	2600	2250
Sanitary Commissioner to Government of India ... ..	2300—2800	2000—2500
Sanitary Commissioner (for all provinces except Central Provinces and Assam) ...	1800—2100	1250—1800
Sanitary Commissioner, Central Provinces and Assam ... ..	1550—2050	
Inspectors-General of Prisons, Madras, Bengal, Burma, Bombay, and United Provinces ...	2100—2300	1500—2000
Inspectors-General of Prisons, Punjab, and Bihar and Orissa ... ..	2100	
Inspectors-General of Prisons, Central Provinces ... ..	1800	

\* Rates drawn by present incumbents.

† Corresponding to the appointments of Surgeon-General in the three Presidency Provinces.

(2) The distinction between 1st and 2nd class civil surgeoncies is abolished, and holders of these appointments will, in future, be paid at the new consolidated rates, given under A above, according to their military rank. This change results in increases varying according to rank from Rs. 200—400 per mensem.

‡ Assuming that a civil surgeoncy is not held by an officer of lower rank than a Captain.

(3) Holders of professorial and bacteriological appointments will, like civil surgeons, be paid at the new consolidated rates, given under A above, plus a special allowance of Rs. 250 per mensem. The resultant increase over the old rates varies from Rs. 150 per mensem in the case of junior Captains to Rs. 400 per mensem in the case of senior Lieutenant-Colonels.

(4) Holders of other special classes of appointments will receive the consolidated pay of rank, as under A above, plus special allowances of differing amounts—e.g., alienists and plague officers Rs. 200 per mensem, superintendents of first-class jails Rs. 150 per mensem, personal assistants to Surgeons-General Rs. 100 per mensem, superintendents to second-class jails Rs. 50 per mensem.

The examples above are not exhaustive, but are given as illustrations of the manner in which the principle previously announced has been carried into effect.

ROYAL AIR FORCE MEDICAL SERVICE.

The Medical Service of the Royal Air Force has not yet been placed upon a permanent basis; the definite conditions of service are not therefore available for publication. It is understood, however, that the general organisation of the Service will be on the lines followed by the other branches of the Force, and that the establishment will consist partly of permanent and partly of temporary officers.

Temporary officers will be required to engage for a period of four years, and may be called upon to spend part of their service at overseas stations—chiefly in Egypt or India—and must be physically fit for service in all climates.

Unless taken in for some specific duty on account of special professional qualifications, medical officers will be required to pass the usual medical tests required of other officers of the flying service, and at the time of entry must sign a declaration that they are willing to fly when called upon to do so.

Vacancies in the establishment of permanent commissioned officers will be filled from the temporary list by selection. Those selected for permanent commissions will count the period of their temporary service towards eventual pension, the remainder will receive a gratuity on leaving the Service at the expiration of their contract.

There will be no competitive examination on entry; candidates must be under 28 years of age, be nominated by the Dean of a recognised medical school or teaching hospital, and will be interviewed personally by the Director of Medical Services, Royal Air Force, before acceptance.

Arrangements are being made to allow post-graduate courses after selection to permanent commission.

Officers engaged in research or pathological work will be promoted separately from the general roster.

Officers selected for the permanent service will normally be promoted to the rank of major after a fixed period of service, but officers specially selected on account of professional or administrative ability will become available for promotion to the rank of major at an earlier date.

Promotion to the higher ranks will be by selection only.

The rates of pay and pension are not yet finally fixed, but it is understood that in the junior ranks the rates will be rather higher than the corresponding rates in the R.A.M.C. to cover the flying risk.

THE COLONIAL MEDICAL SERVICE.

In the self-governing dominions, Canada, Australia, New Zealand, the Union of South Africa, and Newfoundland, medical appointments are made concerning which information can be obtained from the High Commissioners or Agents-General in London; appointments in Egypt and the Soudan are regulated from the Foreign Office; in Aden and adjacent territories the appointments are under the control of the Government of Bombay; in Rhodesia the appointments are made by the British South Africa Company, London Wall Buildings, E.C.; in North Borneo application should be made to the British North Borneo Company, 37, Threadneedle-street, E.C., for appointments; and those in Sarawak are in the hands of H. H. the Rajah.

But in addition to all these there are a large number of important posts under the patronage of the Secretary of State for the Colonies. These concern East Africa (the East Africa, Uganda, Nyasaland, Somaliland, and Zanzibar Protectorates); Eastern (Ceylon, the Straits Settlements, and Federated Malay States, Hong-Kong, Weihaiwei, Mauritius, and Seychelles); West India (British Guiana, Jamaica, Trinidad, the Windward Islands, the Leeward I-lands, Barbados, British Honduras, and the Bahamas); Fiji and the Western Pacific, Cyprus, Malta, Gibraltar, St. Helena, Bermuda, and the Falkland Islands; and West Africa (Nigeria, the Gold Coast, Sierra Leone, and the Gambia). As a general rule, each Colony or Protectorate has its own public service distinct from that of every other, and it is usually only the higher officers who are transferred by the Secretary of State from one Colony to another; but there are two exceptions to this rule. The West African Medical Staff, which serves Nigeria, the Gold Coast, Sierra Leone, and the Gambia, form one service, and in practice the medical services of the Straits Settlements and the Federated Malay States may be regarded as one, as the officers may be and frequently are transferred from the Colony to the States, or *vice versa*. In Ceylon, Mauritius, Jamaica, Barbados, the Bahamas, and Bermuda vacancies are almost always filled locally by the appointment of qualified native candidates, or—in the case of some of the higher posts—by transfer from other Colonies. Appointments in Malta are all filled locally. Vacancies in the Hong-Kong Medical Department are generally filled by transfer from other Colonies. Medical appointments in the Bechuanaland Protectorate, Basutoland, and Swaziland are made only on the recommendation of the High Commissioner for South Africa, who usually appoints local candidates. In most cases the duties of a colonial medical officer are of a very general character, including medical, surgical and often public health work. It is only occasionally that a specialist is required. All applicants must be between the ages of 23 and 35, but in the case of East Africa, Uganda, Nyasaland, Somaliland, and Zanzibar preference will be given to candidates who are over 25 years of age, while in the case of Fiji and the Western Pacific preference will be given to candidates who are under 30. Candidates must be doubly qualified, and the choice will usually fall, other things being equal, on those who have held hospital appointments. Before being definitely appointed candidates will be medically examined by one of the consulting physicians of the Colonial Office: Sir J. Rose Bradford, K.C.M.G., 8, Manchester-square, London, W.; Sir J. Hawtrey Benson, 57, Fitzwilliam-square, Dublin; Lieutenant Colonel J. Arnott, I.M.S., 8, Rothesay-place, Edinburgh; and W. T. Prout, Esq., C.M.G., 14, Rodney-street, Liverpool.

*East African Protectorates.*—Medical Officers in the East Africa, Uganda, Nyasaland, Somaliland, and Zanzibar Protectorates are appointed on probation in the first instance for three years, at the end



of which period their appointments are made permanent if their service has been satisfactory, but special arrangements are now in force in Uganda. The salary of a Medical Officer during probation is £400 per annum fixed, but as soon as he has been confirmed in the permanent appointment his salary rises by annual increments of £20 to £500 per annum, with duty allowance of £40 a year; and after six years' service, £525, rising by annual increments of £25 to £600 a year with duty allowance of £50 a year. There are 23 appointments of this nature in the East Africa Protectorate, 14 in Uganda, 11 in Nyasaland, 4 in Zanzibar, and 3 in Somaliland. In the East Africa Protectorate there are certain special appointments—viz., Deputy Principal Medical Officer (£750-25-850 and £75 duty allowance), Bacteriologist (£600-25-750, duty allowance £50), Assistant Bacteriologist (£500-25-600 duty allowance £50), two Senior Medical Officers (£500-25-750, duty allowance £60), Principal Sanitation Officer (£750-25-850 duty allowance £75), 13 Medical Officers of Health, graded as Medical Officers. In Uganda the post of a Deputy Principal Medical Officer is under consideration; there are two Senior Medical Officers, a Bacteriologist, and a Medical Sanitation Officer at £600-25-750, with duty allowance of £60, and a Medical Officer of Health on the same scale as a Medical Officer. In Zanzibar there is a Medical Officer of Health graded as a Senior Medical Officer, and an Assistant Medical Officer of Health graded as a Medical Officer, with allowances of £100 and £50 respectively, subject to their possessing the Diploma in Public Health. The salary attached to the appointment of Principal Medical Officer in the East Africa Protectorate and Uganda is £850 per annum, rising to £1000 per annum by annual increments of £50, and duty allowance £85; in Nyasaland £750-25-850 and duty allowance, £75; and in Zanzibar £600-25-750 and duty allowance, £60. The Head of the Medical Department in Somaliland is graded as a Senior Medical Officer. Medical Officers are permitted to take private practice on the understanding that they give precedence to their official duties.

**Straits Settlements.**—Medical Officers are appointed as House Surgeons or Assistant Health Officers at a salary of £350. After one year's satisfactory service House Surgeons are appointed Medical Officers with salary rising from £400 to £600. Above this class there are nine senior appointments carrying salaries ranging from £600 (rising to £720) to £750 (rising to £900). The Principal Civil Medical Officer receives £1050, rising to £1200. Duty allowances are attached to all appointments and free quarters, or an additional allowance in lieu thereof, are given to House Surgeons. The authorised establishment is at present 32 officers.

**Federated Malay States.**—Appointments are graded as follows:—Principal Medical Officer, £1050 to £1200; Senior Medical Officer, Perak, £750, rising to £900; Senior Medical Officer, Selangor, £800, rising to £1000; seven Medical Officers Grade I., £600, by £20 annually to £720; 18 Medical Officers, Grade II., £350, and after one year's satisfactory service £400, rising to £600, with free furnished quarters, without private practice. The Senior Medical Officers, in Perak and Selangor and the two Grade I. Medical Officers in charge of Negri Sembilan and Pahang are allowed consulting practice only. Other Medical Officers are prohibited from private practice except in very special cases where the Chief Secretary is satisfied that, owing to the absence of private practitioners, it is absolutely necessary to allow the Government Medical Officer to attend to private patients. The posts of Medical Officer, Grade II., in the Federated Malay States and the corresponding appointments in the Straits Settlements are filled by the promotion of officers who have entered the service as House Surgeons. A non-pensionable allowance, varying with the appointment, is attached to all medical posts in the Straits Settlements and Federated Malay States. In the case of House Surgeons the allowance is at the rate of £40 a year.

**Seychelles.**—There are four medical appointments. The Assistant Government Medical Officers receive Rs. 5000. The holders of these appointments have free quarters. Private practice is allowed.

**Wethaiwei.**—There are two non-pensionable Medical Officers on salaries £400-25-500, with free quarters.

**British Guiana.**—There are 35 appointments. Candidates must have held for at least six months a resident medical appointment in some public institution. Officers are appointed on two years' probation as assistant medical officers, and are paid a salary at the rate of £300 per annum, with quarters, without the right to private practice. The permanent staff, to which officers may be appointed at the expiration of the probationary period, includes the following appointments: Surgeon-General, £900, with travelling expenses and consulting practice; Bacteriologist and Pathologist, £300 to £600; 14 Medical Officers at £500 to £600; 17 Medical Officers at £300 to £500; and two at £300. Officers, on the completion of two years' service in the fixed £300 class, automatically rise to the £300-£400 class. Medical officers appointed to districts receive travelling allowances varying with the nature of the district. They are also allowed private practice. Medical Officers attached to public institutions are, in general, allowed free quarters, and receive a duty allowance. A deduction of 4 per cent. is made from their salaries for the payment of the premiums on an insurance of the officer's life for the benefit of the widow or orphans. The Governor has the power to appoint private practitioners on temporary agreements to perform in the duties of medical officers of districts.

**Trinidad and Tobago.**—In Trinidad and Tobago there are over 40 appointments. Officers are appointed in the first instance on two years' probation as supernumeraries and are eligible for appointment as Government Medical Officers at the end of this period. Applicants must be unmarried and must remain unmarried whilst supernumerary Medical Officers. Supernumeraries receive a salary of £250 per annum with furnished quarters, and are usually attached to the Government hospital. Government Medical Officers receive salary at the rate of £250 per annum with quinquennial increments of £50 accruing from the date of first appointment as supernumerary Medical Officers. Most are employed as District Medical Officers, with private practice, a residence or a rent allowance of £50, a horse allowance, except in one district, and in some cases other allowances for institution work. All officers are required to contribute 4 per cent. of their salaries towards the pensions of the widows and orphans of public officers.

**Windward Islands (Grenada, St. Lucia, St. Vincent).**—The 25 appointments are, with few exceptions, district appointments with the right to private practice attached; the salaries paid by Government

vary from £250 to £350, with allowances in certain cases. The Governor has the power to transfer a medical officer from one island to another at his discretion. The appointments are pensionable.

**Leeward Islands (Antigua, St. Christopher and Nevis, Dominica, Montserrat, Virgin Islands).**—The 24 appointments are of the same nature as in the Windward Islands, but are not pensionable. An officer when first sent out is not appointed to a particular island but to the service of the Leeward Islands, with a salary of £250 or £300 according to station, and the Governor decides as to the district which is to be allotted to him. He is liable to be transferred to any medical district in the islands, and in certain districts he may be required to perform magisterial duties. The medical officers receive fees for successful vaccinations, post-mortem examinations attendance and giving evidence at courts of justice, certificates of lunacy, and, in the larger islands, for burial certificates. They are also, as a rule, allowed private practice.

**British Honduras.**—There are seven medical appointments (besides the principal post of Colonial Surgeon) each carrying a salary of £1700 per annum. Unless they already possess a Diploma of Public Health, medical officers are liable to be required before they join the colony to undergo a course of instruction at a laboratory of public health or analogous institution. The dollar = about 4s. 2d.

**Fiji and the Western Pacific.**—In Fiji the Government Medical Officers receive a salary of £400, rising by annual increments of £25 to £500, with partly furnished quarters, or a house allowance of £50. In some districts a medical officer is also a magistrate with a combined salary of £500, rising to £600, with free quarters. They are allowed private practice, so far as is consistent with the proper discharge of their duty to the Government, but in most districts the private practice is very small. In districts where there is no private practice, an allowance of £50 a year is granted. They are required either to take charge of hospitals or of districts, at the discretion of the authorities. The posts are pensionable. There are at present 13 Medical Officers, three of whom are also Magistrates, in addition to a Chief Medical Officer (£700 a year, rising to £800), a Medical Officer of Health (£500, rising to £600), and a Senior Medical Officer (£450-£500). The medical services of Fiji and the Western Pacific are interchangeable. While serving in the Western Pacific Protectorates their duties may be of a quasi-magisterial nature, and they draw an extra non-pensionable allowance of £50 per annum.

**Cyprus.**—There is a Chief Medical Officer paid at the rate of £550 per annum, and three District Medical Officers paid at the rate of £340 per annum, all enjoying private practice (except the Chief Medical Officer, who is allowed consulting practice only) and receiving 2s. per diem forage allowance; these are the only medical appointments in the island which are open to English candidates.

**Gibraltar.**—There is a surgeon of the Colonial Hospital receiving £400 with fuel and light allowances, and private practice. He also receives £50 for medical examination of school children. There are also two Assistant Surgeons with a salary of £350 per annum, who are allowed private consulting practice only. Free quarters, unfurnished, are provided for all three officers.

**St. Helena.**—The Colonial Surgeon at present receives £270 per annum £20 fees as Health Officer, and £27 horse allowance. Private practice is allowed. The Assistant Colonial Surgeon receives £350 a year and a horse, with forage allowance; but no private practice is allowed without special permission.

**Falkland Islands.**—There are two appointments. The Colonial Surgeon is paid at the rate of £350 per annum, with £25 as Health Officer. The Assistant Colonial Surgeon is paid at the rate of £400 per annum without quarters. Part of the salary is provided from private sources. Private practice is allowed to the Colonial Surgeon, and to a lesser extent to the Assistant Colonial Surgeon.

**Leave and Passages.**—In the East African Protectorates leave of absence on full salary is granted in the normal case after a tour of residential service (of not less than 20 nor more than 30 months) to an amount of five days for each completed month of residence (or 23 days when for any reason the officer is not returning to East Africa) exclusive of the periods of the voyages to and fro. Officers serving in Uganda, Zanzibar, or in certain stations in the East Africa and Nyasaland Protectorates are allowed six or three days' leave respectively in respect of each month of service. In Somaliland special leave regulations exist which provide for an officer taking leave approximately every year. Free first-class passages are provided for the officer only. In the Malay Peninsula two months' leave of absence with full salary may be granted in respect of each year's service, and this leave may be accumulated up to a maximum of eight months. Additional leave on half pay may be granted on special grounds. If an officer on the occasion of his first leave is in receipt of a pensionable salary of less than £500 a year, he is granted a free return passage to the United Kingdom. In Hong-Kong leave of absence on half salary may be granted after 4½ years' service, and a portion of such leave may be commuted, if the Governor agrees, for half the amount on full pay. Leave of absence in excess of 10 months at a time will not be granted, but an extension may be allowed for ill-health or very urgent private affairs.

Subject to the necessities of the service, leave of absence on half salary may be granted to officers in other Colonies on the tropical Africa after a period of six years' resident service without any special grounds. Officers of the Fiji and Western Pacific service proposing to spend their leave in Europe may receive a grant in aid of passage expenses of £60. Leave may be given before the expiration of the due period in case of serious indisposition, or of urgent private affairs. In the absence of special grounds, the leave must not exceed one-sixth of the officer's resident service; on special grounds it may exceed that period by six months. In addition to the above, vacation leave on full pay may be granted, if no inconvenience or expense is caused thereby, not exceeding three months in any two years. In the case of Fiji and the Western Pacific and the Falkland Islands 4½ months' leave may be granted in any three years.

On first appointment an officer whose salary and fees together do not exceed £500 a year will, except in the case of a few colonies possessing Representative Assemblies, be provided by the Crown Agents for the Colonies with free passages to the Colony for himself and his wife and children, if any, not exceeding four persons besides himself. The officer so appointed will be required to execute an agreement binding him to repay the cost of the passage or passages so obtained in the event of his leaving the Government service within three years. This rule applies also to officers appointed to the Malay Peninsula and Hong-Kong. An officer taking leave out of the Colony has to provide his own passages.

<sup>1</sup> In the Straits Settlements and Federated Malay States all permanent Government servants are required to contribute 4 per cent. of their salaries towards the provision of pensions for the widows and orphans of public officers.



**Pensions.**—Officers on the pensionable establishment in the East African Protectorates are at liberty to retire on attaining the age of 50 years. Earlier retirement in the event of ill-health is also provided for. Pensions are computed on the scale of one-sixtieth of the average annual salary of the retiring officer's fixed appointments for three years prior to retirement, but for purposes of calculating pensions two years' service is reckoned as service for three years. In most of the other Colonies an officer holding a pensionable appointment may be allowed to retire on ill-health to retire on a pension after ten full years' resident service; otherwise he must have attained the age of 55. For salary of the retiring officer's fixed appointments for three years prior to retirement it may be awarded, to which one-sixtieth may be added for each additional year's service; but no addition will be made in respect of any service beyond 35 years. For pension purposes absence on vacation leave counts as full service, and leave on half pay as half service. In a few cases the retiring age is 60, and the pension after ten years' service is ten-sixtieths instead of fifteen.

#### West African Medical Staff.

The medical services of the West African Colonies and Protectorates—namely, the Gambia, Sierra Leone, the Gold Coast (including Ashanti and the Northern Territories), and Nigeria—form one service under the above name. All the medical officers for the service are selected by the Secretary of State for the Colonies, and are on one list for employment and promotion. As in other Colonies, applicants must be between 23 and 35 years of age and possess a double qualification, but preference is given to those over 25. The higher grades are usually filled by promotion from the lower.

The grades and emoluments of officers of the staff are as follows:—The Director of the Medical and Sanitary Service in Nigeria receives a salary of £1400 a year, with a duty allowance at the rate of £280 a year. Principal Medical Officer: The Principal Medical Officers receive salaries as follows: In the Gold Coast and the Southern Provinces of Nigeria £1200 a year, with a duty allowance at the rate of £240 a year. In Nigeria (Northern Provinces), £1100 a year, with a duty allowance at the rate of £220 a year. In Sierra Leone, £1000 a year, with a duty allowance at the rate of £200 a year. There is no Principal Medical Officer in the Gambia.

Deputy Principal Medical Officer: There are four appointments of this grade, two in the Southern Provinces of Nigeria and one each in the Northern Provinces and in the Gold Coast respectively. Salary at the rate of £900 a year, rising by annual increments of £25 to £1000 a year, is attached to these appointments, together with a duty allowance at the rate of £180 a year.

Senior Sanitary Officer: There are four appointments of this grade, two in Nigeria, one in the Gold Coast, and one in Sierra Leone. Salary at the rate of £900 a year, rising by annual increments of £25 to £1000 a year (in Sierra Leone to £950 only), is attached to these appointments, together with a duty allowance at the rate of £180 a year.

Provincial Medical Officer: There are seven appointments bearing this title (four in Nigeria, two in the Gold Coast, and one in Sierra Leone), with salary at the rate of £800 a year, rising by annual increments of £25 to £900 a year, and duty allowance at the rate of £160 a year.

Senior Medical Officer: There are 20 appointments of this grade, with salary at the rate of £600 a year, rising by annual increments of £25 to £750 a year, and a duty allowance at the rate of £120 a year. The Senior Medical Officer of the Gambia draws staff pay at the rate of £120 a year, in addition to duty pay, but is not allowed private practice.

Sanitary Officer: There are seven appointments of this grade, with salary at the rate of £700 a year, rising by annual increments of £25 to £800 a year, and a duty allowance at the rate of £140 a year.

Medical Officer: The salary attached to this grade is at the rate of £400 a year, rising by annual increments of £20 to £500 a year, with duty allowance at the rate of £80 a year. Medical Officers who have served for five years and are recommended for a higher rate of salary are required to take a special course of study for three months. If placed, on completing six years' service, on a scale of salary at the rate of £525 a year, rising by annual increments of £25 to £600 a year, with duty allowance at the rate of £100 a year. A Medical Officer who has served for three years on the maximum salary of this scale (£600) without obtaining promotion is eligible for the grant of further annual increments of £25 up to a total maximum salary of £750 a year.

Special appointments: The Director of the Medical Research Institute, Lagos, receives a salary of £600 a year, rising by annual increments of £25 to £800 a year, with a duty allowance of £120 a year. Salary year, is attached to abolition posts (those of Pathologists at Accra, Assistant at the Medical Research Institute, Lagos, and Medical Officers of Health at various places), irrespective of the seniority of the officer holding the appointment. In addition to the duty pay (£100 a year), the holder of the appointment draws half of the staff pay (£100 a year), and of absence, the remainder being drawn by his locum tenens.

**Leave and Passages.**—The ordinary tour of residential service is one year, followed by leave with full pay during the voyages to and from England, and for four or two months clear in England, according as the officer is returning for further service in West Africa or not. If an officer is detained beyond the year, additional leave is given with full pay for ten days in respect of each completed month beyond twelve, whether he is returning or not. If he is invalided before the end of the year, the leave with full pay is for the voyages and for ten or five days in respect of each completed month, according as he is returning or not, known as "ret. on leave," and any pay drawn in respect of such leave is liable to be refunded if he does not return. Leave may be extended on ill-health, or without pay on that or other grounds. Free passages are given to all officers who are granted leave, and free passages are also given on first appointment, subject to the officer signing an agreement under which he is liable to refund its cost if he relinquishes his appointment for any other reason than physical or mental infirmity, or is removed for misconduct, within three years from the date of his arrival in West Africa. Half pay is given during the voyage out on first appointment.

**Private Practice.**—All officers of the Staff except Principal Medical Officers, Deputy Principal Medical Officers, Provincial Medical Officers, Sanitary Officers, and a few other officers holding special appointments, are at present allowed to take private practice, provided that

it does not interfere with the efficient performance of their official duties, but it is within the power of the Governor to withdraw or suspend the privilege in such places and for such periods as he may consider desirable. Private practice does not exist at the majority of stations, and as a general rule, subject to the exigencies of the service, stations where there is private practice are allocated to senior members of the staff.

**Pensions and Gratuities.**—These vary in accordance with the regulations of each Colony, but generally speaking an officer on attaining the age of 50 years, or after 15 years' service (of which at least 12 must have been residential) is qualified for a pension calculated at one-fortieth of the last annual salary for each year of service. If invalided after a minimum of seven years' service, he is qualified for a pension calculated at the same rate. If invalided before completing seven years' service he is qualified for a gratuity not exceeding three-quarters of a month's salary for each six months of service; provided that he has been confirmed in his appointment. For the purpose of calculating the amount of these pensions and gratuities, leave of absence without salary is not counted, while leave with half salary is counted at the rate of one month for every two months of such leave. An addition, representing the value of free quarters, is made to the officer's salary. This addition is as follows: To salaries of £400 a year, an addition of £40; to salaries above £400, but not exceeding £500, an addition of £50; to salaries above £500, but not exceeding £700, an addition of £60; to salaries above £700, but not exceeding £900, an addition of £70; to salaries exceeding £900, an addition of £80. In addition to the ordinary regulations, an officer of the West African Medical Staff enjoys the following special privilege: At the end of nine years (of which not less than six must have been residential) he will be permitted to retire with a gratuity of £1000, or at the end of 12 years (of which not less than eight must have been residential) with a gratuity of £1250. All claims to pensions are, however, forfeited on the receipt of such a gratuity. In the event of an officer dying in the service after completion of these gratuities, a sum equal to the gratuity in question will be paid to the credit of his estate. Officers are not allowed to take their wives out with them until they have acquired experience of the local conditions, and have obtained the sanction of the Governor. Passages for wives and children are not provided.

Candidates for medical appointments in West Africa are allowed to express a preference for any particular Colony or Protectorate, and their wishes in this respect will be borne in mind and met as far as possible, but they are liable to be posted in the first instance, or transferred afterwards if necessary, to any other West African Colony or Protectorate at the discretion of the Secretary of State. Candidates who wish to be posted to the Northern Provinces of Nigeria should be able to ride. Candidates should on no account ultimately be transferred elsewhere, as the number of such transfers is exceedingly small. No applications for transfer can be entertained until an officer has served for five years in the West African Medical Staff, and officers desiring to be transferred must be prepared to find that medical salaries in other Colonies are lower than in West Africa. Only a small proportion of applicants succeed in obtaining a transfer. Officers who may be transferred to pensionable appointments under the Crown elsewhere than in West Africa do not forfeit their claim to pension in respect of their West African service on final retirement, provided they have been members of the Staff for at least 12 months.

**Instruction in Tropical Medicine.**—Every candidate selected for appointment will, unless the Secretary of State decides otherwise, be required to undergo a course of instruction for two or three months either at the London School of Tropical Medicine, Royal Victoria and Albert Hospital, E. (near Connaught Road Station), or at the Liverpool School of Tropical Medicine at the University of Liverpool. The cost of the tuition fees, board, and residence during such instruction, amounting to a maximum of £48 8s 10d., for three months, will be borne by the Government in the case of the London School; at Liverpool the cost of tuition will be borne by the Government, but candidates must make their own arrangements for board and lodging; an allowance of £2 a week will be paid to them monthly in arrears for this purpose. A daily allowance of 5s. (but no salary) will be paid to each candidate, monthly in arrears, during the course and may be continued subsequently up to the date of embarkation. These payments must be refunded by the candidate if he declines to accept an appointment in any of the Colonies or Protectorates for which he may be selected, if he fails to obtain a certificate showing that he has satisfied the school authorities, or if he relinquishes the West African service for any other reason than mental or physical infirmity, or is removed for misconduct, within three years of the date of his arrival in West Africa. If at the end of the session there exist no vacancy in the staff to which a candidate can be appointed he will be placed in a Reserve and granted an allowance at the rate of £200 a year until the occurrence of a vacancy.

**Course of study for higher scale of salary.**—The approved course of study is the three months' course of the West London Post-Graduate College or the London School of Clinical Medicine, Greenwich, in clinical medicine, clinical surgery, and pathology. Officers are allowed to substitute for this course either the course of study and examination for a recognised diploma or degree in public health, sanitary science, or State medicine; the course of study and examination for a further medical or surgical diploma or degree; or if the Governor, on the recommendation of the Principal Medical Officer, approves—a course of study in some special branch of medical or surgical practice (e.g., ophthalmology, dermatology, genito-urinary diseases), or an advanced course at the London or Liverpool School of Tropical Medicine. Whichever of these courses of study is selected, the necessary tuition and examination fees will be paid by the Colonial Government except in the event of an officer's deciding to enter for a further medical or surgical diploma or degree.

In conclusion it should be added that at the present time the age limits laid down for Colonial appointments are not always insisted upon, and that in a number of cases a temporary war bonus augments the salary.

<sup>2</sup> Except that the pension of an officer who has been promoted within three years of his retirement is calculated on the average of his salary for the last three years.



## DIPLOMAS IN STATE AND TROPICAL MEDICINE.

As usual we include in the Students' Number of THE LANCET an epitome of the instruction given at various universities and centres of medical education to medical men desiring to obtain diplomas in sanitary science, public health, State medicine, and tropical medicine. During the war some of this work has been suspended, for both teachers and taught being already registered medical men have been required in other spheres. But the public health of the country and of our colonial dependencies must be maintained, for this is one of our greatest guarantees of ultimate success in the struggle of endurance; and the machinery for the special education of public medical servants exists, as appears from what follows, and is ready to resume full activity at the earliest opportunity.

Resolutions, designed with a view of ensuring "the possession of a distinctively high proficiency, scientific and practical, in all the branches of study which concern the public health," have been adopted at various times by the General Medical Council from 1902 to 1911. Certain universities and corporations grant qualifications in Tropical Medicine which have not as yet been made registrable by statute.

*University of Oxford.*—An examination, conducted partly in writing, partly *visà voce*, and in each subject partly practical, is held in Michaelmas and Trinity Term in the following subjects:—General Hygiene, General Pathology (with special relation to Infectious Diseases), the Laws relating to Public Health, Sanitary Engineering, Vital Statistics. The examination is in two parts, which may be taken together or separately; but Part I. must be passed either before or at the same examination as Part II. The fee for admission to the examination is £5 for each part. Successful candidates are entitled to receive the Diploma in Public Health.

The First Part of the examination will comprise (a) a written paper of three hours in Chemistry and Physics; (b) a three hours' practical and *visà voce* examination in Chemistry and Physics.

The Second Part of the examination will consist of the following parts:—(a) Two written papers, each of three hours, dealing with General Hygiene (including Sanitary Engineering, Vital Statistics, and the Laws relating to Public Health); (b) a practical and *visà voce* examination in General Hygiene; (c) a written paper of three hours in Pathology and Bacteriology; and (d) a three hours' practical and *visà voce* examination in Pathology and Bacteriology.

Candidates in Part I. of the examination will be required to produce a certificate (1) of Laboratory Work in Chemistry as applied to Hygiene.

Candidates in Part II. will produce the following further certificates: (2) of a Practical Knowledge of the Duties, Routine and Special, of Public Health Administration; (3) of having had Practical Instruction in Bacteriology, and the Pathology of the Diseases of Animals transmissible to Man; and (4) of having attended the practice of a Hospital for Infectious Diseases at which opportunities are afforded for the study of the Methods of Administration. The names of candidates must be sent to the Assistant Registrar of the University, Clarendon Building, Oxford, to whom applications for any further information should be addressed.

*University of Cambridge.*—Two examinations in so much of State medicine as comprised in the functions of medical officers of health are held during the year. The examination is divided into two parts and demands proficiency in all the branches of study which bear upon the duties of medical officers of health. The examinations in both parts will be oral and practical, as well as in writing. Candidates may present themselves for either part separately or for both together at their option; but the result of the examination in the case of any candidate will not be published until he has satisfied the examiners in both parts. Marks of distinction will be placed against the names of candidates who have specially distinguished themselves in either (1) general principles of hygiene; (2) bacteriology; (3) chemistry in Part I. of the examination; or (4) the second part of the examination, which has reference to State Medicine and to the applications of Pathology and Sanitary Science. Every

candidate will be required to pay a fee of £6 6s. before admission or readmission to either part of the examination, but candidates who have presented themselves before the year 1896 will be readmitted to either part on payment of a fee of £5 5s. Candidates must before admission to either part of the examination produce evidence of having satisfied provisions (1), (2), and (3), and before admission to Part II. having satisfied provision (4), above mentioned.

For Part I. of the examination courses of lectures and laboratory instruction are given in the University by Mr. J. E. Purvis on Hygiene, Chemistry, &c., and by Dr. Graham-Smith on Bacteriology. Professor G. H. F. Nuttall gives a course of lectures on Protozoal Diseases, and Dr. A. E. Shipley on Animal Parasites. For Part II Dr. A. J. Laird, the Medical Officer of Health for Cambridge, gives courses on Practical Sanitary Administration and in the Administrative Methods of the Infectious Diseases Hospital and Dr. F. Robinson, the Medical Officer of Health to the Cambridgeshire County Council, on Sanitary Laws, School Hygiene, Epidemiology, Vital Statistics, &c. These courses are open to non-members of the University.

All applications for further information respecting examinations and the courses of study should be addressed to Mr. Purvis, Chemical Laboratory, Pembroke-street, Cambridge.

Two Examinations in Tropical Medicine and Hygiene are conducted yearly by the State Medicine Syndicate of the University of Cambridge. The examinations are held in Cambridge early in January and in the middle of August. Each examination will extend over four days.

Any person whose name is on the Medical Register is admissible as a candidate to the examination provided (I.) that a period of not less than 12 months have elapsed between his attainment of a registrable qualification and his admission to the examination; (II.) that he produce evidence, satisfactory to the Syndicate, that he has diligently studied Pathology (including parasitology and bacteriology) in relation to Tropical Diseases, Clinical Medicine, and Surgery at a Hospital for Tropical Diseases, and Hygiene and Methods of Sanitation applicable to Tropical Climates. As evidence of study and attainments a candidate may present to the Syndicate (1) any dissertation, memoir, or other record of work carried out by himself on a subject connected with Tropical Medicine or Hygiene; (2) any Certificate or Diploma in Public Health or Sanitary Science he may have obtained from a recognised Examining Body. Such evidence will be considered by the Syndicate in determining whether he is qualified for admission to the examination and by the examiners in determining whether, if admitted, he shall be included in the list of successful candidates.

The examination will be partly in writing, partly oral, and partly practical and clinical (the clinical part will be conducted at a hospital for tropical diseases, at which cases will be submitted for diagnosis and comment), and will have reference to the nature, incidence, prevention, and treatment of the epidemic and other diseases prevalent in tropical countries. Every candidate who passes the examination to the satisfaction of the examiners will receive from the University a diploma testifying to his knowledge and skill in tropical medicine and hygiene. The fee for the examination is £9 9s., and applications should be addressed to Dr. Graham-Smith, Medical Schools, Cambridge.

*University of London.*—Candidates for the M.D. degree may offer State medicine as a subject in which to graduate. They must send to the Academic Registrar with their forms of entry certificates (i.) of having, subsequently to having obtained a registrable qualification to practise Medicine, attended a course of practical instruction in a laboratory or laboratories, British or foreign, approved by the University, in which chemistry, bacteriology, and the pathology of the diseases of animals transmissible to man are taught; such course to extend over a period of not less than six months and to consist of at least 240 hours, of which not more than one-half shall be devoted to practical chemistry. (ii.) Either of having, subsequently to having obtained a registrable qualification to practise Medicine, during six months (of which at least three months shall be distinct and separate from the above-mentioned period of laboratory instruction) been diligently engaged on not less than 60 working days in acquiring a practical knowledge of the duties, routine and special, of Public Health Administration under the supervision of a person recognised by the University as entitled to



grant certificates. Or of having held for a period of not less than three years an appointment as Medical Officer of Health of a Sanitary District within the British Dominions, and having a population of not less than 15,000. (iii.) Of having, subsequently to having obtained a registrable qualification to practise Medicine, attended at least twice weekly during a period of not less than three months a practice of a hospital for infectious diseases at which opportunities are afforded for the study of methods of administration. In connexion with this degree the various metropolitan medical schools hold regular classes under teachers of Public Health and Sanitary Science, such instruction being also used to obtain the various diplomas of other Universities and of those Royal Corporations which grant them.

*University of Durham.*—Candidates for the degree of Bachelor of Hygiene (B.Hy.) must be at least 22 years of age, registered, and a graduate in Medicine of a recognised university. They must spend six months at Newcastle-upon-Tyne studying Comparative Pathology, Practical Bacteriology, Sanitary Chemistry, and Physics, and have to pass an examination in Sanitary Chemistry, Physics, Comparative Pathology, Sanitary Legislation, Vital Statistics, Nosology, Climatology, Meteorology, Distribution of Health and Disease, Sanitary Medicine and Practical Hygiene. The fee for the examination for the degree of B.Hy. is £10 10s. and for the degree £6 6s. Candidates for the degree of Doctor of Hygiene (D.Hy.) must have acquired the degree of Bachelor of Hygiene, must for two years subsequently have been engaged in Public Health administration, or in research work relating to Public Health. The fee for the examination for the degree of D.Hy. is £5 and for the degree £10. The regulations for examination for the Diploma in Public Health (D.P.H.) are the same as those for the degree of Bachelor of Hygiene, except that the candidate is not required to be a graduate in Medicine of a recognised University and the course of study need not be passed at Newcastle-upon-Tyne. The fee for the examination is £10 10s. and for the diploma £3.

*Victoria University of Manchester.*—An examination in Public Health is held twice yearly. The examination is in two parts and is written, oral, and practical. Candidates may present themselves for Parts I. and II. separately or at the same time provided that no candidate be admitted to Part II. unless he has already passed in Part I. No candidate's name will be published until he has satisfied the examiners in both parts of the examination. The fee for each part is £5 5s., and must be paid on or before July 1st in each year. For any subsequent examination in the same part the fee will be £3 3s. Every candidate who has passed both parts of the examination to the satisfaction of the examiners, and who is legally registered, will receive a Diploma in Public Health. The examinations will begin about the end of March and the middle of July in each year. Holders of the Diploma in Public Health are eligible for examination for the Certificates in School Hygiene and Factory Hygiene after attending the prescribed periods of study and hospital practice.

*University of Birmingham.*—The University grants a degree of B.Sc. in Public Health and also a Diploma in the same subject on the following conditions: Graduates in Medicine of this University may become candidates for the degree of Bachelor of Science in Public Health by conforming to all the requirements laid down for candidates for the Diploma in Public Health, except that after graduating in Medicine all courses of study must be taken out in the University, and they must, in addition, have attended a three months' course of Geology in the University. The examinations will be held in the months of March and June and will consist of two parts, each part being written, oral, and practical. No candidate will be allowed to pass Part II. until he has passed Part I. Candidates may enter for Parts I. and II. separately or at the same time. The fee for each part of the examination is £5. Medical Officers of the Royal Navy who have attended courses in Hygienic Chemistry, Bacteriology, and Public Health at the Naval Medical School, Greenwich, will be admitted to the examinations for the Diploma in Public Health, whether they have previously been students at the Birmingham School or not; and the same applies to officers of the Royal Army Medical Corps who have studied

Chemistry and Bacteriology at the Staff College and pursued the further course of study approved by the General Medical Council.

*University of Liverpool.*—The University grants a Degree in Hygiene (M.H.) and a Diploma (D.P.H.), and every facility is afforded for training in Sanitary Science and State Medicine. The curriculum for the Degree extends over a period of two years, the first of which is devoted to laboratory instruction and practical classes (including those for the Diploma); the second being devoted to advanced study and research. The D.P.H. curriculum fees are: Chemistry, £5 5s.; Bacteriology, £5 5s.; Practical Sanitation, £15; Infectious Diseases, £3 3s. The courses may be taken out at any time, and students are allowed to work daily in the laboratories.

The University grants a Diploma in Tropical Medicine. Three courses of instruction are given every year. Two of these last for three full months—the Lent Course from Jan. 6th to April 5th and the Autumn Course from Sept. 15th to Dec. 13th. The Third Course, an Advanced Course, lasts one month, from June 1st to the 30th. At the end of each full course an examination is held by the University for its Diploma of Tropical Medicine (D.T.M.), which is open only to those who have been through the course of instruction of the school. The examination lasts three days and consists (1) of papers on Tropical Medicine, Tropical Pathology, and Tropical Sanitation and Entomology respectively; (2) of a clinical examination; and (3) of an oral examination. The advanced course consists entirely of Practical and Clinical Laboratory Work, given at the laboratory at the University. The fee for the full course of instruction is 13 guineas, with an extra charge of 10s. 6d. for the use of a microscope if required. The fee for the examination is 5 guineas. Applications should be made to the Dean of the Medical Faculty, University of Liverpool. Two University Fellowships of £100 a year each are open to students of the school, amongst others. Accommodation for research work is to be had at the University Laboratory. The Mary Kingsley Medal is awarded by the school for distinguished work in connexion with Tropical Medicine. The new laboratories are completed and ready for occupation on the termination of the war.

*University of Leeds.*—The University grants a Diploma in Public Health, and every facility is afforded for training in Sanitary Science and State Medicine. The examination, which is held twice in each year—namely, in June and December—is in two parts, and is written, oral, and practical. Candidates may present themselves for Part I. (a), Part I. (b), and II. separately or at the same time, provided that no candidate be allowed to pass in Part II. unless he has already passed in Part I. Fees—The fee for each part is £5 5s., and for any subsequent examination in the same part £3 3s. Instruction in Sanitary Chemistry is given in the second and third terms and in Bacteriology during the first and second terms. Practical work under arrangement with the Leeds City Council. Prospectus can be obtained from the Dean of the Medical School.

*University of Bristol.*—Diploma in Public Health. Candidates must be at least 23 years of age, shall be fully registered medical practitioners of not less than 12 months' standing as such, and shall have passed the examination prescribed by regulation. The examination is divided into two parts. The subjects of the First Part are Chemistry as applied to Public Health and Pathology and Bacteriology. Candidates for the First Part shall, during six months after having obtained a registrable qualification, have received practical laboratory instruction in Hygienic Chemistry, in Bacteriology, and in the Pathology of the Diseases of Animals Transmissible to Man. The subjects of the Second Part are: Public Health and Epidemiology, Sanitary Law, Vital Statistics, and Sanitary Reporting.

For information as to Post graduate instruction apply to the Director of Post-graduate Studies, Professor Walker Hall.

*University of Edinburgh.*—Two degrees in Science in the Department of Public Health are conferred by the University of Edinburgh—viz., Bachelor of Science in Public Health and Doctor of Science in Public Health. A Diploma in Tropical Medicine and Hygiene is also granted. Candidates for the degree of B.Sc. in Public Health must be graduates in Medicine of a recognised University, and must pass two examinations, for the first of which they must, after



graduation in Medicine, have worked for at least 20 hours per week during a period of not less than eight months, of which at least five consecutive months must be in the Public Health Laboratory of the University of Edinburgh and the remainder either there or in a laboratory recognised by that University; they must also have attended courses of instruction in Physics and Geology in some Scottish University. Candidates are not admitted to the Second Examination sooner than six months after having passed the First Examination, nor sooner than 18 months after having taken their degree in Medicine, and they must have attended two separate courses in Public Health in some University of the United Kingdom or in such medical school or Indian, Colonial, or Foreign University as may be approved for the purpose by Edinburgh University, each course consisting of 40 lectures at least; one of which courses shall deal with medicine and the other with engineering, each in its relation to public health. The subjects of examination include Laboratory work, Physics, Geology, Medicine in its application to Public Health, Sanitation, Sanitary Law, and Vital Statistics. Graduates who have held the degree of B.Sc. in Public Health from the University of Edinburgh for a term of five years may offer themselves for the degree of D.Sc. in Public Health in that University. They must then present a Thesis and pass an examination in Public Health. The fees are £3 3s. for the First and £3 3s. for the Second B.Sc. Examinations, and £10 10s. for the degree of D.Sc.

*University of Aberdeen.*—The Diploma in Public Health (D.P.H.) is conferred only on graduates in Medicine of a University in the United Kingdom not less than 12 months after medical graduation. Every candidate must produce evidence of having attended, after graduation in Medicine, during a period of six months, practical instruction in Hygiene and Bacteriology in laboratories approved of by the University, together with having during six months (whereof three months must be distinct from the period of laboratory instruction) been diligently engaged in acquiring a practical knowledge of the duties, routine and special, of Public Health administration under the medical officer of health of a county or large urban district. He must have regularly attended for three months the practice of a hospital for infectious diseases at which opportunities are afforded for the study of methods of administration. He must also have obtained practical instruction in the drawing and interpretation of plans. The diploma is conferred after an examination in Public Health held in March and July of each year. The fee is £5 5s.

*University of Dublin (Trinity College).*—The Diploma in Public Health is conferred, after examination, on the following conditions. The candidate must be a registered medical practitioner and have obtained a registrable qualification at least nine months before the examination. The candidate must have completed, subsequently to obtaining a registrable qualification, four months' practical instruction in a chemical and bacteriological laboratory, or laboratories, approved by the University, must have studied practically outdoor sanitary work for six months under an approved officer of health, and must have spent three months' attendance at a fever hospital where opportunities are afforded for the study of methods of administration. A special prospectus and a list of recognised laboratories may be obtained by application to the Registrar of the School of Physic, Trinity College, Dublin.

*National University of Ireland.*—At this University there is a Diploma in Public Health and a B.Sc. in Public Health. The Diploma may be granted to matriculated or non-matriculated students of the University who shall have completed approved courses of study and shall have passed the prescribed examinations, provided that it shall not be granted except to a registered medical practitioner. Candidates may present themselves for the examination after an interval of not less than 12 months from the time of obtaining a registrable qualification. The curriculum extends over a period of not less than nine calendar months. Every candidate must produce a certificate that he has attended practical instruction in a laboratory, approved by the University, in Chemistry, Bacteriology, and the Pathology of the diseases of animals transmissible to man. The examination consists of two parts, which may be passed separately or together. Part I. comprises the following subjects: Chemistry, Meteorology and Climato-

logy, and Sanitary Engineering and Architecture. Part II. comprises the following subjects: Bacteriology, Hygiene, Sanitary Law, and Vital Statistics. The examination in each part will be oral and practical as well as written.

For the B.Sc. in Public Health a candidate shall not be admitted unless he (a) shall have received the degrees of M.B., B.Ch., and B.A.O. at least one year previously; (b) shall have pursued an approved course of study in the Faculty of Medicine; and (c) shall have passed the prescribed examination. In addition to D.P.H. course the candidate will be required to take up (1) a Special Course of Pathology; (2) Bacteriology; and (3) Advanced Course in Hygiene. Each of these courses lasts three months.

*University of Belfast.*—A Diploma in Public Health is given by examination. Every candidate must produce evidence that, after obtaining a registrable qualification, he has during six months received practical instruction in an approved laboratory in which Chemistry, Bacteriology, and the Pathology of the diseases of animals transmissible to man are taught. After obtaining a registrable qualification every candidate must produce evidence that he has attended during three months the practice of a hospital for infectious diseases at which opportunities are afforded for the study of methods of administration. The examination must have extended over not less than four days, one of which shall have been devoted to practical work in a laboratory, and one to practical examination in, and reporting on, subjects which fall within the special outdoor duties of a medical officer of health. The examination will be held once yearly, Part I. in March and Part II. in June. The first part of the examination will have reference to the general principles of sanitary science, and the second part to State Medicine and to the applications of Pathology and Sanitary Science. The fee for each part is 1 guinea.

*Royal College of Physicians of London and the Royal College of Surgeons of England.*—The following are the regulations for obtaining the Diploma in Public Health: The examination consists of two parts. The first part of the examination takes place in January and July, and the second part in January and July. The fee for each part is £10 10s., except for those who are diplomates of the Royal Colleges, who pay £6 6s. for each part. A candidate intending to present himself must give 14 days' written notice to the Secretary, at the Examination Hall, Queen-square, London, W.C. 1. He will be admissible to examination in Part I. on producing evidence (1) of having been in possession of a registrable qualification for at least 12 months; (2) of having attended thereafter practical instruction in a laboratory recognised by the Examining Board in England for at least 240 hours during a period of six months; and (3) of being at least 23 years of age. A candidate will be admitted to Part II. of the examination on producing evidence (1) of having been diligently engaged in acquiring a practical knowledge of Public Health administration during six months under certain specified conditions; (2) of having attended during three months the clinical practice of a hospital for infectious diseases; and (3) of being at least 24 years of age.

*The Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, the Royal Faculty of Physicians and Surgeons of Glasgow.*—All candidates for the Diploma in Public Health must have a qualification which has been registered under the Medical Acts. Candidates must have attended not less than four calendar months' practical instruction in Chemistry and Bacteriology in a recognised laboratory or laboratories, must have studied outdoor sanitary work for six months under a medical officer of health or other sanitary officer; and must give evidence of attendance for three months at the practice of a Hospital for Infectious Diseases, at which he has received instruction in the methods of administration. The examination consists of two parts, and candidates may enter for both at one period or for either separately. The First Part includes (a) Laboratory Work (Chemistry and Bacteriology), (b) Physics and Meteorology; and the Second Examination embraces (a) Report on Premises visited, (b) Examination at Fever Hospital, (c) Examination at Public Abattoir, (d) Written and Oral Examinations on Epidemiology and Endemiology, (e) Vital Statistics and Sanitary Law, and (f) Practical Sanitation. The fee is 12 guineas for both examinations, or 6 guineas for either of them. A fee of 3 guineas is payable by rejected



candidates for either examination. The examination is held twice yearly, in May and October. The published regulations provide detailed synopses of the subjects of examination. The Registrar for Edinburgh is Mr. D. L. Eadie, 49, Lauriston-place, and for Glasgow Mr. Walter Hurst, 242, St. Vincent-street.

*Royal College of Physicians of Ireland and Royal College of Surgeons in Ireland.*—Every candidate for the Diploma in Public Health must be a registered medical practitioner. He must subsequently to qualification (1) receive six months' laboratory instruction in Chemistry, Bacteriology, and the Diseases of Animals transmissible to man; and (2) during six months practically study outdoor sanitary work under a medical officer of health, and shall as an additional requirement attend a hospital for infectious diseases. Candidates are examined on four days, commencing on the first Monday of February, May, and November. The examination comprises the following subjects:—Hygiene, Chemistry, Meteorology and Climatology, Engineering, Vital Statistics, Sanitary Law, and Bacteriology. The fee for the examination is £10 10s. For further particulars apply to Alfred Miller, Secretary, Committee of Management; Office, Royal College of Surgeons, Dublin.

## DENTAL SURGERY.

ANYONE who is on the Medical Register is entitled to practise as a dentist, although he cannot register as such without the special licence; but it is of eminent advantage to take the L.D.S., otherwise few dental appointments at general or special hospitals or dispensaries are available. The subjects beyond those included in the general qualification are—Dental Anatomy and Physiology (Human and Comparative), one course; a separate course of Dental Histology, including the preparation of microscopical sections; Dental Surgery, one course; a separate course of Practical Dental Surgery; a course of not less than five lectures on the Surgery of the Mouth; Dental Mechanics, one course; a course of Practical Dental Mechanics, including the manufacture and adjustment of six dentures and six crowns; Dental Metallurgy, one course; a course of Practical Dental Metallurgy; Practice of Dental Surgery at a recognised school, two years, and a certificate of having been engaged during a period of not less than two years in acquiring a knowledge of Dental Mechanics (this may be obtained by apprenticeship to a duly qualified dental practitioner or in the mechanical department of a recognised dental hospital). The Dental Schools in London are the Royal Dental Hospital of London, the National Dental Hospital, Guy's Hospital Dental School, and the London Hospital Dental School. Most of the large provincial towns, where there are medical schools, have now dental hospitals.

*The Registration of Dental Students* is carried on at the Medical Council Office in London in the same manner as the existing registration of medical students, and subject to the same regulations as regards Preliminary Examinations. Candidates for a diploma in Dental Surgery must produce certificates of having been engaged during four years in professional studies, including two years' instruction in mechanical dentistry. The two years of instruction in mechanical dentistry, or any part of them, may be taken by the dental student either before or after his registration as a student, but no portion of such mechanical instruction will be counted as one of the four years of professional study unless taken after registration. The recommendations as to the course of study and examinations adopted by the General Medical Council in November, 1909, are under revision by the Council, but consideration of them is postponed until the Departmental Committee on the Dentists Act has reported.

It is necessary for anyone practising Dental Surgery in this country to be on the Register, and no foreign qualifications are recognised, except the Dental Diploma granted in Belgium after examination by the Provincial Medical Commission, provided the holder has obtained the grade of "Candidate in Medicine" at one of the four Belgian Universities. Persons with Colonial and Foreign qualifications which have been obtained after a four years' curriculum can apply for special registration. Certain dental qualifications granted in Australia and New Zealand are also

registrable. The Royal Colleges of the United Kingdom and ten of the Universities grant degrees or licences in Dental Surgery.

### THE REGISTERING BODIES IN DENTISTRY.

*The Royal College of Surgeons of England* grants a diploma in Dental Surgery under the following regulations, which apply to all candidates who have registered as dental students after Jan. 1st, 1897. Candidates are required to pass three examinations: the Preliminary Science Examination, the First Professional Examination, and the Second Professional Examination. I. Preliminary Science Examination.—This is identical with Part I. of the First Examination of the Examining Board in England. Candidates who commenced professional study on or after Oct. 1st, 1913, must pass the Preliminary Science Examination before commencing the courses required for the Second Professional Examination. II. The First Professional Examination.—The candidate must produce evidence of instruction in Dental Metallurgy and Practical Dental Mechanics. The Examination consists of Part I. (Mechanical Dentistry) and Part II. (Dental Metallurgy), the examination in Dental Metallurgy being by written paper. The parts may be taken together or separately. III. The Second Professional Examination.—This is divided into two parts: (a) the General, (b) the Dental. The General part must be passed before the Dental portion. The instruction is obtained partly at a General Hospital and partly at a Dental Hospital.—The Second Professional Examination consists of: Part I., General Anatomy and Physiology, General Surgery and Pathology; Part II., Dental Anatomy and Physiology, Dental Pathology and Surgery, and Practical Dental Surgery. There is a written and *visà voce* examination in each part and a practical examination as well in Part II. Exemption from the Preliminary Science Examination is granted to candidates who have passed an Examination in Chemistry and Physics for a degree in Medicine at a University in the United Kingdom, in India, or in a British colony. Exemption from Examination in Anatomy and Physiology is granted to candidates who have passed the Second Examination of the Examining Board in England or the corresponding Examination for any degree or qualification in Medicine or Surgery registrable under the Medical Act of 1886. Exemption from Examination in General Surgery and Pathology is granted to candidates who have passed the Examination in Surgery of the Examining Board in England or the corresponding Examinations of the Colleges and University above mentioned. The fee for the diploma is 20 guineas, and is payable as follows:—Preliminary Science Examination, 3 guineas; First Professional Examination, 7 guineas; Second Professional Examination, 10 guineas. Synopses of examinations and all further information can be obtained from the Secretary, Examination Hall, Queen-square, London, W.C. 1.

*Royal College of Surgeons, Edinburgh.*—Regulations giving a list of Preliminary Examinations recognised for obtaining the Licence in Dental Surgery, as well as of the subjects of the Professional Examinations, may be obtained from Mr. D. L. Eadie, Clerk to the Royal College of Surgeons, at 49, Lauriston-place, Edinburgh. Candidates must produce certificates of having, subsequently to the date of registration, been engaged for four years in professional studies and of three years' instruction in Mechanical Dentistry from a registered dental practitioner, except in the case of previously registered medical practitioners, when two years will be considered sufficient. Candidates must also have attended a course of instruction at a University or in an established school of medicine or in a provincial school specially recognised by the College as qualifying for the Diploma in Surgery. In addition they will be required to have attended in a recognised dental hospital, or with teachers recognised by the College, special courses of lectures and instruction in Anatomy and Physiology (Human and Comparative), Surgery, Pathology, Materia Medica, Dental Histology, and Practical Dental Mechanics and Metallurgy; two years' attendance at a dental hospital or the dental department of a general hospital recognised by the College. Practical instruction in Mechanical Dentistry from a registered Dentist, or in the Mechanical Department of a recognised Dental Hospital and School, for



three years. Candidates who have passed the First and Second Examinations for the Triple Qualification will be exempt from the First Dental Examination, and will have the advantage of being admissible either to the Final Dental Examination or to the subsequent Examination for the Triple Qualification, or to both. But the First Dental Examination will not be held as equivalent to the First and Second Triple Examinations, and will admit to the Final Dental Examination only. Candidates who are Licentiates of this College or who may be registered medical practitioners will be required to produce certificates of attendance on the special subjects only and will be examined in these only for the dental diploma. First Professional Examination: The candidate must have attended the required courses. The examination embraces (1) Chemistry and Physics; and (2) Anatomy and Physiology. The fee is £5 5s. for the complete examination, and £3 3s. is payable for each division. In all cases of rejected candidates the fee for re-entry is £3 3s. Second Examination: The candidate must have attended the remaining courses of the curriculum, must produce certificates showing that he is 21 years of age, and must pay a fee of £10 10s., for re-entry £5 5s. The examination embraces (1) Surgery and Medicine; and (2) the special subjects of Dental Anatomy and Physiology, Dental Surgery and Pathology, Dental Materia Medica, Dental Mechanics and Dental Metallurgy, with a practical as well as the written and oral examinations in the subjects of Dental and Oral Surgery, Pathology, and Mechanics. The candidate will be tested in the Treatment of Dental Diseases, in Operative Dentistry, the Administration of Anæsthetics, Orthodontics, and in Prosthetic and Mechanical Dentistry. Candidates who claim exemption from the First Dental Examination on the ground of having passed the First and Second Triple Qualification Examinations or other recognised examinations will, before being admitted to the Second Dental Examination, be required to pay the total fee of £15 15s. payable for the dental diploma. Fees and schedules must be lodged with the Clerk not later than one week before the examination.

*Royal Faculty of Physicians and Surgeons of Glasgow.*—The regulations as to certificates, curriculum, number, and subjects of examinations, fees, &c., are in effect similar to those of the Royal College of Surgeons of Edinburgh, but embrace Dental Bacteriology. Candidates can enter for the First Examination in three divisions, the first embracing Physics and Chemistry, the second Dental Metallurgy and Dental Mechanics, and the third Anatomy and Physiology. The examination in Dental Mechanics is practical; and there is at the Final Examination an examination in Practical Dentistry conducted in a dental hospital. Copies of regulations, &c., to be obtained from Mr. Walter Hurst, Registrar, Faculty Hall, 242, St. Vincent-street, Glasgow.

*Royal College of Surgeons in Ireland.*—Candidates for the Licence in Dental Surgery are required to pass two professional examinations. Before the First Examination the candidate must produce evidence of having attended courses in Theoretical and Practical Chemistry, including Metallurgy and Physics, at a recognised institution; of having been registered as a medical or dental student by the General Medical Council; and of having attended courses of instruction in the following subjects at a recognised school of medicine: (a) Anatomy Lectures; (b) Dissections with Demonstrations; (c) Physiology, including Dental Physiology; (d) Practical Physiology and Histology, including Dental Physiology and Histology, Human and Comparative. Before the Final Dental Examination the candidate must have been engaged during a period of two years in acquiring a practical familiarity with the details of Mechanical Dentistry under the instruction of a registered dentist, or under the direction of the superintendent of the Mechanical Department of a recognised Dental Hospital, and have attended, at institutions recognised by the College for the purpose, the following courses of instruction: (a) Dental Surgery and Pathology, Orthodontia, and the Materia Medica and Therapeutics applicable to Dental Surgery. Lectures. Two courses. (b) Dental Mechanics. Lectures. Two courses. (c) Dental Anatomy. Lectures. One course. (d) The practice of a Dental Hospital, or of the Dental Department of a General Hospital. Two years. He must also have attended Clinical instructions at a recognised General Hospital during the ordinary teaching sessions (nine months), and have been engaged during four years in the acquirement of pro-

fessional knowledge subsequently to the date of registration as a medical or dental student. One year's bona-fide apprenticeship with a registered dental practitioner, after being registered as a medical or dental student, may be counted as one of the four years of professional study. He must be 21 years of age.

In the First Dental Examination candidates will be examined in (A) Physics and Chemistry, including Practical Chemistry and Metallurgy. (B) Anatomy, Physiology, and Histology—General and Dental. All the subjects may be passed at the same time, or they may be passed in two groups, (A) and (B). The examination is partly written, partly *visû voce*, and partly practical.

In the Final Dental Examination candidates will be examined in General Pathology, Medicine, and Surgery; Dental Surgery, and Dental Pathology, with the Materia Medica and Therapeutics applicable to Dental Surgery; Dental Mechanics and Metallurgy; Orthodontia. Candidates must pass in all the subjects at one examination. The examination is partly written, partly *visû voce*, and partly practical, and includes the examination of patients and the performance of dental operations. Candidates are required to provide their own instruments and gold for filling. The First Dental Examination will commence on the first Mondays in the months of February, May, and November. The Final Dental Examination will commence on the second Mondays in the months of February, May, and November. The total fee for the Diploma in Dental Surgery is 20 guineas. Candidates must pay the fees for examinations from which they are exempted, unless when such exemptions have been granted in virtue of examinations passed before the Conjoint Board in Ireland.

*University of Birmingham.*—The teaching of Dentistry is undertaken by the University acting in association with the Birmingham Dental Hospital and the Birmingham Clinical Board. The instruction at the Dental Hospital is carried out under the direction of the University Dental Clinical Board, so that students may fully qualify themselves for the Dental Diploma (L.D.S.) of this and other universities and licensing bodies. There is a special and well-equipped Dental Museum and Laboratory. An Entrance Exhibition, value £37 10s. is awarded annually at the commencement of the winter session. The following are the regulations for Degrees in Dentistry:—1. The degrees conferred by the University are those of Bachelor and Master of Dental Surgery (B.D.S. and M.D.S.). 2. All candidates for these degrees must pass the same Matriculation Examination as that required from candidates for Medical Degrees. 3. The degree of Bachelor of Dental Surgery is not conferred upon any candidate who has not obtained a Licence in Dental Surgery. The candidate is not eligible for the degree until a period of 12 months has elapsed from the passing of his examination for the Licence in Dental Surgery. Of this period at least six months must be spent in the dental department of a general hospital approved by the University. 4. In addition to the Licence in Dental Surgery the candidate must produce evidence that he has attended the courses required by medical students of the University in the following subjects and passed the Examinations held in the same for Medical and Surgical Degrees: (a) Chemistry and Practical Chemistry, (b) Physics and Practical Physics, (c) Elementary Biology, (d) Anatomy and Practical Anatomy, and (e) Physiology and Practical Physiology. B. That he has passed the class examinations in: (f) One Special Course of Lectures on Medicine, (g) One Special Course of Lectures on Surgery, and (h) Pathology and Bacteriology. C. That he has attended courses and passed the class examinations in: (k) Dental Histology and Patho-Histology, (l) Comparative Dental Anatomy, and (m) Dental Surgery and Prosthetic Dentistry. D. That he has received instruction in the Clinical Examination of living cases at the dental department of a general hospital for a period of not less than six months. 5. The Final Examination will deal with the subjects in Classes C and D. 6. On the expiration of 12 months from the date of passing the Examination for the Degree of Bachelor of Dental Surgery, the candidate will be eligible for that of Master of Dental Surgery. 7. For this degree candidates will be required to submit a thesis containing original work and investigations in some subject connected with Dentistry, which thesis shall be submitted to examiners to be nominated by the Dental Advisory Board.



*University of Bristol.*—Candidates for the degree of Bachelor of Dental Surgery must be not less than 21 years of age and shall have pursued the courses prescribed by University regulations during not less than five years, of which three shall have been passed in the University, and shall have been registered as dental students by the General Medical Council. All candidates for the degree of B.D.S. are required to satisfy the examiners in the several subjects of four examinations. The First Examination: The subjects are Chemistry, Physics, and Zoology, and the curriculum extends over one year.\* The Second Examination: The subjects are Dental Mechanics, Dental Metallurgy, and Dental Materia Medica, and the candidate shall produce evidence of having served for two years an approved pupillage in Dental Mechanics. The Third Examination: The subjects are Anatomy, Physiology, and Histology, Dental Anatomy, and Dental Histology. The Final Examination: The subjects are Medicine and Surgery, Dental Surgery (including Prosthetics), Operative Dental Surgery, and Dental Bacteriology. Degree of Master of Dental Surgery: Candidates shall be Bachelors of the University, shall present a Dissertation on some subject of Dental Surgery to be approved by the Examiners, and pass an examination in Dental Surgery. Diploma in Dental Surgery: Candidates need not be undergraduates, but shall be registered dental students before being admitted to any professional examination; the curriculum extends over four years. A two years' pupillage in Mechanical Dentistry is required, and four examinations must be passed, the subjects of which differ only from those of the B.D.S. in that Zoology is not required for the First Examination, and Medicine is not required for the Final Examination. Candidates who are already registered medical practitioners shall be further exempted from study and examination in Physics and Chemistry, Anatomy, Physiology and Histology, Medicine, and General Surgery.

*University of Durham.*—Every candidate for the Licence in Dental Surgery must be registered as a dental student. There are four Examinations. The subjects are:—*First:* (a) Chemistry; and (b) Physics. *Second:* (a) Dental Mechanics, Theoretical and Practical; (b) Dental Metallurgy. *Third:* (a) Anatomy; (b) Physiology and Histology; (c) Dental Anatomy and Dental Histology; and (d) Dental Materia Medica. *Final:* (a) Surgery; (b) Dental Surgery, including Prosthetics and Orthodontia; (c) Operative Dental Surgery, Practical Examination; and (d) Dental Pathology and Bacteriology. A candidate before presenting himself for examination is required to furnish certificates of instruction in the following subjects, attended after registration as a dental student at recognised Colleges or Schools:—*First Examination:* Chemistry and Physics. *Second Examination:* Dental Mechanics and Dental Metallurgy. *Third Examination:* Anatomy, with Dissections; Physiology; Histology; Dental Anatomy and Physiology; Dental Histology; and Dental Materia Medica. *Final Examination:* Dental Hospital Practice (two years); General Hospital Practice (nine months); Medicine Lectures (two terms); Surgery Lectures (two terms); Dental Surgery and Pathology (a course of not less than 20 lectures); Dental Bacteriology (three terms); Operative Dental Surgery (not less than 12 lectures); and Anaesthetics (a course of not less than one month).

Before admission to the Final Examination each candidate must furnish evidence (1) of having attained the age of 21 years; (2) of having undergone a three years' pupillage in Mechanical Dentistry with a registered dentist; and (3) of having been engaged in professional study for at least four years subsequent to registration as a dental student. The examinations will be held concurrently with the medical examinations, and the fees payable by candidates are as follows: First Examination, £2 10s.; Second Examination, £2 10s.; Third Examination, £2 10s.; Final Examination, £3 10s.; fee for Licence, £3; total, £15. For re-examination: First Examination, £1 10s.; Second Examination, £2; Third Examination, £2 (in one part only, £1); Fourth Examination, £2. The practical examinations in dentistry will be conducted at the Newcastle Dental Hospital.

*University of Leeds.*—The degrees in Dental Surgery are Bachelor of Dental Surgery (B.Ch.D.) and Master of Dental Surgery (M.Ch.D.). All candidates for the degree of Bachelor of Dental Surgery shall be required to have passed the Matriculation Examination, to have pursued thereafter approved courses of study for not less than five academic years, two of such years at least having been passed in the University subsequently to the date of passing Parts I. and II. of the First Examination, and to have completed such period of pupillage or hospital attendance, or both, as may be prescribed by the regulations of the University. No candidate will be admitted to the degree who has not attained the age of 21 years on the day of graduation. The classes in the Department of Dentistry begin on Oct. 1st. The instruction in the Preliminary subjects of Chemistry, Physics, and Biology are given at the University in College-road. The classes in the other subjects and the systematic courses in Dental subjects are held in the School of Medicine of the University in Thoresby Place. The clinical instruction is given in the Dental Department of the Leeds Public Dispensary, which is affiliated with the University and recognised by the Royal College of Surgeons. Applications for the prospectus should be made to the Dean of the Faculty of Medicine.

*University of Liverpool (Liverpool Dental Hospital Clinical School and School of Dental Surgery).*—The University grants a Licence in Dental Surgery (L.D.S.) and degrees in Dental Surgery (B.D.S. and M.D.S.). The courses of systematic instruction are given in the University buildings, five minutes' walk from the Dental Hospital. The two institutions are now closely associated, and the management of the curriculum is in the hands of the Board of Dental Studies. The Dental Hospital, covering a site of 672 square yards, is equipped in each department with every modern accessory and receives constant additions. The laboratory is in charge of a skilled dental mechanic under the supervision of the Director of Dental Education and Dental Staff, and students are able to undertake at the hospital the whole of their training in Mechanical Dentistry. The times of the lectures at the University are arranged to meet the convenience of students, thus allowing the maximum time for attendance upon Dental Hospital practice. Fees: The composition fees are as follows: Licence course (L.D.S.): Composition fee £58 10s., for the course of other licensing bodies £61 10s., payable in two equal instalments, the first on entry, the second 12 months later. Two years' instruction in Mechanical Dentistry (pupillage) and two years' Dental Hospital Practice (combined), £100, or in two instalments of £52 10s. each. Degree course (B.D.S.): £67 10s. for all lectures (including Chemistry, Physics, and Zoology) in three instalments. Two years' dental hospital, £21; general hospital practice, £10 10s.; three years' mechanical instruction (pupillage), £105. Further information may be had from the Director of Dental Education, Mr. W. H. Gilmour.

*University of Manchester.*—In the University of Manchester the Dental Department forms an integral part of the Faculty of Medicine. This contains a series of laboratories, lecture rooms, and museums which will bear comparison with those of any otherschool in the kingdom, and the fullest opportunities for study are offered to students preparing for any of the professional examinations. Instruction adapted to the requirements of students preparing for the B.D.S. Degree and the Dental Diplomas of the University, the Royal College of Surgeons of England, and of other licensing bodies is given during the Winter and Summer Sessions both at the University and at the Dental Hospital of Manchester adjoining the University. The required general hospital practice is taken at the Manchester Royal Infirmary. Women students are admitted to the classes in the Dental Department, and for them common rooms are provided. The composition fee for candidates for the University degree of Bachelor of Dental Surgery is 60 guineas, payable in two equal instalments at the beginning of the first and third years of studentship. The composition fee for candidates for the University Diploma in Dentistry is 55 guineas, payable in two equal instalments at the beginning of the first and third years of studentship. The composition fee for candidates for the L.D.S. of England is 60 guineas, payable in two equal instalments at the beginning of the first and third years of studentship. Students who have already served their apprenticeship with a private

\* Candidates who have passed the Higher School Certificate approved by the Board of Education in these subjects will not be required to sit for the first examination for either the B.D.S. or the L.D.S., and will be regarded as having completed one year of study.



practitioner, and who propose to complete the final portion of their attendance at the University and at an approved dental hospital, will be required to pay the composition fee in two equal instalments at the commencement of the first and second years of studentship. The composition fee does not include the hospital fees, the examination fees, the fee for the conferment of the degree or the diploma, the registration fee, nor the fees for chemicals and chemical apparatus.

*National University of Ireland.*—This University grants the degrees of Bachelor of Dental Surgery and a degree of Master of Dental Surgery. A student may not be admitted to the Degree of Bachelor of Dental Surgery unless a period of not less than four years shall have elapsed from the date of his matriculation, during which period he must have pursued an approved course of study of not less than nine terms. For the degree of Bachelor of Dental Surgery candidates must pass four examinations, the first two being the same as those for the first and second examination in Medicine. The subjects of the third examination are Dental and Practical Pathology, Dental Surgery and Dental Medicine, the subjects of the fourth being Dental Surgery and Pathology, Dental Mechanics, Operative Dentistry, Orthodontia, and Dental Materia Medica. A candidate for the degree of B.D.S. must produce evidence of having been engaged during a period of two years in acquiring a practical familiarity with the details of Mechanical Dentistry under the instruction of a registered dentist, or under professional direction in the mechanical department of a dental hospital approved by the University. A portion of or the entire period may be served before commencing study for the degree of B.D.S., but no portion so taken prior to commencement of study shall count as part of the four years of Dental Study. The degree of Master of Dental Surgery will not be granted until three years after the B.D.S. has been obtained.

*University of Melbourne.*—Degrees of Bachelor (B.D.Sc.) and Doctor of Dental Science (D.D.Sc.) are granted. Candidates for the former are required. Subsequently to matriculation (which must include physics) to take a four years' course of study and to pass four examinations. They shall be apprenticed for not less than three years with a registered dentist in some part of the British Empire. Fee for the four years £100, payable in four equal annual instalments. Annual examination fee £5 5s. Candidates for the degree of Doctor must be Bachelors of Dental Science of at least two years' standing. The examination is partly written and partly oral. A thesis may be submitted.

*University of Sydney.*—A degree in Dental Surgery (B.D.S.) is granted after a four years' course following matriculation. A graduate in medicine is required to devote four terms to dental study before sitting for the degree of B.D.S. and a licentiate in dental surgery one additional year.

*University of Adelaide.*—The four years' course for the B.D.S. is regulated by similar conditions to that for the M.B., B.S. Four examinations are held in November of successive years. The fee for each ordinary examination is £3 3s., and for the degree £5 5s. Fees for the whole course amount to £95 11s.

*McGill University, Montreal.*—The degree of D.D.S. is granted on a four years' curriculum, the first year being that demanded of students in the Medical Faculty.

*University of Toronto.*—The degree of D.D.S. is granted on a four years' curriculum. Annual examinations are conducted under the joint auspices of the University and the Royal College of Dental Surgeons of Ontario. Concurrent courses may be run in medicine and dentistry extending over seven years.

*University of Malta.*—The University grants its diploma in dental surgery after examination to candidates producing evidence of four years' professional study and three years' instruction in mechanical dentistry.

#### TEACHING INSTITUTIONS IN DENTISTRY.

See also under Universities of Birmingham, Leeds, Liverpool, and Manchester above.

#### LONDON.

*Royal Dental Hospital of London, School of Dental Surgery, Leicester-square.*—A school of the University of London, and women are now admitted as students and are eligible for all hospital appointments and school prizes.—The school provides the special dental education required by the Royal College of Surgeons for the Licence in Dental Surgery. The general part of the

curriculum may be taken at any general hospital. The hospital is open from 9 A.M. to 5 P.M., there being one staff for the morning and another for the afternoon of each day. Pupils are received for the training in dental mechanics recognised by the curriculum. The demonstrators at the commencement of each session give a course of lectures on Operative Dental Surgery. The six house surgeons are held for six months each and are open to all qualified students. The lecturers, in addition to their lectures, give special demonstrations on the Microscopy of Dental Anatomy and Dental Surgery. The lecturer on Dental Mechanics also gives practical demonstrations in the laboratory. There is an Entrance Scholarship in Chemistry and Physics of the value of £50. One Entrance Scholarship in Dental Mechanics and Metallurgy value £25, open to pupils of the Hospital only. One Entrance Scholarship of £25 in Dental Mechanics, open to pupils of private practitioners. The Saunders Scholarship of £20 awarded to second year students. The Storer Bennett Research Scholarship for Scientific Research in any branch of Dental Surgery, value £50, is awarded triennially. The Alfred Woodhouse Scholarship of £35 and the Robert Woodhouse Prize of £10 for Practical Dental Surgery. Prizes and certificates are awarded by the lecturers for the best examinations in the subjects of their respective courses at the end of the summer and winter sessions. Fee for two years' hospital practice required by the curriculum, including lectures, £53 3s. in one payment, or £55 13s. in two yearly instalments. The curriculum requires two years to be passed at a General Hospital; the fee for this is about £60. Both hospitals can be attended simultaneously. For the lectures in Chemistry and Physics for the Preliminary Science Examination £10 10s. The fee for the instruction in Dental Mechanics and the two years' hospital practice required by the curriculum is £150 if paid in one instalment, or 150 guineas if paid in three equal instalments. The fee for tuition in Dental Mechanics is 50 guineas per annum; for one year's hospital practice £21. The Winter Session opens on Oct. 1st.

*University College Hospital Dental School.*—Corner of Great Portland and Devonshire-streets, W.—This Hospital and School has recently been thoroughly reorganised, and is now fully equipped with all the most modern appliances. Students are entered as students of University College Hospital, and, as such, attend the classes of Chemistry, Physics, Anatomy, and Physiology in University College, which is a few minutes' walk from the Dental Department in Great Portland-street, hitherto known as the National Dental Hospital. The First Dental School to admit Women Students. Practical courses to comply with the R.C.S. curriculum are held. Clinical Lectures and Demonstrations are given, and each student on entering passes through a preliminary course under a demonstrator. Two Entrance Exhibitions, of the value of £40 and £20, are open for competition. Prizes are open for competition at the end of each course of lectures. Fee for the full curriculum of four years, in all subjects required by the Royal College of Surgeons, also for other licensing bodies, 180 guineas, or in four instalments of 62, 41, 41, 41 guineas. A composition fee for medical men has been arranged covering the Two Years' Mechanical Work, Hospital Practice, and Lectures required by the curriculum of the Royal College of Surgeons amounting to 120 guineas. Hospital Practice to registered practitioners by special permission of Committee. 12 months, £15 15s. The Calendar, containing full information as to Lectures, Fees, Prizes, and Subjects for the Entrance Exhibitions may be had on application to the Dean, who attends the Hospital on Tuesday mornings at 10.30.

*Guy's Hospital.*—The work of the Dental Department begins daily at 9 A.M. both in the extraction rooms and in the conservation room. The Extraction Rooms: A new Dental Out-patient Department has been provided. There is ample accommodation for ordinary extractions and anæsthetic extractions, together with waiting- and retiring-rooms. Patients are admitted between 8.45 and 9.30 A.M., and are seen by the dental surgeon for the day, the staff demonstrator, the dental house surgeon, and the dressers. The Conservation Room is open from 9 A.M. till 5 P.M. It has recently been entirely remodelled and greatly enlarged, giving a floor space of over 6000 square feet. It affords accommodation for about 100 dental chairs, with the necessary equipment of the



most modern type, for the use of the Dressers, who, under the supervision of the Staff, perform the various operations of Dental Surgery. The members of the staff attend every morning and afternoon to give demonstrations and otherwise assist students in their work in the Conservation Room and Prosthetic Laboratory. The Probationers' Laboratory is supervised by two of the staff demonstrators, and instruction is given in operative dentistry on a "mannikin" to students during their first three months of study. Students in Dental Prosthetics are received, and a graded, systematic, and full course of instruction, extending over two years, is carried out. Dental students have the opportunity of attending at this hospital the whole course of instruction required by the examining board for the L.D.S. Eng.—viz., two years' studentship in dental prosthetics, the special lectures and practice of the Dental Department, and the general lectures and practice of the Medical School. The fees for these two courses may be paid separately or together, or they may be combined with the fees required to be paid for the course for a medical diploma. Students who enter for a medical as well as a dental diploma are allowed to pursue their study of Dentistry during any period of their medical course most convenient to themselves without further charge. Four Entrance Scholarships in Dental Prosthetics of the value of £20 each are offered for competition annually, two in September and two in April, and prizes of the aggregate value of £47 are awarded for general proficiency and for skill in Operative Dentistry. A Dental Travelling Scholarship of the value of £100 is awarded every second year. Dental students are eligible for admission to the Residential College and enjoy the privileges of students in the Medical School. Application should be made to the Dean of the Medical School.

*London Hospital.*—This school is a part of the London Hospital and Medical College, and is fully equipped on the most modern lines and with the latest appliances. It provides a complete curriculum in all subjects for the L.D.S. Diploma, and is admirably adapted for the purpose of teaching. The Conservation Room is well lighted and ventilated and fitted with pump chairs of the latest pattern; the fountain spittoon at every chair has been specially designed and has attached to it a saliva ejector, hot and cold water, compressed air, gas and electric current, also a swing bracket to carry the students' cabinet. Electric sterilisers are supplied in each department and motor engines where required. The School possesses in addition to the Theatres, Laboratories and Museums in the College, a special Museum of Dental Anatomy and Surgery, Operative Dentistry, Prosthetic and Extraction Rooms, and Laboratories for Practical Dental Metallurgy and Dental Prosthesis. A systematic course of instruction in Dental Prosthesis is arranged for pupils. The up-to-date Laboratory contains every modern apparatus and is in charge of a skilled curator and his assistants. Connected with the Medical College and Dental School are a Library, Athenæum, Clubs' Union, Dining Hall with moderate tariff, Students' Hostel, and an Athletic Ground. For full particulars as to fees and course of study advised apply to the Dean, Professor William Wright, who will be glad to make arrangements for anyone wishing to see the Dental School and Medical College.

*London (Royal Free Hospital) School of Medicine for Women.*—Full courses are arranged for women students for the study of dentistry, and in preparation for the Licence in Dental Surgery of the Royal College of Surgeons of England, at the London (Royal Free Hospital) School of Medicine for Women, in conjunction with the London Dental Hospital, Leicester-square, and the National Dental Hospital, Great Portland-street, W. The course is arranged as follows: First and second years: Chemistry, Physics, and Dental Mechanics. Third, fourth, and fifth years: Anatomy, Physiology, and Special Dental Courses, Courses in Medicine and Surgery, General Hospital Course, Dental Hospital Course. The combined fees at the London School of Medicine for Women and the National Dental Hospital are £180 if paid in one sum on beginning the course, or £191 if paid in three annual instalments. Bursary: The Council of the School will award annually (until further notice) an "Agnes Guthrie" Bursary of the value of £50 to a student fulfilling the required conditions, who enters for the full dental course. Candidates are required to send in applications on or before July 1st, to the Warden and Secretary, from whom a prospectus of the School and all particulars can be obtained.

## PROVINCIAL.

*Birmingham Dental Hospital, Great Charles-street.*—Dean: Mr. W. T. Madin. The Dental Hospital was founded in 1858, and was recognised by the Royal College of Surgeons in 1880 for the teaching of Dental Students. Having an annual attendance of about 16,000 patients, it affords every advantage for students about to enter the profession to acquire a thorough practical knowledge, as required by the Medical Council. The present Hospital was opened on July 6th, 1905. It has accommodation for 50 students. The equipment is in accordance with the most modern requirements for the efficient teaching and practice of Dental Surgery. The operations performed annually average 35,000, including 5000 gold and other fillings, and many cases of crowns, bridges, porcelain inlays, and regulations. By arrangements with the Birmingham University and with the General and Queen's Hospitals the entire course of Lectures, Hospital Practice, &c., may be completed for an inclusive fee of £96 15s., or including Mechanical Pupilage, £186. Examination fees for L.D.S. Birm., total £18. The instruments and materials necessary for Hospital Practice cost about £35. The Composition Fee for the courses required for the L.D.S. of the University, or any of the Corporations alone, is £60, payable in two annual instalments at the commencement of the first and second years; that for the courses required for the L.D.S. and the Degree in Dentistry of the University is £75; that for the L.D.S. in combination with the M.R.C.S. and L.R.C.P. is £85; and that for the M.B., Ch.B., and B.D.S. is £95. All of these composition fees are payable in two annual instalments at the commencement of the first and second years. Each of these fees covers the cost of the courses given at the University for the qualifications indicated, but does not include fees for Hospital teaching. For two years' dental hospital practice the fee is 20 guineas, payable in two instalments of 10 guineas each at the commencement of the first and second (hospital) years respectively. For two years' mechanical pupilage, 85 guineas, which may be paid in two annual instalments of 50 and 35 guineas respectively; mechanical pupils may join for a probationary period of one month, fee 5 guineas, which is deducted upon payment of the full amount. For general surgical hospital practice, lectures, and demonstrations: Surgery, two winters, £10 10s. One Entrance Scholarship is offered annually of the value of £37 10s. It is awarded to the student who, entering for the Dental Degree of the University in October, or having entered not earlier than the previous April, shall pass the best examination in the subjects studied during his apprenticeship. Candidates must be under the age of 21 years. Application for admission, together with a certificate of birth, must be sent to the Dean of the Medical Faculty, Mr. William F. Haslam, on or before Oct. 15th.

*Leeds Public Dispensary.*—The Dental Department of the Leeds Public Dispensary is fully equipped to provide training for Dental Students, and affords every opportunity for the student to prepare for any of the Dental Degrees or Diplomas. The Demonstrator of Operative Dental Surgery instructs students during their probationary course. At the completion of this training students have patients allotted to them by the Demonstrator, and have every opportunity of acquiring knowledge from the members of the Staff, two of whom are in attendance each day. The following prizes are awarded:—First year Students, value 2 guineas. Operative Dental Surgery Prize, value 5 guineas. Two prizes in Prosthetic Dentistry: (a) a prize, value 2 guineas, for first-year pupils; (b) a prize, value 5 guineas, open for competition to all Students. Extraction prize, value 2 guineas, open for competition to all Students. A prize in Orthodontics, value 5 guineas, is open to all students. Warden: Mr. W. Sinton Thorburn, to whom all communications should be addressed.

*Dental Hospital of Manchester.*—This Hospital is in association for teaching purposes with the University of Manchester and the Royal Infirmary, and is in the centre of a very large population. Courses of study are provided to meet the requirements of the various examining bodies, including those of the University of Manchester for the qualifications L.D.S. and B.D.S., and the L.D.S. of the Royal College of Surgeons of England. Clinical instruction is given by the members of the staff and by the house surgeons and demonstrators, and also by the honorary



anæsthetists in the administration of nitrous oxide gas; a special class in anæsthetics is conducted by the clinical tutor in that subject, and a class for instruction in porcelain and gold inlay work by the demonstrator specially appointed for that work.

A Travelling Scholarship, value £100, will be awarded from time to time. Ten prizes, varying in value from £2 to £8, are awarded annually.

For the whole course of hospital instruction for the L.D.S. (including two years' mechanical training) the fee is £100, or if paid in instalments £105. For the two years' Operative Course only, £21, or if paid in two instalments 21 guineas. For the whole course of hospital instruction for the B.D.S. degree (including mechanical training), £130, or if paid in instalments 130 guineas. Additional practice in Dental Mechanics may be taken by pupils who have already received their mechanical training elsewhere, at a fee of £20 for six months.

All the courses of instruction are open to women students.

Copies of the Prospectus will be forwarded on application to Mr. J. Hilditch Mathews, Dean.

*Newcastle-upon-Tyne Dental Hospital and School.*—This Hospital is centrally situated (within five minutes of the various colleges, infirmary, and railway station); the rooms are well lighted and thoroughly equipped for carrying on the work. Dental surgeons and an anæsthetist attend each morning. A tutorial dental surgeon is also in attendance. The Composition Fee for the special Dental Lectures and Dental Hospital Practice is £45 3s. if paid in one sum, or £46 4s. if paid in two instalments of £23 2s. The Composition Fee for the Lectures at the Colleges of Medicine and Science is 40 guineas; in addition to this there is a library and an athletic fee. Particulars of the fee for General Hospital Practice may be obtained from the Senior House Physician, Royal Victoria Infirmary, Newcastle-upon-Tyne. Medals and Certificates of Merit are granted to students showing certain standards of proficiency in the various classes at the Dental School. The prospectus of the Dental Hospital and School, containing full information, may be obtained from either Mr. J. T. Jameson, 12, Windsor-crescent, Newcastle-upon-Tyne, Dean, or Mr. James Coltman, 13, Ellison-place, Newcastle-upon-Tyne, Vice-Dean.

*Devon and Exeter Dental Hospital, 24, Southernhay, West, Exeter.*—Established 1880.—The hospital is open on Mondays, Tuesdays, Wednesdays, and Thursdays, and patients are admitted between the hours of 9 and 11 A.M. Students attend the practice of the hospital under the control of the medical officers. Honorary treasurer, Mr. J. M. Ackland; secretary Mr. Albert G. Littlejohn.

#### SCOTLAND.

*The Incorporated Edinburgh Dental Hospital and School.*—The Edinburgh Dental Hospital and School is located in a spacious and well-equipped building at 31, Chambers-street and offers special advantages to dental students. The General Courses required for the Dental Diploma may be taken in the Medical School of the Royal Colleges of Physicians and Surgeons or in the University schools. The hospital attendance and clinical instruction are taken at the Royal Infirmary. The University, Medical Schools, and Royal Infirmary are within three minutes' walk of the Dental Hospital. The special courses are taken in the hospital. The Dental Hospital practice, extending over two years, affords a student ample opportunity for a full acquaintance with every branch of dentistry. The hospital admits a limited number of indentured pupils. They receive their instruction in Mechanical Dentistry concurrently with the general and special courses. A premium of 60 guineas is payable with each such pupil. The practice and lectures of the hospital are recognised by, and qualify for, all the Licensing Boards. The cost of the hospital outfit of instruments is included in the Dental Hospital fee of £42. The minimum cost of classes and Diploma for the whole course of dental instruction amounts to £98 17s. Those students who desire to take a Medical and Surgical Diploma in addition to the L.D.S. have in this school admirable facilities for so doing. The triple qualification of the Royal College of Physicians and Surgeons of Edinburgh and the Royal Faculty of Physicians and Surgeons of Glasgow

is recommended. The minimum cost of Professional Education, the Triple Qualification, and the Licence in Dental Surgery amounts to £172 19s. Further particulars can be obtained from the Dean, Mr. W. Guy.

*Incorporated Glasgow Dental Hospital, 15, Dalhousie-street, Glasgow.*—The School is open to Men and Women Students, and Lectures are given on Dental Surgery, Operative Dental Surgery, Orthodontia, Dental Anatomy and Physiology, Pathology, Dental Histology, Dental Mechanics, Crown and Bridge work, Dental Metallurgy, Dental Bacteriology, and Anæsthetics. Lectures on general subjects required for Dentistry may be taken at the University or at one of the extra-mural schools where special provision is made for Dental Students. Composition fee for two years' Hospital Practice and Lectures special to Dentistry, £40 on entry or in two instalments of £21 each. Fees for Hospital Practice and Dental Lectures may be paid for separately, at a total cost of £43 1s. Full information may be had on application to the Dean.

*Glasgow Royal Infirmary (Dental Department).*\*—Mr. W. Taylor attends at the Royal Infirmary at 9 A.M. on Wednesdays and other days as arranged, and gives a course of instruction in Dental Surgery. The following course in the curriculum can be taken at St. Mungo's College: Anatomy, six months; Practical Anatomy, nine months; Physiology, six months; Chemistry, six months; Practical Chemistry with Metallurgy, three months; Surgery, six months; Medicine, six months; Materia Medica, three months; Clinical Surgery, six months; Dental Surgery, six months, and attendance for two years on the dental department of the hospital. The attendance on the Dental Clinic is free to students of the hospital.

#### IRELAND.

*Incorporated Dental Hospital of Ireland, Lincoln-place, Dublin.*\*—All Dental Students who have passed their First Dental Examination in the Royal College of Surgeons in Ireland (or an equivalent examination or examinations) are admissible to the Clinical Instruction of the Hospital. In addition to Clinical Instruction and Special Demonstrations, courses of lectures are given at the hospital on Dental Surgery and Pathology, Mechanical Dentistry, the Administration of Anæsthetics, Orthodontia, Dental Anatomy, and Dental Materia Medica. Practical instruction is also given in Anæsthetics. In addition to the longer courses of hospital attendance, courses of three months' duration will be given to surgeons intending to practise in the Colonies or remote country districts, or in the Army and Navy.

Fees.—Dental Hospital Practise (each year), £12 12s.; Lectures, £6 6s.; Composition Fee, £15 15s. per annum. In addition to the above courses registered dentists who are members of the British Dental Association will usually be permitted to take out a three months' course for a fee of 6 guineas. The course in practical Dental Mechanics can be taken in the Hospital Laboratory. Further particulars can be obtained from the Dean.

#### DOMINIONS.

*The Australian College of Dentistry*, in connexion with the Melbourne Dental Hospital, trains candidates for the degrees of B.D.Sc. and D.D.Sc. Melb. Students indentured to the College pay £170 in two instalments of £85 each, or four instalments of £42 10s. The superintendent of the College is Mr. E. S. Fisher, L.D.S., D.D.Sc.

*United Dental Hospital of Sydney* was established in 1901 to provide facilities for the students attending the University Dental School. The fee payable by University students for the dental practice of the hospital is £6 6s. per annum. The secretary is Mr. H. A. Clarke, F.I.A.A.

*The Dental Department of McGill University, Montreal*, was opened in 1903 at the request of the Dental Association of the Province of Quebec as a section of the medical faculty. An out-patient clinic in dentistry at the Montreal General Hospital provides the clinical material. Particulars from the Registrar of the Medical Faculty.

*The Royal College of Dental Surgeons of Ontario* has a school of dentistry in connexion with the University of Toronto. Practical work is carried out in the infirmary and laboratories of the College.

\* No returns.



## REGISTRABLE COLONIAL AND FOREIGN MEDICAL DEGREES.

UNDER the Medical Act, 1886, a number of medical diplomas granted in British possessions entitle their possessors to be registered without further examination in the Colonial List of the (British) Medical Register. The condition attached to such registration is that the holder of the colonial diploma obtained it when he was not domiciled in the United Kingdom or in the course of a period of not less than five years during the whole of which he resided out of the United Kingdom. Some account<sup>1</sup> of these diplomas is here given.

### AUSTRALASIA.

*Summary of Registrable Degrees.*—New South Wales: University of Sydney, (1) M.B., (2) M.D., (3) Ch.M. New Zealand: University of New Zealand, (1) M.B., Ch.B., (2) M.D. South Australia: University of Adelaide, (1) M.B., B.S., (2) M.D., (3) M.S. Victoria: University of Melbourne, (1) M.B., (2) M.D., B.S.

### University of Adelaide.

The University of Adelaide<sup>2</sup> was established by Act of the South Australian Legislature in 1874. In 1883 Sir Thomas Elder gave £10,000 for the foundation of a school of medicine. The Medical Acts of 1844 and 1880 set up a South Australian Medical Board to issue certificates of legally qualified medical practice.

*Preliminary Examination.*—Before entering upon the medical course candidates must have passed the Senior Public Examination in at least five subjects at one and the same time, and the higher standard in physics, chemistry, and biology.

*M.B., B.S.*—The five years' course includes five examinations held in November of each year. At the first the subjects are anatomy and dissections, physiology, organic chemistry, and physical chemistry; at the second, anatomy, physiology, and materia medica; at the third, medicine, surgery (including clinical), regional and surgical anatomy, bacteriology; at the fourth, medicine (including clinical), surgery, pathology, obstetrics, and forensic medicine (including insanity); at the fifth, medicine (all branches), surgery (including surgical anatomy and operative surgery), gynaecology, ophthalmology, otology, therapeutics, and elements of hygiene. The fee for each examination is £3 3s. and for the degree £5 5s. Fees for the five years' course of study amount to £124 19s. There were 189 undergraduate students in 1918.

*M.D.*—Candidates must have been Bachelors for at least nine academic terms, which may be shortened on the recommendation of the Faculty of Medicine. The subject of examination may be selected from the following: General medicine, diseases of the nervous system, pathology, obstetrics, State medicine. A thesis may be submitted. Fee for the examination £15 15s., for the degree £10 10s.

*M.S.*—The conditions are similar to those for the M.D. Choice of subject may be made from: Gynaecology, the surgery of the abdomen, the surgery of the special senses and throat; in addition to examination in the principles of surgery.

### University of Melbourne.

The University of Melbourne<sup>3</sup> was incorporated by Act of the Victorian Legislature in 1853. The Medical Act of 1890 set up the Medical Board of Victoria to register legally qualified medical practitioners.

*Preliminary Examination.*—All candidates must possess the School Leaving Certificate, which is based on education in a secondary school during four years. The Intermediate Certificate must have been taken at least a year before the School Leaving. English is compulsory at the higher standard; Latin and geometry with trigonometry at the lower.

<sup>1</sup> The information which was kindly sent to us has been summarised. Where none appears none was received. It is hoped to make the section more complete another year.

<sup>2</sup> The University Registrar is Mr. C. R. Hodge. The Calendar of the University of Adelaide (1919) is a volume of 490 pp., printed by W. K. Thomas and Co., Grenfell street, Adelaide. Price 2s. 6d.

<sup>3</sup> The University Registrar is Mr. J. P. Bainbridge, J.P. The Melbourne University Calendar (1919) is a volume of 334 pp., printed for the University by Ford and Son, Drummond-street, Carlton, Melbourne. Price 3s.

*M.B., B.S.*—The course extends over five calendar years, and is divided into two equal parts, hospital practice being confined to the second half. The first year (Division I.) is devoted to natural philosophy, chemistry, biology, and botany; the remainder of the first half (Division II.) to anatomy and physiology. Two complete courses of dissections are compulsory. Hospital practice extends through Divisions III. and IV. The general hospitals ranking as clinical schools are the Melbourne Hospital, the Alfred Hospital, and the St. Vincent's Hospital. The recognised special hospitals include the Women's Hospital, the Children's Hospital, the Eye and Ear Hospital, the Infectious Diseases Hospital, the Receiving House, and Acute Mental Hospital. A full clinical curriculum is arranged, both general and special, with clinical lectures. In Division III. (lasting one year) courses of lectures are given in pathology (with practical work in histology and in bacteriology), in therapeutics, public health, materia medica, and pharmacy, and regional and applied anatomy, and examination in all these subjects follows immediately. In Division IV., lasting a year and a half, systematic lectures are confined to the first year and include medicine, surgery, and forensic medicine. Lectures on obstetrics and gynaecology are given in Division III., but the examination in these subjects is postponed till the final at the end of the course, which also includes the subjects of Division IV. Clinical medicine and clinical surgery rank as separate subjects in the finals.

Honour examinations with exhibitions are held in all subjects of Divisions I., II., and III., and there is a final honour examination with scholarships in medicine, in surgery, and in obstetrics and gynaecology.

The yearly fee payable to the University is £23, with a sports fee of 1 guinea and a club-house fee of 1 guinea. The hospital and pharmacy fees in Divisions III. and IV. amount to £69 6s. The total fees are £194 16s. The degree fee for M.B., B.S., is 7 guineas.

The number of students now in attendance is 628.

*M.D.*—Candidates must be Bachelors of Medicine of two years' standing. They may proceed either by thesis or by examination. The thesis must be a substantial contribution to medical knowledge. The examination includes medicine, with either obstetrics and medical gynaecology, or diseases of children, or diseases of the nervous system, including insanity. Subject to a dispensing power in the case of theses of great merit, all candidates must pass an examination in clinical medicine. The fee for examination and degree is 10 guineas.

*M.S.*—Candidates must be Bachelors of Surgery of two years' standing. Part I. of the examination includes surgical anatomy and surgical pathology. Part II. includes surgery in all branches. The two parts may be taken together or separately. No candidate can pass in Part II. who has not passed in Part I. The fee for examination and degree is 10 guineas.

*Diploma of Public Health.*—Granted under conditions agreeing with those in the United Kingdom. Fees for instruction are 32 guineas, apart from fever hospital practice. The fee for examination is 10 guineas, for diploma 3 guineas.

*Diploma of Tropical Medicine.*—Candidates must be qualified medical practitioners, and must have passed Part I. for D.P.H. or have undergone a special training in lieu thereof. They are trained in tropical medicine at the Australian Institute of Tropical Medicine, Townsville, Queensland, having a three months' course of theoretical and practical instruction, followed by a three months' clinical course in the Townsville Hospital. The examination is conducted at the institute. Fee for preliminary course is £2 2s.; for course at institute, 10 guineas; for examination and diploma, 5 guineas.

*Affiliated Colleges.*—Trinity College (1872), Ormond College (1879), and Queen's College (1888) are affiliated to the University and have medical tutors.

### University of New Zealand.

The University of New Zealand was established by Act of the New Zealand Legislature in 1870. The Medical Act of 1908 provided for the registration of medical practitioners. The University has no fixed home or buildings; it is an examining body with four affiliated colleges—namely, University of Otago, Dunedin; Canterbury College, Christchurch; Auckland University College; and Victoria



University, Wellington. The degrees of M.B., Ch.B., M.D., and B.D.S. are conferred.

#### *University of Sydney.*

The University of Sydney<sup>1</sup> was incorporated by Act of the New South Wales Legislature in 1850. The Medical Practitioners Act of 1898 provides for the registration of legally qualified medical practitioners.

*Matriculation Examination.*—Latin and another language other than English are required, one at the Higher standard.

*M.B., Ch.M.*—The course of study extends over a period of five years. Five degree and a final examination are held: (1st year) in physics, chemistry, botany and zoology; (2nd year) in anatomy and physiology; (3rd year) in the entire subjects of anatomy and physiology, every part of the body having been dissected at least once; (4th year) in pathology, surgical anatomy and operative surgery, materia medica, and therapeutics; (5th year) in medical jurisprudence and public health; (final) in medicine, surgery, obstetrics, and gynaecology. Certificates of proficiency in vaccination and anaesthetics are required. The fee for each degree is £10. The number of students attending degree courses during 1917 was 545—480 men and 65 women.

*M.D.*—Candidates must, after obtaining the degree of Bachelor, have spent at least two years in medical or surgical practice or in approved study. Examination is written or oral in one of the following subjects: medicine, medical jurisprudence and public health, surgery, obstetrics and gynaecology; or in any of the scientific subjects included in the medical curriculum. A thesis must be presented two months before the examination. The fee for the degree is £10.

*Diploma in Public Health.*—Candidates must be registered practitioners of not less than 12 months' standing. The examination is in two parts: (1) relating to the general principles of sanitary medicine; (2) relating to State medicine and to the applications of pathology and sanitary science to public health. The fee is £10.

*Affiliated Colleges.*—Matriculated students are admitted to the following resident colleges—namely, St. Paul's College (Church of England), St. John's College (Roman Catholic), St. Andrew's College (Presbyterian), Wesley College (Methodist), the Women's College (undenominational), at which scholarships and bursaries are available.

*Recognised Hospitals* are the Royal Prince Alfred Hospital with medical school, the Sydney Hospital with clinical school, St. Vincent's Hospital, the Royal Hospital for Women, the Royal Alexandra Hospital for Children, the Glandesville and Callan Park Hospitals for the Insane, the Women's Hospital, the Renwick Hospital for Infants, and the South Sydney Hospital for Women.

#### BRITISH NORTH AMERICA.

*Summary of Registrable Degrees and Diplomas.*—Manitoba: College of Physicians and Surgeons, Member; University of Manitoba, M.D. New Brunswick: Provincial Council of Physicians and Surgeons, L.M.S. Newfoundland: Medical Board, L.M.S. Nova Scotia: Provincial Medical Board, L.M.S.; Dalhousie University, M.D., C.M. (Halifax Medical College, M.D., C.M., if obtained prior to August 31st, 1911). Ontario: College of Physicians and Surgeons, Member. (To this can be added as additional qualifications the degrees in medicine of the Queen's University, Kingston; the Western University, London; and the University of Toronto.) Prince Edward Island: Medical Council, L.M.S. Quebec: McGill University, M.D., C.M.; Laval University, M.D. Saskatchewan: College of Physicians and Surgeons, Member.

#### *Dalhousie University, Halifax, Nova Scotia.*<sup>5</sup>

The work of Halifax Medical College was discontinued in 1911, when instruction in all subjects of the medical curriculum was undertaken by Dalhousie University. The professional examinations are conducted conjointly by the university and the Provincial Medical Board of Nova Scotia (see below).

<sup>4</sup> The University Registrar is Mr. H. E. Barff, M.A. The Calendar of the University of Sydney (1918) is a volume of 712 pp., printed for the University by Angus and Robertson, Ltd., Sydney. Price 2s. 6d.

<sup>5</sup> The Secretary of the Medical Faculty is Professor D. Fraser Harris. The calendar of the Faculty, 1919-20, is an excerpt of 40 pp. from the University Calendar, printed for the University by Wm. Macnab and Son, Halifax.

*M.D., C.M.*—In addition to the matriculation or preliminary examination candidates are required to pass five professional examinations. For admission to the classes of the third or any higher year the undergraduate must have passed in all the subjects of the preceding year. The curriculum for the third year still includes practical anatomy and advanced physiology, while the fifth (final) year subjects are given as: Surgical anatomy, operative surgery, clinical surgery, clinical medicine, clinical pediatrics, clinical obstetrics, practical obstetrics, clinical gynaecology, mental diseases, skin diseases, eye, ear, nose and throat diseases, dressing, clerking, vaccination, post mortems, hospital, medical ethics. To win distinction in any subject a mark of 75 per cent. or over is required. The total tuition fees in any year amount to \$125, with \$10 additional for the third, fourth, and fifth years. The fee for each examination is \$10. There were 114 medical students of all years in 1918-19.

#### *Queen's University, Kingston, Canada.*

Queen's College, Kingston,<sup>6</sup> was established by Royal charter in 1841, assisted by grants from the Presbyterian Church in Scotland. Classes in medicine were first held in the University in 1854. The Medical School, conducted for a time under the charter of the Royal College of Physicians and Surgeons at Kingston, became an integral part of the University in 1892. Kingston General Hospital (230 beds) is adjacent to the University buildings.

*M.D., C.M.*—Candidates for a degree must pass the Junior Matriculation of the University or its equivalent. The course comprises five sessions of eight months each. A combined B.A. and M.D. course may be taken in seven years. Foreign students must spend at least one full session in the University. Examinations are held at the end of each session. The average cost per session of eight months, including board and lodging, is \$376-\$435. All students are expected to attend a church of the denomination to which they profess to belong. 228 students were in attendance during the session 1918-19.

*D.Sc.*—Granted on a thesis embodying original research of importance to medical science not earlier than two years after graduation. A reading knowledge of scientific French and German is required.

*D.P.H.*—The diploma is granted to those holding the M.D., or M.D., B.Sc., after examination following prescribed study, which includes six months with a recognised medical officer of health in the study of practical sanitation.

#### *Laval University, Quebec.*

Laval Catholic University<sup>7</sup> was incorporated by Royal Charter in 1852, absorbing the Quebec School of Medicine organised four years earlier. The first class graduated in 1855.

*M.B., M.D.*—The entrance examination includes Latin, philosophy, and Canadian history, and its standard is prescribed by the College of Physicians and Surgeons of Quebec. The Faculty of Medicine confers a baccalauréat and a doctorat, the former after 2 years, comprising 6 terms of study, the latter after 3 further years. Examinations are held in June at the end of each year of study. The total fee for examinations is \$15, for the diploma of bachelor \$5, and for that of doctor \$20. Fees paid by enrolled students for the medical course amount to \$45 a term.

#### *McGill University, Montreal.*

"The Faculty of Medicine of McGill University" arose out of the Montreal Medical Institution, organised as a medical school in 1823-24, and incorporated in the University in 1829.

*Preliminary Examination.*—Before registration an undergraduate in medicine must have passed the Matriculation Examination of the University or its equivalent. The examination is held twice yearly at McGill, and once at Calgary, Regina, Winnipeg, Toronto, St. John, and Truro.

<sup>6</sup> The Secretary of the Medical Faculty is Dr. A. R. B. Williamson. Queen's University, Kingston, Ont. The Calendar of the Faculty of Medicine, 1919-20, is a volume of 104 pp., printed by the Jackson Press, Kingston.

<sup>7</sup> The Secretary of the Medical Faculty is M. Arthur Vallée. The Annuaire de la Faculté de la Médecine de l'Université Laval (1918-19) is a volume of 61 pp., printed by l'Action Sociale, Limitée, Quebec.

<sup>8</sup> The University Registrar is Mr. J. M. Nicholson, M.A. The registrar of the Faculty of Medicine is Dr. J. W. Scane. The Annual Calendar of the Faculty of Medicine and Department of Dentistry is a volume of 90 pp., printed by the Gazette Printing Co., Ltd., Montreal.



Also in June in London (apply to Secretary, Headmasters' Conference, 12, King's Bench Walk, E.C.). Latin, and either Greek, French, or German must be taken. Every student entering the University is required to pass a physical examination to detect defects and weaknesses amenable to treatment. Board and lodging can be obtained in private houses in the vicinity of the University at \$40 a month upwards.

*M.D., C.M.*—The undergraduate course in medicine has this year been increased to six years by a pre-medical year devoted to chemistry, physics, and biology, with English and one modern language. This readjustment gives a final year confined to hospital work, including medicine, surgery, obstetrics, ophthalmology, oto-laryngology, pathology, and dermatology. The third year now embraces anatomy (neurology), physiology, general pathology, bacteriology, chemistry (physiological and clinical), parasitology, pharmacology, and clinical microscopy. During this year students begin to visit the hospitals and receive instruction in small groups in the elements of clinical medicine and clinical surgery. Examinations are held in the subjects of each successive year. Seven years' (double) courses are held for the B.A., M.D., or B.Sc., M.D. The total faculty fees for the medical course of five years are \$735, payable in five annual instalments of \$147 each. The degree fee is 30. 365 medical students were enrolled in the session 1917-18.

*D.P.H.*—The course for this diploma is temporarily withdrawn.

#### *New Brunswick, Council of Physicians and Surgeons.*

The Council of Physicians and Surgeons of New Brunswick is empowered by the Medical Act to issue a licence (L.M.S.) conferring the legal right to practise. The usual matriculation examination is required and the graded collegiate course comprises five sessions of not less than eight months each. The examinations are held twice a year at St. John, N.B., the fee being \$30. Candidates may appear for the primary examination at the end of the second year of study. The fee for the licence is \$3 and the registration fee \$40. The registrar of the council is Dr. S. Skinner, 64, Charlotte-street, St. John, N.B.

#### *Nova Scotia, Provincial Medical Board.*

A licence (L.M.S.), legally entitling to practise, is issued by the Provincial Medical Board of Nova Scotia after a preliminary (fee \$25 including student registration) and three professional examinations (fees \$75 including registration). The registrar of the Board is Dr. W. H. Hattie, Halifax, N.S.

#### *University of Toronto.*

The University of Toronto,<sup>9</sup> Ontario, took its title in 1849, a Royal Charter having been granted in 1827. The Faculty of Medicine was re-established in 1887 under the Federation Act. Victoria College (1892), Trinity College (1904), and St. Michael's College (1907) are integral parts of the University.

*Preliminary Examination.*—The matriculation certificate of the University is required from entrants unless they are graduates in Arts of a Dominion or British University or possess a certificate of entrance into the Faculty of Education.

*M.B.*—The undergraduate course has just been lengthened to six years, with an exception for those who have been on military service. Six examinations are taken in succession at the end of the session. The early years aim at giving such a training in sciences as is now exacted of those who desire to obtain a British as well as a Canadian qualification. During the third year an attempt is made to bridge the gap between the primary scientific and the final clinical subjects by taking up anatomy and physiology at the same time as surgery and medicine throughout the year. Preliminary courses in pathology and pathological chemistry are taken; instruction is given in pharmacology; and a series of ten lectures delivered on psychology. The final year includes courses on anaesthesia, dentistry, medical ethics, history of medicine, and life insurance. The annual fee for regular students with one annual examination is \$150. Combined courses of B.A., M.B. and B.Sc., M.B., lasting seven years, are also arranged. Honour standing can be obtained in each year's subjects. There is residence for about 150 men and

three houses near to the University. Each male student proceeding to a degree must take physical training, the character to be determined by medical examination in the first two years of his attendance.

*M.D.*—One year must elapse after obtaining the M.B. degree and an approved thesis submitted.

*D.P.H.*—Candidates must be graduates in medicine of this or some other University. The curriculum extends over a winter session of eight months and a summer session of three months. The fee for the course is \$150 and for the diploma \$20.

#### NEAR EAST.

##### *Registrable Degree.*—University of Malta, M.D.

##### *University of Malta.*

The University of Malta was added in 1898 to the list of institutions recognised by the English Royal Colleges. Study in the Faculty of Medicine and Surgery<sup>10</sup> is open to matriculated students who have attended a three years' preparatory course in the Faculty of Science. Matriculation includes English, Italian, and Latin, while history is also necessary to comply with the G. M. C. regulations. The preparatory course in science in its third year comprises English or Italian literature, physics, organic chemistry, and human anatomy and general histology, with dissection. Medical botany is taught at the Botanic Garden. The academical course of medicine and surgery (*M.B., Ch.B.*) extends over four years, the first year being devoted solely to anatomy and physiology, and the final year including clinical medicine, surgery, and midwifery, along with operative surgery and forensic medicine, and continued attendance at the clinical laboratory and the hospital. The degree of *M.D.* or of *Ch.M.* is conferred on any *M.B., Ch.B.* on passing an examination at not less than one year after graduation, in each case with an approved thesis. The fee for any of the three degrees is £6.

#### FAR EAST.

*Summary of Registrable Degrees.*—Ceylon: Medical College, L.M.S. Hong-Kong: University of Hong-Kong, M.B., B.S. India: University of Allahabad, M.B., B.S.; University of Bombay,<sup>11</sup> (1) L.M.S., (2) M.B., B.S., (3) M.D., (4) M.S.; University of Calcutta, (1) L.M.S., (2) M.B., (3) M.D., (4) M.S., (5) M.O.; University of Madras,<sup>12</sup> (1) M.B., M.S., (2) M.B., B.S., (3) M.D.; Punjab University, (1) L.M.S., (2) M.B., (3) M.D., (4) M.S. Straits Settlements: King Edward VII. Medical School, Singapore, L.M.S.

##### *University of Allahabad.*

The examination for the degree of *M.B., B.S.* consists of three parts: preliminary scientific, first degree, and final degree. The two latter are held at Lucknow. The preliminary scientific examination in chemistry, physics, and biology is open to candidates who have passed in these subjects at the intermediate examination of the University. The first degree examination comprises anatomy, physiology, and materia medica and pharmacy; it may be taken after two years. The final degree examination comprises two groups: (A) midwifery, hygiene, and medical jurisprudence, taken after two years; (B) medicine, surgery, and pathology, taken a year later. Honours may be obtained in any subject. The *M.D.* degree is obtained within not less than one year on passing an examination in medicine and pathology. The fees for the *M.B., B.S.* examination are Rs.140, for the *M.D.* Rs 200.

*King George's Medical College, Lucknow,* prepares students for the medical degrees of the University of Allahabad. The curriculum extends to five college years, each of three terms. Scholarships and bursaries are granted.

##### *University of Bombay.*<sup>13</sup>

Candidates for the *M.B., B.S.* must have passed the previous examination or its equivalent, and be engaged during five University years in professional study at a medical college

<sup>10</sup> Statute of the University of Malta, 1915, Government Printing Office, Malta, price 1s.

<sup>11</sup> If obtained after June 25th, 1912, the degree must have been registered in the Presidency.

<sup>12</sup> If obtained after June 1st, 1916, the degree must have been registered in the Presidency.

<sup>13</sup> The Registrar of the University is Mr. K. B. F. M. Dastur, M.A. The Bombay University Calendar (1918) is a volume of 610 pp., printed at the Government Central Press, Bombay.

<sup>9</sup> The Secretary of the Faculty of Medicine is Dr. E. S. Ryerson. The Calendar of the University of Toronto, Faculty of Medicine (1919-20) is a volume of 146 pp., printed by the University of Toronto Press.



recognised by the University. Three examinations are held: the first, or preliminary scientific; the second, or intermediate; and the third, or final; each of them twice in the year. The two former are of the usual character. The final is divided into two parts, which may be taken together two years after the intermediate. Part I. includes medicine, medical jurisprudence, pathology, and hygiene; Part II. surgery, midwifery, and ophthalmology. 203 medical undergraduates passed examinations in 1916. Candidature for the degrees of *B. Hy.*, *M.D.*, *D. Hy.*, or *M.S.* implies that the *M.B.*, *B.S.* degree has been taken not less than a year (*D. Hy.*, 3 years) previously.

*Grant Medical College, Bombay*, was established in 1845, to "impart through a scientific system the benefit of medical instruction to the Natives of Western India," and recognised by the University in 1860. Attached is a laboratory for scientific medical research. The students are arranged in three classes: (1) graduates and undergraduates of the University of Bombay and other recognised Universities who are educated through the English language for medical degrees; (2) members of the European and domiciled European communities who are educated through the English language for the grade of military assistant surgeon; (3) undergraduates and others for the diplomas of the College of Physicians and Surgeons, Bombay. The College has ceased to grant diplomas, and is affiliated to the University for medical education.

#### *University of Calcutta.*<sup>14</sup>

For the degree of *M.B.* the preliminary scientific, first, and final *M.B.* examinations must be passed. The final is divided into two parts, major and minor, which may be taken together. The former includes medicine, surgery, and midwifery; the latter general pathology, medical jurisprudence, and hygiene. An examination for honours is held a week after the pass list is declared. The fees for the three examinations are Rs. 25, Rs. 30, and Rs. 50 respectively. The *M.D.* degree is granted after examination in medicine, pathology, and mental diseases not less than one year subsequent to the *M.B.* The fee is Rs. 100. Degrees of Master of Surgery (*M.S.*) and Obstetrics (*M.O.*) are also granted. A diploma in public health is granted to possessors of the *M.B.* degree or *L.M.S.* diploma by examination after a prescribed course of a year has been carried out. The fee is Rs. 100.

#### *Ceylon Medical College.*

The Ceylon Medical College<sup>15</sup> began in 1870, and the curriculum and examinations were revised in 1901 to accord with modern requirements. In 1888 the licence in medicine and surgery (*L.M.S.*) granted by the College was recognised by the G.M.C. Women were admitted to the College in 1892. There is a medical and an apothecaries' department in the College. A preliminary examination of the standard of the Cambridge Senior Local or School Certificate Examination is required for admission to the five years' medical course. The first professional examination is passed at the end of the first year, the second at the end of the third, and the final in two parts at the end of the fourth and fifth. The fifth year's course includes, besides the usual final subjects, instruction in tropical medicine, skiagraphic demonstrations, and attendance at a leper asylum. The total fees for the medical curriculum, including examinations, amount to Rs. 1223.50. Various Government scholarships and medals are granted.

#### *University of Hong-Kong.*

The Faculty of Medicine of the University of Hong-Kong<sup>16</sup> (1912) had its origin in the work of the Hong-Kong College of Medicine founded in 1887. The School of Anatomy was opened in 1913 and special schools for physiology, pathology, and tropical medicine are in course of erection. The University confers the degrees of *M.B.*, *B.S.*, *M.D.*, and *M.S.* The subjects of the first medical examination are physics, chemistry, and biology; of the second, anatomy, physiology, general pathology (including bacteriology), and elementary pharmacology; of the third, Part I., surgery

and midwifery, Part II., medicine and pathology, including hygiene and tropical medicine. The fee for each part of each examination is \$5, and for conferring the *M.B.*, *B.S.* \$25. The candidate for *M.D.* may present himself in two years and must take general medicine as well as one of the following: State medicine, pathology, midwifery, tropical medicine, physiology. The rules for *M.S.* are similar. The fee for each examination is \$100 and for conferring the degree \$100.

#### *University of Madras.*

A medical school was established in Madras in 1835, which became the Madras Medical College in 1851 and was affiliated to the University in 1877. The College was originally for supplying assistant surgeons and hospital assistants to the army, but now undertakes also the training of students for the medical degrees and diplomas of Madras University. Candidates for the degrees of *M.B.*, *B.S.* must have passed the Intermediate Examination in Arts of the University or its equivalent, and have studied medicine for not less than five years in a college affiliated to the University. Four examinations are held, the third (at the end of the third year) comprising general pathology and hygiene, and the fourth the other professional subjects. The examination fees are Rs. 25, Rs. 25, Rs. 40, and Rs. 50 respectively. The *M.D.* degree may be taken not less than one year after a first-class pass in either medicine, midwifery, pathology, or tropical medicine. The conditions for the *M.S.* degree are similar. The examination fee in each case is Rs. 100. A degree in sanitary science (*B.S.Sc.*) can be taken in two parts one year after the *M.B.*, *B.S.*, the total fee being Rs. 100.

The *Madras Medical College*<sup>17</sup> includes a college department, an apothecary department, a chemists' and druggists' department, and a sanitary inspectors' department. The course of training for the *M.B.*, *B.S.* is charged Rs. 120 a year, or a lump sum of Rs. 540 if paid in advance. Valuable scholarships are awarded by the Government and by the Dufferin Fund, and special Government stipends to women medical students.

#### *Punjab University.*

An examination for the degree of *M.B.*, *B.S.* is held annually in Lahore in May, and consists of three parts—first, second, and final. The first professional examination is open to candidates who not less than two years previously have passed the intermediate examination of the Science Faculty taking the medical student's group; it comprises anatomy, physiology, and materia medica, and the fee is Rs. 30. The second examination is in pathology, forensic medicine, and hygiene, and is taken at the end of the third year; the fee is Rs. 30. The final examination, for which the fee is Rs. 40, is taken at the end of the fifth year and comprises the rest of the professional subjects.

*King Edward Medical College, Lahore*, trains students for the medical degrees and diplomas of Punjab University. The college year consists of one long session of three terms. The course for the *M.B.*, *B.S.* occupies five years, the fees being Rs. 125, Rs. 115, Rs. 135, Rs. 105, and Rs. 105 in successive years. College scholarships are granted.

#### REGISTRABLE FOREIGN MEDICAL DEGREES.

Certain medical diplomas granted in foreign countries also entitle to registration in the foreign list of the Medical Register, provided that the holder is not a British subject or that, being a British subject, the diploma was obtained under domiciliary conditions similar to those attached to colonial diplomas.

*Summary of Registrable Degrees* (the date in parentheses being the year in which Part II. of the Medical Act, 1886, was applied to the country in question).—*Italy* (1901): Degrees of Doctor of Medicine and Surgery of all the Royal Italian Universities. *Japan* (1905): Degrees of Bachelor of Medicine (Igakushi) and Doctor of Medicine (Igaku Hakushi) of the Imperial Universities of Japan; and the Degree of Bachelor of Medicine (Igakushi) of any Government or Prefectural special medical college, or of a private special medical college designated by a Minister of Education of the Empire of Japan. *Belgium* (1915): Degrees of Doctor of Medicine of the Belgian Universities of Brussels, Ghent, Liège, and

<sup>14</sup> The University of Calcutta Regulations (1914) make a volume of 410 pp., published by the University.

<sup>15</sup> The Registrar of the college is Dr. P. J. Kelly. The Ceylon Medical College Calendar (1917-18) is a volume of 91 pp., published by authority and printed by H. M. Richards, acting Government printer, Colombo.

<sup>16</sup> The acting registrar of the University is Mr. K. Brayshaw, B.A. The University Calendar (1918-19) is a volume of 116 pp., printed for the University by Noronha and Co., Government printers, Hong-Kong.

<sup>17</sup> The Calendar of the Medical College, Madras (1918), is a volume of 191 pp., printed by the Superintendent, Government Press, Madras, price 1s.



Louvain, which give legal authority to practise medicine, surgery, and midwifery in Belgium.

#### Italy.

The regulation for the medical diploma is fixed by Royal Decree dated August 9th, 1910, and is the same for each of the 20 universities and institutes where courses of study are arranged. These are in alphabetical order: Bologna, Cagliari (Sardinia), Camerino, Catania, Ferrara, Florence, Genoa, Messina, Modena, Naples, Padua, Palermo, Parma, Pavia, Perugia, Pisa, Rome, Sassari, Siena, and Turin.

The course covers six years, and embraces the following 20 constituent subjects: (1) experimental physics, (2) inorganic and organic chemistry, (3) botany, (4) zoology and comparative anatomy, (5) normal human anatomy (descriptive or systematic, macroscopic and microscopic), (6) physiology, (7) general pathology, (8) pharmacology and toxicology, (9) pathological anatomy and histology, (10) special medical (practical) pathology, (11) special surgical (practical) pathology, (12) medical clinics, general and special, (13) pediatric clinic, (14) surgical clinic, general, special and operative, (15) obstetric and gynaecological clinic, (16) ophthalmological clinic, (17) clinics of nervous and mental diseases, (18) hygiene and public health, (19) legal medicine, (20) dermatological and venereal clinic.

The distribution of these subjects over the six years varies somewhat at the different centres, but the official course at Siena may be taken as an example:—1st year: botany, zoology, normal human anatomy. 2nd year: normal human anatomy, general chemistry, experimental physics, embryology, experimental physiology. 3rd year: normal and topographical human anatomy, experimental physiology, bacteriology, general pathology. 4th year: *materia medica*, special medical and surgical pathology, pathological anatomy, medical and surgical clinic. 5th year: pathological anatomy, medical, surgical, ophthalmological, and dermatological clinic, hygiene and public health. 6th year: medical, surgical, nervous and mental, pediatrics, and obstetric clinic, legal medicine, operations, history of medical science. Twenty-six optional courses in special subjects can be attended by students of various years. The examinations are held in the latter half of October and June.

#### Japan.

The medical course is taken at the Imperial Universities of Kyoto and Tokyo, and at the medical schools of Formosa, Aichi, Chiba, Kanazawa, Kumamoto, Nagasaki, Okayama, and Sendai.

The *Kyoto College of Medicine*<sup>18</sup> was established in 1899. It includes institutes of anatomy, physiology, medical chemistry, pharmacology, pathology, hygiene, forensic medicine, medicine, surgery, ophthalmology, gynaecology, pediatrics, dermatology, oto-rhino-laryngology, orthopaedic surgery, and psychiatry, each in charge of one or more of the 22 professors and 16 assistant professors, the director being Dr. Hayazo Ito. There is a four years' course of instruction, the first year being devoted to anatomy, histology, physiology, medical chemistry, and embryology. In the second year pharmacology, general pathology, pathological anatomy and histology, diagnosis, special medicine, general surgery, and bandaging are added. The first examination is held at the end of the second academic year, the second at the end of the fourth year in surgery, medicine, ophthalmology, gynaecology, and either hygiene or forensic medicine (the choice being determined by lot). At request students are also examined in pediatrics, dermatology, oto-rhino-laryngology, psychiatry, and orthopaedic surgery. In the year 1910-84 students graduated in medicine from the College.

#### Belgium.

The medical course for the degree of M.D. may be taken at any of the four Universities: Free University of Brussels, State University of Ghent, University of Liège, Catholic University of Louvain. After a preliminary year and an examination which may be taken in two parts—(1) logic, zoology, botany; (2) physics, chemistry, geology—the student becomes “*candidat en sciences naturelles*.” Two years are then devoted to the ancillary sciences, the examination again being in two parts—(1) embryology, systematic

anatomy Part I., histology, comparative anatomy, physiology; (2) systematic anatomy Part II., regional anatomy, special histology, psychology, special physiology—when the stage of “*candidat en médecine*” is reached. Professional studies occupy three years at least, and there are three further examinations. The first includes (i.) general pathology and therapeutics; (ii.) elements of pharmacology and pharmacodynamics; (iii.) pathological anatomy; (iv.) general surgical pathology. The second includes: (i.) medical pathology and special therapeutics, including mental diseases; (ii.) special surgical pathology; (iii.) public and private hygiene; (iv.) the theory of accouchement. The third and final comprises (i.) legal medicine, (ii.) medical clinic, (iii.) surgical clinic, (iv.) operations, (v.) ophthalmological clinic, (vi.) obstetric clinic, as well as practical tests in pathological microscopy and regional anatomy.

The Universities of Ghent and Liège grant a diploma of “*médecin-hygiéniste*” after examination to medical graduates of at least one year's standing.

*University of Liège.*—The Faculty of Medicine includes 15 professors and eight lecturers. The dean is Professor L. Fredericq (Institut physiologique). The fee for inscription in the medical faculty is Fr. 200 for the grade of candidate and Fr. 200 for each of the three parts of the professional examination. Details of the courses may be obtained from Professor Ch. Jolin, secretary to the medical faculty.

*University of Louvain.*—All the courses in the Faculty of Medicine have been resumed. For the third professional examination the programme is as follows: A. Lemaire (medical clinic), R. Schoekaert (theory of accouchement), A. Vander Straeten (ophthalmological clinic), R. Bruynoghe (legal medicine), G. Debaisieux (surgical clinic), L. Van den Wildenberg (oto-rhino-laryngological clinic), A. Van Mosseken (dental clinic), O. De Mees (minor surgery). The dean of the faculty is Professor Schoekaert, and the secretary Professor Bruynoghe (rue Marie Thérèse 100). An “*Année Académique, 1919*,” has been issued from the University press.

*University of Brussels.*—The former courses in the Faculty of Medicine were resumed (see THE LANCET, March 1st, 1919, p. 353) on Jan. 22nd last, as well as the clinics at St. Jean and St. Pierre, and the instruction for the diploma of public health.

Details of these courses may be obtained from the secretary of the University at rue des Sols 14, Brussels.

#### THE M.D. BRUSSELS FOR STRANGERS.

The examination is arranged in three parts. No conditions of residence are needed; the time required for the three examinations seldom exceeds 10 or 12 days, and candidates who are unable to be so long away from home may take each part separately. The examinations are conducted in English through the medium of an interpreter (without additional charge). They take place on the first Tuesday in November, December, March, and May, and the second Tuesday in June. They are *viva voce*, but candidates may have a written examination by paying an additional fee of £1 for each test. This does not exempt them from the *viva voce* examination. Part I. includes general medicine; *materia medica* and pharmacology; general surgery; and the theory of midwifery. Part II. includes general therapeutics; pathology and morbid anatomy, and the use of the microscope; special therapeutics and medicine of internal diseases; special surgery; and mental diseases. Part III. includes public and private hygiene; medical jurisprudence; clinical medicine; clinical surgery; examination in operative surgery, consisting of some of the usual operations on the dead subject—viz., amputation, ligation of artery, &c.; ophthalmology; examination in midwifery, consisting of obstetrical operation on the mannequin (model of pelvis), examination in regional anatomy with dissection; and bacteriology.

DONATIONS AND BEQUESTS.—Under the will of the late Mrs. M. L. Burns, Mr. Pierpont Morgan's sister, the testatrix has bequeathed £5000 to Guy's Hospital.—The late Mr. James Stephenson Binning has left by will £1000 for such London hospitals as the executors may select.—The late Mrs. Paris has bequeathed £1000 to the Totnes Cottage Hospital in memory of her late sister, Miss F. Mitchell.

<sup>18</sup> The Kyoto Imperial University Calendar (1911) is a volume of 164 pp., published by the University.



## Obituary.

AUGUSTUS G. VERNON-HARCOURT, F.R.S.,  
LATE PRESIDENT OF THE CHEMICAL SOCIETY.

Professor A. G. Vernon-Harcourt, whose death was announced early this week, was a well-known figure at the University of Oxford, where he was Lees Reader in Chemistry and attached to Christ Church. He retired from this appointment some 20 years ago, after a long record of chemical research whose outcome was of a highly valuable nature. His first studies referred to the rate at which chemical change proceeds between given substances, the simple one chosen for the purpose being that occurring between hydrogen iodide and hydrogen peroxide, iodine being evolved. He eventually demonstrated that the rate of chemical change was strictly proportional to the mass of the interacting substances concerned. An insight into the law of mass action was thus gained, and this work was followed up by other investigations, which led to results of great theoretical importance. They were of practical importance also, as in certain cases they enabled the achievement of the laboratory to be carried to the factory. This work was begun at Oxford in the early "sixties." Later on Vernon-Harcourt turned his attention to the purification and testing of coal-gas, and he evolved an ingenious method of eliminating certain sulphur compounds from this illuminant. His process for estimating the sulphur in coal-gas is in use at the present day. During this work he invented the well-known pentane lamp as the official standard of illumination, replacing the doubtful standard of a wax candle. In medical science Vernon-Harcourt's name will be remembered in connexion with a chloroform dosimetric inhaler which he devised. This apparatus enabled the anaesthetist to control the composition of the mixture of air and chloroform passing to the patient. The Chloroform Committee of the British Medical Association accepted this apparatus as satisfactory, but clinical authorities were not long in pointing out its disadvantages, maintaining that chloroform accidents cannot be entirely prevented by regulating chloroform percentages. The inhaler, however, proved useful when provided with an oxygen attachment in cases in which a light anaesthesia was required. The risk of using a dosimetric inhaler was that while it suggested security it might divert the attention of the chloroformist from his patient's condition. The apparatus was most ingeniously designed and succeeded in giving exact proportions of chloroform and air up to a maximum of 2 per cent. of the anaesthetic. Vernon-Harcourt's researches gained for him the Fellowship of the Royal Society in 1868, and he was elected President of the Chemical Society in 1895. He died on August 23rd in his 85th year at his residence near Ryde in the Isle of Wight.

**THE OXFORD ROLL OF SERVICE.**—A final and enlarged edition of the Roll of Service of the University of Oxford is now in preparation. Forms asking for information have been sent to all members of the University, past or present, who are known to have been on military or naval service, and whose addresses could be obtained. Those who have not received the forms should send full information of their service either to the "Compiler of the Roll of Service" at their old College, or to E. S. Craig, Esq., Assistant Registrar, University of Oxford. All such information should be sent in before Sept. 15th.

## URBAN VITAL STATISTICS.

(Week ended August 23rd, 1919.)

**English and Welsh Towns.**—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had been 9.7, 9.7, and 10.0 in the three preceding weeks, was again 10.0 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual rate was 10.4, and was the same as that recorded in the previous week, while among the remaining towns the rates ranged from 2.8 in Ilford, 4.4 in Northampton, 5.0 in Wallasey, and 5.2 in Bournemouth, to 16.2 in Middlesbrough, 16.4 in Newcastle-on-Tyne, 17.2 in Hastings, and 19.0 in Tynemouth. The principal epidemic diseases caused 263 deaths, which corresponded to an annual rate of 0.8 per 1000, and included 155 from infantile diarrhoea, 44 from measles, 41 from diphtheria, 12 from whooping-cough, 9 from scarlet fever, 5 from enteric fever, and 2 from small-pox. Measles caused a death-rate of 1.2 in Newcastle-on-Tyne, 1.3 in Gateshead, and 1.8 in Tynemouth, and scarlet fever of 1.9 in Wigan. There were 1464 cases of scarlet fever and 1063 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 1517 and 1112 respectively at the end of the previous week. The causes of 26 deaths in the 96 towns were uncertified, of which 6 were registered in Birmingham and 2 each in Liverpool, Manchester, Salford, and Newcastle-on-Tyne.

**Scotch Towns.**—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had been 10.6, 10.0, and 9.9 in the three preceding weeks, rose last week to 10.7 per 1000. The 243 deaths in Glasgow corresponded to an annual rate of 11.3 per 1000, and included 28 from infantile diarrhoea, 4 from measles, and 1 from whooping-cough. The 72 deaths in Edinburgh were equal to a rate of 11.2 per 1000, and included 2 from measles and 2 from diphtheria.

**Irish Towns.**—The 124 deaths in Dublin corresponded to an annual rate of 16.0 per 1000, and included 26 from infantile diarrhoea. The 130 deaths in Belfast were equal to a rate of 16.9 per 1000, and included 16 from infantile diarrhoea, 1 from scarlet fever, and 1 from diphtheria.

## Medical Diary for the ensuing Week.

**LECTURES, ADDRESSES, DEMONSTRATIONS, &c.**  
LONDON HOSPITAL MEDICAL COLLEGE, in the Clinical Theatre of the Hospital.

A Special Course of Instruction in the Surgical Dyspepsias will be given by Mr. A. J. Walton:—

MONDAY, Sept. 1st.—4.30 P.M., Lecture XI.:—Ætiology—Symptoms. Complications and Treatment of Duodenal Ulcer.

FRIDAY.—4.30 P.M., Lecture X.:—Congenital and Acquired Pyloric Stenosis.

## Births, Marriages, and Deaths.

### MARRIAGES.

**POWELL—RICKETTS.**—On August 21st, at St. Barnabas Church, Pimlico-road, S.W., Mr. L. K. M. Powell, 19th Bengal Lancers, son of the late Henry Watson Powell, of the Mercers' Company and Australia, to Beryl, only daughter of the late T. F. Ricketts, M.B., F.R.C.S., and Mrs. Ricketts.

**SMITH—ELLIS.**—On August 26th, at Phillack Parish Church, Cornwall, Matthew Baird Smith, B.Sc. M.B., Ch.B., to Alice May, daughter of Christopher Ellis, Hayle, Cornwall.

**TASKER—ROBINSON.**—On August 21st, at Woudham Parish Church, H. L. Tasker, M.D., of 58, New Cavendish-street, W. 1, son of the Rev. W. Lindley Tasker, to Adela Mary, eldest daughter of Mr. and Mrs. J. Robinson, of Ring's Hill, Borsdal.

### Communications, Letters, &c., to the Editor have been received from—

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| <p>A.—Mr. J. Abraham, Lond.; Sir R. Armstrong-Jones, Lond.<br/>B.—Dr. G. Blacker, Lond.; Dr. W. Bennett, Slaidburn; Board of Agriculture and Fisheries, Lond.; Dr. H. S. Baketel, New York; Dr. A. T. Blease, Altrincham; Mr. F. C. Barlow, Lond.; Mr. G. Y. Baldock, Lond.; Dr. C. K. Bond, Brighton; Dr. J. H. E. Brock, Lond.; Lieut.-Col. Sir James Barrett, K.B.E.; Miss E. Behnke, Lond.<br/>C.—Chicago School of Sanitary Instruction; Dr. R. Creasy, Lond.; Dr. H. W. Crowe, Harrogate; Mr. E. S. Craig, Oxford.<br/>D.—Surg.-Comdr. S. F. Dudley, R.N.<br/>E.—Maj.-Gen. Sir George Evatt; Dr. R. Eager, Exminster; Dr. T. W. Eden, Lond.; Surg.-Comdr. E. T. P. Barnes, R.N.<br/>F.—Dr. A. R. Fraser, Aberdeen; Dr. R. C. Fairbairn, Lond.; Major E. R. Fothergill, R.A.M.C.; Dr. J. G. Forbes, Redhill.<br/>G.—Dr. A. D. Gardner, Oxford; Capt. R. L. Gamlen, I.M.S. (ret'd.).<br/>H.—Dr. R. C. Holt, Disbury; Dr. F. Herniman-Johnson, Lond.<br/>J.—John Rylands Library, Manchester, Librarian of.</p> | <p>L.—Dr. A. W. Lemarchand, Barnstable; Mr. L. Lorent, Charterot; Major J. H. Lloyd, R.A.M.C.<br/>M.—Mr. J. A. C. Macewen, Glasgow; Dr. F. H. Moore, Thaxted; Medico; Medical Research Committee, Lond.; Metropolitan Asylums Board, Lond.; Clerk to; Ministry of Health, Lond.<br/>O.—Hon. H. Onslow, Cambridge.<br/>P.—Mrs. C. P. Plaxton, Prince Albert, Saskatchewan.<br/>R.—Mr. H. M. Rainsford, Lond.; Dr. O. Richards, C.M.G., D.S.O.; Dr. J. D. Rolleston, Lond.; Dr. W. Raine, Redcar; Mr. J. Ramsbottom, Lond.<br/>S.—Mr. E. G. Stanley, Paris; Messrs. B. Schwabe and Co., Basel; Mr. F. B. Shawe, Bishops Cleeve; Society for the Study of Inebriety, Lond.; Prof. B. G. Slesinger, Lond.; Society of Apothecaries of London.<br/>T.—Major J. Taylor, R.A.M.C.<br/>W.—Dr. F. P. Weber, Lond.; Dr. S. E. White, Lond.; Dr. F. J. Waldo, Lond.; Dr. L. A. Weatherly, Bournemouth; Dr. E. M. Wyche, Nottingham; Dr. C. W. Wigham, Lond.; Sir G. Sims Woodhead, Cambridge.<br/>Y.—Dr. F. W. B. Young, Liverpool.</p> |
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THE

## Chadwick Lectures

ON

## THE PROBLEM OF HYGIENE IN EGYPT.

*Being Three Lectures delivered at the Summer Session, 1919,*

BY ANDREW BALFOUR, C.B., C.M.G., M.D.,

DIRECTOR-IN-CHIEF, WELLOOME BUREAU OF SCIENTIFIC RESEARCH;  
LATE PRESIDENT, EGYPTIAN PUBLIC HEALTH COMMISSION.

## LECTURE I.—THE CAUSES OF THE PROBLEM.

MR. PRESIDENT AND GENTLEMEN,—Egypt is the hub of the wheel of Empire. The importance of that ancient land is fully recognised from a military, political, and commercial standpoint. It has bulked largely in the world's history, and recent events have certainly not tended to diminish its status in those directions. It is, however, doubtful if, in this country at least, the significance of Egypt from a hygienic point of view is equally realised. And yet in what may be called "imperial medicine," Egypt must ever play an increasingly important rôle.

## EGYPT AS AN INTERNATIONAL FILTER.

She lies at the gateway to the East, the Suez Canal traverses her territory, she acts as a great filter, a filter for disease. This filter, however, differs markedly from others with which we are acquainted, for the filtration it effects is a double one. It protects Europe from such diseases as plague and cholera, ship-borne from India, Mesopotamia, Arabia, and ports on the western Red Sea littoral, and it guards these countries and places from the risk of infection coming from southern Russia, the Levant, and various foci in the Mediterranean. In days to come there will be few more important quarantine stations than Suez, while Port Said and Alexandria keep watch and guard on vessels hailing from north and east and west.

Although a constant vigilance has to be exercised, no great strain is imposed upon those responsible, save at the time of the Mecca pilgrimage, when the migrations of the faithful occasion the utmost alertness. More especially is this the case when the pilgrimage is declared "brut" or infected. The term "brut" is a French word which has various meanings, such as rough, raw, crude, and so forth. It also signifies "void of reason," and seems almost to have been adopted on account of this meaning, for there is nothing about it to denote infection. In all probability it was employed merely as a convenient term, the antithesis of the French "net," and one with which the pilgrimage could be discreetly labelled, even if infection was merely suspected, not absolutely proved. When such a label was affixed the problem became one of much anxiety. Picture to yourselves the conditions of the Hedjaz. Vast throngs of people, often ill-fed and ill-clad, crowded together at such a pestilential port as Jeddah, an assemblage polyglot in the extreme and hailing from every quarter of the Moslem world, a concourse in some respects clearly in its habits, thanks to the Mohammedan ritual, but ignorant of every law of modern hygiene, a great gathering which, having completed its devotions at the Prophet's shrine, was intent on one thing only—to return home as quickly, cheaply, and easily as possible.

*Pilgrims by Road, Rail, and Sea.*

While this was true of the majority, it is interesting to note that, owing to the difficulties of travel in the Hedjaz in pre-war days, many pilgrims after travelling by the railway to Medina, actually made for Egypt and then started off for Mecca, a curious roundabout way of attaining their goal, and one which introduced fresh sanitary complications. In any case, the crowded port was followed by crowded steamers whereon the pilgrims were packed almost like tinned sardines, for the voyage is short and the restrictions are none too stringent. Amongst this mass of humanity sweltering in the heat of the Red Sea plague or cholera might make its appearance and begin to claim its victims. The ship is then infected and is a danger to Egypt—a problem to be solved. Yet, again, she may merely hail from an infected port and require watching for a certain period—a different proposition.

But all pilgrims did not reach Egypt by the southern sea route. You are familiar with the Hedjaz railway, which has

played so notable a part in the war. Formerly it played an equally important rôle as regards the Mecca pilgrimage and the trains were, at the time of the Haj, thronged with a multitude travelling, as Clemow has described, in open trucks or luggage vans. Amongst them were Egyptians, who often chose this route for their return journey and eventually reach the sea at Jaffa, Haifa or Beyrout, whence they took ship to Egypt, avoiding to some extent the restrictions placed upon those travelling via the Red Sea. (See map.)

So much for the rôle of Egypt as an international filter. The measures taken to deal with the problem of sea quarantine will be considered in due course, but it must be remembered that the war has introduced a new factor into the sanitary problem arising out of the relation of Egypt to her neighbours. This new factor is the railway linking the Nilotic territories with Palestine. Prior to the war the question of land quarantine was one of little importance. To the west lay Tripoli, separated from the populous lands of the Delta by a great desert, which was seamed only by caravan routes and uninhabited save by wandering Bedouins and where scattered oases afforded water and means of life. In the south Egypt merged with the Sudan, and there was more danger of the latter being infected from Egypt by way of the Nile than there was of Egypt being infected from the Sudan. Eastwards lay the desert of the Sinai Peninsula, an effective barrier between the Suez Canal and Syria.

Now, as by the stroke of an enchanter's wand, all is changed so far as this eastern frontier is concerned. An iron link has been forged, a link potent for good and evil, and in a few hours the traveller passes from the sands of Egypt to the mountains of Judea. It is conceivable that in the near future yet a third form of quarantine may have to be instituted, as there is every likelihood of Egypt becoming a halting-place for great airships en route from India to Europe.

Interesting as are these questions of aerial, land, and maritime quarantine, it must be understood that the main problem of hygiene in Egypt centres in the internal condition of the country.

## MEDIÆVAL SANITARY CONDITIONS.

In the first place, it is necessary to remember that, so far as the great mass of the native population goes, sanitary conditions may be described as mediæval. In the second place, one must not forget that all that really counts in the Egypt of to-day is artificial. The country as we know it is the product of man's activity. Egypt is so very old that it is difficult to get beyond a period when man was not busy modifying it to suit his needs, but doubtless at the beginning the land was one huge desert with fertile strips bordering the Nile, strips dependent on the annual rise and fall of the great river. Then came man and harnessed the water to his uses. While, owing chiefly to the configuration of the land, he has not created any great change in Upper Egypt, he has established the green Delta with which we are now familiar, a Delta which in many respects is a hot-bed of disease. Irrigation, while conferring the greatest benefits on the land of the Pharaohs, while in reality creating modern Egypt, has been by no means an unmixed blessing, for closely associated with it are the two great worm diseases, ankylostomiasis and schistosomiasis (bilharziasis), which have produced such dire effects upon the fellahen.

Considerations of climate enter little into the problem of hygiene in Egypt, for such influence as the climate exerts is largely of a beneficial nature, though it should be noted that the climatic conditions at certain seasons of the year are singularly favourable to the propagation of flies, and hence to the dissemination of such diseases as enteric fever and dysentery.

*The Racial Factor in the Health Problem.*

The race, and more especially those fellahen of whom we have spoken, constitutes a very important factor in the health problem. Who are these brown-faced, blue-garbed sons of the soil? They constitute the immense majority of the population; they form the lowest stratum of the social organisation of the country; they are the descendants of those who, until Great Britain undertook the work of reformation in Egypt, were beaten and robbed, the prey of pashas and of usurers. Physically they are a sturdy race, and, as Lord Cromer has stated, when left to themselves, kindly and even jovial. These characteristics are more marked in the people of the Delta, those of Upper Egypt being somewhat



truculent and less easy to handle. Unhappily, from a hygienic standpoint, the fellahen are also steeped in ignorance and superstition, void of initiative, with no outlook, with little ambition, content with the daily round of labour in the fields, and in many cases doomed to suffer much misery from preventable disease. As a recent Commission has said, and truly said: "To-day the greater part of Egypt is filthy and no self-respecting populace can be raised in filthy surroundings. As of old, Egypt is plagued by disease, and it is hopeless to expect a disease-ridden people to play their proper part in furthering the welfare of their country. The infant mortality of Egypt is appalling, actually one-third of the children born dying in infancy. The verminous condition of the fellahen shows no improvement, though lice are now known to be conveyers of typhus and relapsing fevers which account for so many deaths." And, again, when speaking of the necessity for education and for improvement in village sanitation, it is stated that "the healthy fellah is happy and content because he has never

#### *Archaic Methods of Midwifery.*

Dr. Elgood has pointed out that there must be at least 4,000,000 women in Egypt of child-bearing age. The general methods of midwifery she describes as archaic and brutal. No one knows how much puerperal fever occurs, but, taking Cairo alone, it is significant how many funeral biers are seen in the streets with silver bridal tresses adorning their head-pieces, the sign that a woman has died during her first year of married life. In any case, there can be no doubt that, apart from other ailments, the majority of lower-class Egyptian women suffer from uterine and ovarian complaints. Gonorrhœa is exceedingly common, syphilis far from rare, while the mental effect produced by the frequent loss of children must tend to depress vitality and induce apathy and despair. The harem system makes the problem of succouring these women difficult, though not hopeless. Naturally enough, they and their husbands object to male assistance, and, even at out-patient clinics, to the presence



known anything better, while the unhealthy fellah is far from being happy and content, though he is, perhaps, the most patient of sufferers."

It is, indeed, this quality of patience, an almost bovine patience, which is one of the chief features in the character of the fellahen, but, so far as disease goes, there is a kind of hopelessness about it which is pathetic. Especially is this true of the women, who, in contrast to the men, wear black garments. Now black is the colour of mourning, and well may it be worn by the women of the fellahen, for their lot, from a medical and sanitary standpoint, is too often a sad and weary one. I propose to consider the problem of the women first, for in eastern countries questions of health are very intimately bound up with the state of the female population. Unhappily, the poorer women of Egypt, be they fellahen or town dwellers, have not lacked champions in the past. Their most energetic and scientific supporter of late years has been Mrs. Elgood, a woman doctor who has laboured incessantly to improve their lot, and who, as medical officer to the Ministry of Education, has also fought the battle of the children.

of male students or of "tamurgis," as the male hospital orderlies are called.

According to Dr. Elgood, the absence in most Government hospitals of a European matron or a woman doctor prevents the lower-class men entrusting their women to the care of such institutions. Another condition which leads to difficulties is the treatment of prostitutes in Government hospitals. So long as this class is admitted to the same building as the honourable women, so long will the latter object to being treated there, even though the prostitutes are housed in special wards.

Lastly, there is the question of hospital fees. Small though these are, they are prohibitive, for many of the working-class Egyptians are miserably poor. There is a rule that the very poor shall not be charged, but nearly all who attend hospital are in this state, for it is the last resort of the destitute. At the present time most of the maternity assistance in Egypt is rendered by dayas or midwives, poorly trained women of a low and dirty class, who are responsible for many of the deaths both of mothers and infants. In addition a certain number of hakimas or, as they



are more usually termed, *mumarridas*, exist, to whom further reference will be made when we consider the solving of this part of the Egyptian health problem.

*Effect of the Mothers' Disabilities on the Child Population.*

Healthy children are a nation's greatest asset, but how can the poorer Egyptian children be healthy when their mothers labour under the disabilities we have just considered, and are in addition dirty and ignorant? A third of them die as infants. Those who survive, especially if in the large towns, have a struggle for existence. A great number attain adolescence exhibiting some defect. Many harbour ankylostomes or schistosomes, or both, and suffer grievously in consequence. A large percentage are infected with other helminths, many have damaged eyes, some are cripples, others have splenomegaly, often combined with hepatic cirrhosis. Yet others acquire pellagra. Not a few are disfigured by small-pox, and probably a minority become healthy men and women. Yet there is no instruction in diseases of infants and children at the Kasr-el-Aini School of Medicine, the only institution in Egypt granting diplomas to practise the healing art, and the facilities for the gratuitous treatment of infants and children are woefully inadequate, save possibly where eye diseases are concerned.

*How the Fellaheen Live.*

We have digressed a little from the subject of the fellaheen, but, returning to them again, let us see how they live and labour and what ideas they possess as regards the cure and prevention of disease. They inhabit villages which, though often picturesque, transgress wellnigh every law of health; congeries of flat-roofed, ill-ventilated, mud dwellings, some of them partly underground, crowded like rabbit warrens, and where the houses are shared alike by man and his domestic animals—donkeys, cattle, buffaloes, sheep, goats, cats, dogs, rabbits, fowls, and pigeons. The roofs are usually piled high with grass or rubbish, and commonly serve as latrines for the women of the household. The lanes or passages between the houses are narrow, often tortuous, and not infrequently blocked by stacks of manure. There are many blind alleys. There is no sweep of purifying air. No sanitary conveniences of any kind exist, but rats swarm, and at certain periods there is a plague of flies. Hard by there is often a birka or pool which may serve as a mosquito nursery, and the water of which, frequently used for drinking purposes, is generally grossly polluted. It may harbour the infected snail hosts of the schistosomes and be a danger to those bathing in it. The usual source of water-supply is a canal into which all manner of filth finds its way and in which buffaloes love to soak themselves.

The larger villages, if judged by the number of their inhabitants, might well be regarded as considerable towns, and may contain better-class houses in which the wealthier landowners live. Most of the fellaheen, however, are small proprietors subsisting on the produce of their fields. Apart from the presence of disease and deformities, their lot under British rule is by no means a hard one, and certainly compares favourably with that of the poor of the congested towns, into which the rural population tends to flock, thereby creating one of the most serious of the sanitary problems that have to be faced. There is no room for the newcomers, adequate building schemes to cope with the difficulty are non-existent, and the result is overcrowding with all its attendant ills, evils accentuated in a land where the lower orders are infested by vermin, and where the plague-carrying rat flea abounds.

One has no wish to paint too gloomy a picture of Egyptian life. There is much in it that is cheerful and attractive, at least in the country districts. The ravages of disease are not very apparent to the casual observer. It is true he cannot fail to be struck by the number of blind persons or unfortunates with defective vision; he may notice that deformities are common, and occasionally be shocked by the sight of a wretched leper, but otherwise he would probably regard the populace as strong and well-liking. It is not until one studies statistics, visits the dispensaries and hospitals, becomes familiar with the asylums and homes for incurables, inspects the slums of the great cities, and is brought into contact with epidemics that one appreciates how great a burden of suffering and inefficiency is borne by the populace of Egypt, and how much of this burden is preventable. Take the work of the fellaheen, work with the primitive plough and the fass (hoe or spade) in the irrigated

fields, work which entails walking or standing ankle- and knee-deep in the alluvial mud. Owing solely to the pollution of the soil with human excrement, there is an ever-present risk of infection with the larvæ of ankylostomes, resulting in that hookworm disease of which, thanks to the Rockefeller Institute and its campaign, we have heard so much of late years.

*Abysmal Ignorance and its Results.*

Again, either in the course of his work or when bathing or washing or drinking, the fellah is often brought into contact with water which, owing to pollution with urine or fæces, is charged with the cercariæ of one or other of the human schistosomes, and in many cases he falls a victim to schistosomiasis. Both schistosomiasis and ankylostomiasis are serious diseases which can be prevented by suitable hygienic measures, and the same is true of many others. It is easy to proclaim this fact, but to tackle preventable diseases properly it is highly desirable to enlist the sympathy and support of the populace who suffer from its effects. Such is no easy task even amongst an educated community. The native Egyptian, however, is still plunged in abysmal ignorance as regards the nature and cure of disease. Lord Cromer in his book, "Modern Egypt," quoting from an interesting paper written by the late Dr. Sandwith in 1884, cites several instances of strange superstitions which showed that the medical knowledge amongst the poorer classes was not materially in advance of that current in the days of the Pharaohs. Here is one not quoted, but culled from the same authority. Numerous alleged cures exist for ophthalmia, "such as wearing a red bead or gold ornament on the forehead or rowing across the Nile at Cairo to deposit a lump of mud on the further shore. During the process of some of these cures it is considered most important that the eyes should not be washed for 40 days, and it is not uncommon to see children with both eyes completely covered with a dry scab which the parents refuse to have removed, although pus may be streaming down the child's cheeks."

It is to be feared that in the thirty odd years which have elapsed since Dr. Sandwith collected these curious beliefs there has been no very great change, though, doubtless, there has been some lessening in this ignorance and credulity, for the leaven of education has been at work, new ideas are abroad, and the doctor is more trusted than he used to be.

THE CONDITIONS IN URBAN AREAS.

Hitherto we have been considering chiefly the rural districts and the fellaheen. Let us take a look at the urban populations and at the conditions which exist in such great cities as Cairo and Alexandria. I cannot do better than quote Lord Cromer's vivid description of the first ten people a visitor to Cairo may happen to meet in the streets of "that maze of old ruin and modern café, that dying Mecca and still-born Rue de Rivoli," as it was christened by Sir William Butler.

"The first passer-by is manifestly an Egyptian fellah who has come into the city to sell his garden produce. The headgear, dress, and aquiline nose of the second render it easy to recognise a Bedouin who is, perhaps, come to Cairo to buy ammunition for his flint-lock gun, but who is ill at ease amidst urban surroundings, and will hasten to return to the more congenial air of the desert. The small, thick-lipped man with dreamy eyes, who has a far-away look of one of the bas-reliefs on an ancient Egyptian tomb, but who Champollion and other savants tell us is not the lineal descendant of the ancient Egyptians, is presumably a Coptic clerk in some Government office. The face, which peers somewhat loweringly over a heavy moustache from the window of a passing hrougham, is probably that of some Turco-Egyptian Pasha. The man with a bold, handsome, cruel face, who swaggers by in long boots and baggy trousers, must surely be a Circassian. The Syrian money-lender, who comes next, will get out of his way, albeit he may be about to sell up the Circassian's property the next day to recover a loan of which the capital and interest at any ordinary rate have been already paid twenty times over. The green turban, dignified mien, and slow gait of the seventh passer-by denote some pious Sheikh perhaps on his way to the famous University of El-Azhar. The eighth must be a Jew, who has just returned from a tour in Asia Minor with a stock of embroideries, which he is about to sell to the winter tourists. The ninth would seem to be some Levantine nondescript, whose ethnological status defies diagnosis; and the tenth, though not easily distinguishable from the latter class, is in reality one of the petty traders of whom Greece is so prolific, and who are to be found dotted all over the Ottoman dominions. Nor is the list yet exhausted. Armenians, Tunisians, Algerians, Soudanese, Maltese, half-breeds of every description, and pure-blooded Europeans pass by in procession, and all go to swell the mass, if not of Egyptians, at all events of dwellers in Egypt."

Naturally this mixture of races adds to the difficulties of the sanitarian, which have been further enhanced by the existence of the capitulations. These were at first really



concessions or privileges granted by Turkey to foreigners resident in Egypt, but under the lax rule of the Khedives the privileges grew into abuses, multiplied in various directions, and became a curse to the country and a great bar to sanitary reform, because many of those who offended against the public health could not be brought to book. Happily, the capitulations are now on their last legs, but they have wrought untold harm for many years. This is why in Cairo so many of the so-called *établissements insalubres*, really offensive trades, thoroughly deserve their title; this is one reason why it has been so difficult to deal with the mosquito pest; this has been one of the causes which have wellnigh broken the heart of the energetic medical officer of health in his struggle to abate nuisances and secure convictions.

But the capitulations are by no means the sole reason why Cairo has a high death-rate and in many parts is insanitary in the extreme. In 1911 in a well-known medical work there appeared the following criticism which gave rise to much heart-burning in certain quarters. After commenting on the cesspools, the mosquitoes, the sewage-sodden soil, and the vermin of the Egyptian capital, the writer goes on to say:—

"The human mortality is enormous, especially the infantile mortality. The figures supplied by the Public Health Department are unreliable (as I know, for I have assisted to compile some of them). The actual population is unknown, many deaths are probably never reported, and sickness is not usually notified. All deaths are supposed to be registered, the diagnosis usually being made by a brief inspection of the dead body. Doctors will not notify disease because they say that it ruins their practice. Landlords prefer to knock holes in the sides of their cesspools and allow the sewage to flood their cellars and basements rather than go to the expense of having them pumped out. The water-supply is not the best obtainable, the streets are not properly cleaned, and enormous heaps of dung and rubbish have been allowed to accumulate for years past on the outskirts of the city. Many of the streets are not metalled; which perhaps is a good thing, for the rough surface acts as a sponge for the stale urine which would otherwise collect in puddles. Dung and street refuse are used as fuel generally; and large collections of this rubbish are kept for this purpose on the roofs of the 'Turkish baths.' Nearly all the dogs have been destroyed owing to outbreaks of rabies, and many cats have taken their place as natural scavengers. Hordes of flies, which breed in the dung and rubbish, abound everywhere, and are nearly as great a nuisance as the mosquitoes. Without exaggeration, Cairo may be described as a city which is hardly fit for habitation, and at present it must rank with Moscow, Peking and Hankow as being one of the most insanitary spots in the world.

Happily there has been in some directions a considerable change; or the better since the above appeared.

#### *Insanitary Old Cairo.*

I myself recall an incident which opened my eyes as to the insanitary state of affairs permitted to exist in a city the European part of which almost merits the old title of Cairo the Magnificent, so far as spacious streets and fine buildings are concerned. A certain Sewage Transport Company approached me with a view to obtaining a concession for dealing with the conservancy of Khartoum. I met the company's representatives in a very ramshackle and decayed building in Old Cairo. As is usual in Egypt, coffee was served, and on finishing my cup I discovered amongst the syrup at the bottom of it a dead fly. I fear this prejudiced the company's application from the outset; but in any case it could never have been entertained, for the ideas advanced were, to say the least, unprogressive, and the methods of working in Cairo were disgraceful. Pail contents were collected in those insanitary juggernauts called Crowley carts, which jolted and splashed along the unpaved, badly kept roads, to the joy of thousands of flies which bore them company. The cart contents were dumped into shallow open depressions in the soil no great distance from the city confines, and were there mixed with material dug from the neighbouring gebels, which is said to have fertilising properties. The nauseous mixture, after drying in some measure, was spread out on the top of these same gebels for further desiccation. Naturally it pulverised and naturally the south wind wafted it down upon the city. Is it possible to imagine a more filthy and insanitary procedure? Is it strange that sore throats are frequent in this city of dust and smells? These methods are still in vogue, for the great drainage scheme has not yet touched Old Cairo, and though there is better supervision the conditions remain very unsatisfactory. One has only to read the report of the Sanitary Commissioner sent out by THE LANCET in 1908 to realise how necessary it was, and still is, to cleanse the Augean stable. He paints a lurid picture of the rubbish heaps to the north of the city, and though things have improved in some measure, a good deal yet remains to be

done. Elsewhere, amongst the tangle of narrow streets in the Bulaq, Saïda Zeinab, and Bab-el-Sharia quarters all manner of insanitary conditions continue to flourish. The meat market is very far from ideal, the tripe market an abomination. Many of the cowsheds and dairies are filthy in the extreme. The roofs of the houses are used as latrines, the condition of the wells in their basements is enough to suggest cholera. Filth and flies, overcrowding, vermin, infected food and drink, stagnant air, disease and destitution, all are there. Is it any wonder the Sphinx sits yonder in the desert and gazes with stony and sardonic smile over a city with a death-rate of nearly 40 per 1000 per annum?

#### *The Same Evils in Modern Alexandria.*

But you will say, after all Cairo is a great and ancient native city, an eastern city, and we know what happens to the man who tries to hustle the East. Let us then take train to Alexandria, which is largely a European city, a proud and prosperous city with a municipality and, *mirabile dictu*, wellnigh as fine a slaughter-house as is to be found anywhere in Europe. Here, however, are the same evils—slum quarters or *echèches* of the worst description, centres of typhus and relapsing fever, often cheek by jowl with better-class dwellings, often close to areas inhabited by well-to-do Europeans. The conditions at the hammams, or Turkish baths, are scandalous, for at these places the town refuse, often ill-smelling and foul, is used as fuel, and, being stored anyhow and everywhere, is most offensive and dangerous. It breeds flies galore, it affords a happy hunting-ground for lean donkeys, greedy goats, and mangy cats. The creatures who handle it look like soot-besmirched myrmidons of Satan, and, strange to say, in the furnaces which it feeds beans are baked in earthenware jars from which they are sold in the neighbouring streets.

Until the sanitary authorities of the Expeditionary Force took stringent action most of the aerated water factories, the bakeries, pâtisseries, ice-cream shops, and the kitchens of the restaurants were sources of danger to the community, and in certain instances disgusting as well as dangerous. The markets leave much to be desired, the municipal arrangements for refuse destruction are totally inadequate, the methods of disposal of latrine-bucket contents and sewage sludge at Mex and Gabriel offensive and noxious, the Infectious Diseases Hospital a disgrace to a city like Alexandria, and the municipal bacteriological laboratory a place in which it is a crying shame to ask any scientist to work—at least during the hot, moist summer.

It is the same more or less in all the towns of Egypt. Here and there, as at Suez and Port Said, good work by energetic officials has remedied matters in some degree, but not so very long ago I encountered amongst the mounds of rubbish awaiting incineration at Port Said the most remarkable and nauseating odour it has ever been my ill fortune to experience, and I may say I am somewhat blasé as regards insanitary effluvia. It had a peculiar sweet flavour which defies description and demanded instant flight, so that I am still wondering what could possibly have produced it.

#### THE PRINCIPAL INFECTIVE DISEASES.

Now, what are the principal diseases which form the natural corollary to this state of affairs in the Egypt of to-day—the Egypt, remember, over which this country has cast her mantle of protection, which has a rightful claim upon us for assistance and advice in safeguarding the health of her people, which, if her sanitary salvation is to be secured, must be guided wisely and well along the paths of hygiene?

I have already spoken of the two great worm diseases, reference has been made to the frequency of other helminthic disorders, typhus and relapsing fever have been mentioned, allusion has been made to enteric fever, dysentery, plague, cholera, small-pox, pellagra, leprosy, splenomegaly, idiopathic hepatic cirrhosis, and ophthalmia. There has been some reference to venereal complaints, to deformities, and to gynaecological disorders, but we are by no means at the end of the list. Before proceeding, however, a few words may be said about one or two of those just cited. Dysentery amongst the native Egyptians, when not a symptom of rectal bilharziasis, is chiefly of the amœbic type. Whether bacillary or amœbic, it is a filth disease the cause of which, like those of enteric, may be summarised as careless contact cases, carriers—chiefly cooks—drains, dairies, dirty drinking-water, the dust of dried dejecta, and the repulsive regurgitation, dangerous droppings and filthy feet of fecal-feeding



flics fouling food. Plague, at least in its bubonic form, is due to vermin, cholera in the main to polluted drinking water, and the way in which cholera is held in check is a fine tribute to the work of the Department of Epidemic Services. Small-pox has few terrors for the vaccinated, and yet it is sad to see its ravages in Egypt. Pellagra is still a puzzle, but is possibly a combination of a food deficiency disease and an auto-intoxication from the bowel. Anyway, it helps to fill the asylums and causes considerable misery and distress. Leprosy, another enigma, so far as its method of spread is concerned, is certainly associated with dirt and destitution, and is by no means a stranger to some parts of Egypt. Yet nothing is done for it, and the leper is free to infect the healthy.

Splenomegaly, often accompanied by cirrhosis of the liver, may be due to various causes, all of which are not yet fully understood, but some of which are assuredly of an insanitary nature; while ophthalmia, in all its various and disfiguring forms, is too often directly traceable to lack of the elements of hygiene and to the ubiquitous fly. Is it not a terrible thought that at the time of the last Census it was found that more than half a million persons in Egypt were blind in one or both eyes! All this is a sorry tale, whether or not we believe man is made in God's image, but there is more to tell. Dengue fever, now definitely known to be mosquito-borne, occurs every now and then in Cairo and elsewhere, malaria still lingers near Ismailia, and is by no means infrequent along the Suez Canal. It is prevalent and severe in the Kharga oasis and lurks in the Delta to an extent which is only now becoming appreciated. Filariasis, another mosquito-carried disease, possesses foci in the land. An unknown fever resembling both typhus and typhoid but of a relapsing type made its appearance in Cairo in 1914 and accounted for many deaths, undulant fever (a preventable malady) occurs, sand-fly fever claims its victims here and there, diphtheria is not uncommon, rabies is present to a disquieting extent, while skin infections, and more especially boils, show that the plagues of Egypt, if they once ended with the death of the first-born, have assuredly assumed a new lease of life.

## CARCINOMA OF THE RECTUM:

### THE CHOICE OF OPERATION.

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It is my purpose in this article to discuss the relative merits of, and the indications for, the various operations which have been devised for carcinoma of the rectum.

It must be regarded as a lamentable fact that only a small percentage of cases of rectal carcinoma are capable of radical extirpation when first seen by the surgeon. I have asked a number of surgeons to give me their estimate of the percentage of operable cases; the lowest figure was 20 per cent. and the highest 40 per cent. My own experience is that it is about half-way between these figures, rather under 30 per cent. The figures vary in the two sexes. Taking a rough estimate, out of every 100 cases in the female 40 are operable, out of every 100 in the male only 20, giving a figure of 30 per cent. for the two sexes.

#### *Early Stages of the Disease.*

Carcinoma of the rectum probably starts either as a small ulcer or as a small polypoid growth. But how rarely does one come across a case in such an early stage. One would think that either of these would cause sufficient discomfort to arrest the patient's attention and cause him to seek advice. But experience shows that this is not the case, and the majority of patients, even intelligent and educated ones, present at the first examination a large ulcerating process extending more or less completely round the bowel.

The really early cases are so rare that it is easy to remember them.

A lady, aged 37, consulted me in 1912 on account of a single attack of hæmorrhage from the rectum—bright red, not profuse. She had no other signs or symptoms. She did not look ill, and rectal examination was negative. The sigmoidoscope revealed a stalked polypus about the size of a Barcelona nut in the sigmoid colon. I opened the abdomen and excised the polypus with its base and a wide area of the bowel wall surrounding it, and closed the opening with Lambert sutures. She made an uneventful recovery.

Microscopical examination revealed, to my surprise, a typical columnar-celled carcinoma. She has exhibited no signs of recurrence. The case demonstrates the value of sigmoidoscopic examination, if such demonstration is still needed.

But this type of case is the exception. The one we have to deal with most often is that in which a large mass is palpable within reach of the examining finger. The question to be decided is, Is it capable of radical extirpation? I hold very strongly the view that the question cannot be adequately decided unless and until the patient is examined under an anæsthetic. It is sufficient at the first examination to know that there is a carcinoma. Digital manipulation of the growth nearly always causes great pain.

Examination under an anæsthetic will reveal a number of helpful points: (1) the extent of the growth in both directions—i.e., whether it completely encircles the bowel and (if the examining finger can be introduced through the lumen of the growth) how far it extends upwards; (2) the nature of the growth—i.e., whether it is a soft friable fungating mass (as it most often is) or whether it is a hard fibrous ring; (3) the mobility of the growth—i.e., whether it is fixed behind to the sacrum or it front to the bladder in the male or to the posterior vaginal wall in the female; (4) deep palpation of the relaxed abdominal wall may enable the surgeon to feel enlargement of the lumbar glands or of the liver.

#### *Colostomy.*

If such examination reveals the case to be a hopelessly inoperable one a colostomy should be done, and done at once. I remember being taught as a student that the patient should be put on a suitable diet calculated to leave as small a faecal residue as possible and kept under observation; and that a colostomy should only be performed as soon as symptoms of obstruction supervened. This teaching, I believe, to be wholly and utterly wrong, for the following reasons: (1) the patient will get progressively weaker as time goes on and less able to withstand the shock of an abdominal operation; (2) if the surgeon is to wait until symptoms of obstruction supervene there will necessarily be some hypertrophy and dilatation of the descending colon and the operation may be rendered technically difficult; (3) it is probable that deflection of the intestinal contents from passing over the surface of the growth may retard its progress; and (4) last, but not least, the patient is already suffering from some degree of chronic intestinal stasis, and an immediate colostomy will relieve him from the multitude of disorders associated with that condition. In fact, the improvement which often follows colostomy is quite remarkable.

The colostomy should be a hypogastric one, the incision being a vertical one through the centre of the left rectus abdominis muscle just below the umbilicus and a loop of the descending colon brought out and fixed in position by passing a stout glass rod through its mesentery. Hypogastric colostomy has several advantages over inguinal colostomy done through a muscle-splitting incision in the left iliac fossa. The opening is in the centre of the abdomen in a position where the patient can attend to it with the greatest ease and comfort, and the cup remains in position whatever attitude the patient may adopt, whereas in the inguinal colostomy the cup is apt to ride up on the anterior superior iliac spine when the patient sits down and allow an escape of faecal matter. Further, the rectus abdominis develops in the course of time a certain degree of sphincteric power, which the muscles in the left iliac fossa rarely, if ever, do.

Some surgeons perform a transverse colostomy. I do not advise it because the great omentum may make the operation difficult, and my experience is that the spur is rarely as good and there is a tendency to spontaneous closure.

There is a popular idea that to have a colostomy is the worst fate in the world, rendering the owner intolerable to himself and to others, and that it is better to die of the cancer. This is a fallacy which should be combated. Life with a colostomy is not, of course, ideal, but it is far from intolerable; and I know of one medical man who has had a colostomy done for diverticulitis, and now that the diverticulitis is cured refuses to have the colostomy closed and conducts a large practice in comfort.

#### *When is a Radical Operation Justifiable?*

The contraindications may be considered under two headings.



(1) *General*.—Advanced age is a contraindication. It is difficult to lay down an absolute rule; to say, for instance, that radical operation must not be undertaken in an individual of 60 years or over. Some people of 60 are, pathologically speaking, only 50; others are 70. Experience alone can help one to decide on this point. Recognisable metastasis—e.g., enlargement of the liver with umbilicated nodules, or enlarged lumbar glands palpable through the abdominal wall under an anæsthetic—is an absolute contraindication, as is the condition known as cachexia.

(2) *Local*.—Direct extension may have extended so far as to form a recto-vesical fistula. This is an absolute bar to radical operation. Fixation of the growth in any direction, anteriorly to the prostate or bladder in the male or to the posterior wall of the vagina in the female, laterally along either levator ani muscle or posteriorly to the coccyx or sacrum diminishes the prospect of success in proportion to the density of the fixation. Personally I regard dense fixation anteriorly in the male as a definite contraindication. In the female the posterior wall of the vagina can be removed with the bowel. Fixation in other directions is less serious and operability depends upon the degree of it present. In some cases fixation has spread in the direction of all points of the compass and these are inoperable.

#### *Unsound Operations.*

When a decision has been arrived at that the case is operable, what operation should be done? I am convinced that any operation which aims at leaving a normal anus—i.e., any operation which is not associated with a colostomy—is a bad operation. It is pathologically unsound because it leaves behind those very areas which are liable to become the seat of recurrence. Three such operations have been described.

1. Rectorrhaphy or trans-sacral excision of the growth with end-to-end anastomosis. This consists in a few words of removing the coccyx and part of the sacrum if necessary, freeing the portion of bowel where the growth is situated, dividing the bowel above and below the growth and performing an anastomosis of the two ends. It is difficult, almost impossible, to be certain of so removing all the affected tissues as to make reasonably sure against recurrence; the anastomosis rarely, if ever, holds per primam and usually leaves a posterior fistula, which takes weeks or months to heal; and, finally, there is often left an ugly and intractable stricture at the level of the line of suture.

2. The abdomino-anal operation. The early stages of this resemble those of the abdomino-perineal. The abdomen is opened in the middle line, the lower part of the sigmoid and the rectum freed from their attachments and pushed down below the peritoneal pelvic floor, which is reconstituted by suture. The abdomen is closed. The patient is turned on his side. A posterior incision is made and the coccyx removed, if necessary. The rectum is cut away from the external sphincter, which is left but divided posteriorly. The bowel is pulled down as far as it will come and is fixed inside the sphincter, which is reunited. All the bowel distal to the sphincter, this being the portion bearing the carcinoma, is removed at a level of an inch below the anus. This operation is more radical than the last. But if the contents of the ischio-rectal fossa have been thoroughly removed with the levatores ani and the internal sphincter the sigmoid, which has been brought down to replace the rectum, cannot and does not behave like a normal rectum, and infinite trouble with defæcation is usually experienced, not to mention the fact that some degree of stenosis at the anal orifice is a common sequela.

(3) Kraske's operation and its modifications. In this the coccyx, and, if necessary, the lowest part of the sacrum, is removed, a perianal incision is made and the rectum is dissected up until it is free well above the growth. The bowel is divided above the growth and the open proximal end is fixed on to the upper part of the wound as an artificial anus. The artificial anus so formed develops no sort of control, and is in such a position that the patient is totally unable to look after himself. This operation is, in my opinion, quite unjustifiable, and I hope it is falling into disuse.

#### *Satisfactory Radical Operations.*

There are, as I think, only two satisfactory radical operations for carcinoma of the rectum: (1) the combined abdomino-perineal, and (2) colostomy with high perineal excision later, which I will call for short the two-stage operation, and I propose to discuss their respective merits.

(1) The combined abdomino-perineal operation. I do not propose to describe the technique in detail since it is sufficiently well known. The abdomen is opened by a paramesial incision with the patient in the Trendelenburg position, the inferior mesenteric artery is divided between

ligatures, and an incision made in the mesentery of the colon on either side. These incisions are produced to meet in front of the sigmo-rectum. A separate incision about two inches long is made through the centre of the left rectus abdominis muscle. The bowel is divided at the apex of the omega loop, and both ends are closed with a basting stitch. The proximal end is brought out through the separate opening and fixed in position so as to form a terminal colostomy. It is well to make a small incision in the exposed end and tie in a catheter, as advocated by Mr. Sampson Handley. This has two advantages: (i.) flatus can escape, and (ii.) saline infusions can be given through the catheter if desired. The distal end is freed from its connexions and pushed down into the pelvis, and the peritoneal pelvic floor is restored above it by suture. The abdomen is closed and the patient turned on the left side. The anal orifice is closed with a running suture and an incision made round it, which is continued upwards in the middle line behind. The coccyx is removed if necessary. The connexions of the rectum proper are cut through at as wide a distance from the bowel as possible. The levatores ani should be divided near their origin, and the whole of the bowel below the point of section is removed en masse. A large drainage-tube is inserted in the posterior wound and the skin edges brought together with sutures.

(2) Colostomy with excision at a later stage. In this a hypogastric colostomy is performed and opened on the third or fourth day. A fortnight later, when the colostomy is well established and working adequately, the second stage is undertaken. The anus is closed, an incision made round it and extended upwards in the middle line behind and the coccyx removed as in the abdomino-perineal operation. The connexions of the rectum are cut through as far away from the bowel as possible; and the freeing of the rectum is continued upwards carefully and gradually until the pelvic peritoneal floor is reached anteriorly. The peritoneum is deliberately opened and the freeing of the bowel is continued, clamping the vessels on its posterior aspect until a portion of bowel completely covered by peritoneum can be comfortably reached. A clamp is put on at this level and the distal portion of bowel is removed. The proximal end is closed with a basting stitch, and its closure made further secure by a superimposed circumferential Lembert suture. This end may be allowed to drop back into the peritoneal cavity or may be fixed to the pelvic peritoneum. The pelvic peritoneum is formally closed, as in a laparotomy. A tube is inserted for 48 hours in case of oozing and the skin edges brought together by suture. Primary union of the posterior wound should result.

The important thing is that the bowel should be brought down so far that it is divided at a point where it is completely covered by peritoneum. If this is done it can be returned to the peritoneal cavity without risk. Any attempt to divide the rectum below the pelvic peritoneal floor means that a portion of bowel uncovered by peritoneum is left in the pelvis. The stitches give way and a fistula results which may persistently refuse to close, and first intention healing of the posterior wound (a point of prime importance to the patient's comfort) is impossible.

At first sight the abdomino-perineal operation appeals to the imagination as the more radical and therefore sounder procedure. But it has to be confessed that the abdomino-perineal operation is associated even now with a high primary mortality—i.e., death as the immediate result of the operation. When it was first introduced this mortality must have been at least 40 per cent. It is difficult to get exact figures, but that is my impression. With our improved technique of to-day, and the more judicious selection of suitable cases, the figures have shown an improvement. At this date I estimate the primary mortality as being roughly 15 per cent. in females and nearly 25 per cent. in males—that is, 20 per cent. in all cases, a formidable consideration for any surgeon to face.

#### *Common Causes of Death.*

These are: (1) *Shock*. This can be largely combated by giving a continuous submammary infusion of saline during the course of the operation.

(2) *Peritonitis*. This is a low form which makes its appearance recognisable clinically about the fifth or sixth day, and death ensues two or three days later. It is due to soiling of the peritoneal cavity at the moment when the bowel is divided and its ends sutured; in other words, to indifferent technique. But in spite of every possible precaution, it must be admitted that it does occur.



(3) *Intestinal obstruction.* This is generally due to one or more coils becoming fixed by plastic adhesions to the line of suture restoring the pelvic floor and acutely angulated, or as happened in one of my cases, to a coil becoming strangulated round the colon at the back of the colostomy wound. This occurs a few days after the operation and the patient is rarely in a condition successfully to withstand the shock of another laparotomy even if the diagnosis be made in time.

In 1915 I myself lost four male patients consecutively in whom I had performed the abdomino-perineal operation, one from shock, one from peritonitis, and two from intestinal obstruction.

On the other hand, the primary mortality of the two-stage operation should be nil or, at any rate, so small as to be negligible.

#### *A Question for Consideration.*

This, then, is the question we should put to ourselves. Is the possibility of radical extirpation of the growth with freedom from recurrence so much greater in the combined abdomino-perineal operation than in the two-stage operation that we are justified in facing the extra risk of its primary mortality? The only difference between the patients after the two operations is this—that the patient after the two-stage operation still retains a portion of bowel distal to the apex of the omega loop.

The question, therefore, further resolves itself into this. Is this portion of bowel a common seat of recurrence? It need hardly be remarked that recurrence is due to: (a) indirect extension, and (b) direct extension. Indirect extension spreads either by the portal venous system to the liver or by the lymphatics to the retro-peritoneal glands. It does not concern us in this argument, since in neither operation is any attempt made to deal with it. In fact, as I said above, if its presence is clinically recognisable it is a contraindication to radical operation.

Direct extension may be (i.) intramural or extramural. My own belief is that intramural extension certainly takes place round the bowel and down the bowel, but that if the growth extends *up* the bowel it does so only for a very short distance. I have yet to be convinced that the bodies which have been described in the submucous layer of the bowel at a distance of some inches from the growth are carcinomatous at all, and I have not seen a case where a fatal recurrence has taken place in the bowel left after a free perineal intra-peritoneal excision.

But direct extramural extension is a different matter, and I believe that the most important channel by which the growth extends is the fascia covering the levator ani. When we see a recurrence after a radical operation for carcinoma of the rectum it is usually in the form of a fungating mass which has spread down the wall of the ischio-rectal fossa and fungated through the skin in or near the line of the posterior incision; it has, in fact, spread down from a portion of the origin of the infected levator ani which was left behind.

If this is so, the possibility of eradicating the disease should be equally great in the two-stage operation as in the combined abdomino-perineal. I am therefore putting forward my view that considering the respective mortalities of the two operations the two-stage operation should be regarded as preferable in the great majority of operable cases of carcinoma of the rectum; it should be the operation of election.

There is, however, one class of case where the two-stage operation is not feasible and the abdomino-perineal is the only one which gives a chance of removing the growth—i.e., where the carcinoma is situated at the junction of sigmoid and rectum, too low down to admit of excision and end-to-end anastomosis from above and too high up to allow of excision from below.

#### *Conclusions.*

(1) Only 30 per cent. of cases of carcinoma of the rectum admit of radical operation when first seen.

(2) When radical operation is impossible, a hypogastric colostomy should be done *at once*.

(3) Radical operations which aim at retaining the anal canal are pathologically unsound.

(4) The only sound radical operations are: (i.) the two-stage operation (colostomy and intraperitoneal excision by the perineal route later); and (ii.) the combined abdomino-perineal operation.

(5) Of these, the former is the better except in the case of a growth situated at the junction of the sigmoid and the rectum.

## NOTE ON A METHOD FOR THE SEDIMENTATION OF TUBERCLE BACILLI IN SPUTUM.

By J. G. GREENFIELD, M.B., M.R.C.P., B.Sc.;

AND

J. ANDERSON,

FORMERLY PRIVATE, R.A.M.C.

THE following method has been in use for over a year in the laboratory connected with a large military chest hospital, which was constantly receiving fresh cases of suspected phthisis. Up to 20 samples of sputum per diem have been dealt with by its use, and we have found it so much more practical and reliable than any of the published sedimentation methods that we think it is worth while to make it more generally known.

#### *The Method Described.*

5 c.cm. of sputum are mixed with twice their volume of—

Sod. carb. (cryst.)	...	...	...	...	...	1
Acid carbolie (cryst.)	...	...	...	...	...	1
Water	...	...	...	...	...	100

in a centrifuge tube; the tube is then covered with a rubber cap, shaken for a few minutes and put in the incubator for 12 to 24 hours. (If a number of sputa are to be tested they can be placed in numbered tubes in an ordinary test-tube rack and kept in order during further stages.) At the end of the time the tubes are centrifuged for about 15 minutes, the supernatant fluid poured off, and films made from 2 to 4 loopsful of the deposit are stained in the usual way.

#### *Advantages.*

The chief advantages of this method are as follows:—

1. Its rapidity, as it really takes less time than the direct smear method, especially if a large number of sputa have to be examined, as the rapidity with which the frankly positive sputa can be picked out more than compensates for the slightly longer technique.

2. The sputa when taken out of the incubator are sterile in the majority of cases. We have cultured many sputa on to Dorset's egg medium with uniformly negative results both as regards tubercle bacilli and pyogenic organisms. Of two guinea-pigs inoculated from sputa containing numerous tubercle in every field, only one became infected. This pig was injected with 2 c.cm. of a very purulent deposit which contained vast numbers of tubercle bacilli. It would doubtless be possible so to arrange the strength of carbolie used that the pyogenic organisms would be killed off, leaving some viable tubercle bacilli; but for routine laboratory work the advantages of killing off the bacilli before making the smears cannot be over-estimated.

3. The films resemble the direct smears both in the relative proportion of other organisms present and in the presence of mononuclear and polymorphonuclear cells, but the mucus is not stained.

Table showing Number of Bacilli Counted in 15 Fields.

No. of case.	Direct smear.	Ellermann's method.	Simplified method.	No. of case.	Direct smear.	Ellermann's method.	Simplified method.
1	49	47	251	11	15	18	98
2	19	109	107	12	76	+	+
3	1	+	+	13	38	96	161
4	5	149	120	14	0*	6*	14*
5	2	7	17	15	2*	104	150
6	5	72	111	16	20*	+	+
7	16	26	204	17	12*	104	126
8	14	453	537	18	397	+	+
9	0	5	68	19	2	16	99
10	0	5	7	20	25*	67*	200*

+ = more than 1000.

\* = after prolonged search.

The relative ease with which tubercle bacilli can be found by this method, as compared with the examination of the direct smear and of films made by the full technique of Ellermann and Erlandsen, is shown in the above table. In almost every case as many, or more, bacilli were found by the simplified technique, and the advantages both as regards cleanliness and time are obvious.



# A CASE OF LYMPHADENOMA WITH PERIODIC PYREXIA

("PEL-EBSTEIN DISEASE").

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I AM encouraged to publish this case, not because I am in a position to contribute any new ideas, but because I think its publication will serve some purpose in drawing attention to a condition which, though well recognised, is comparatively rarely encountered and which offers some points of interest in diagnosis. I venture to think, also, that this case is an exceptionally striking example and in many respects more typical than those which have been previously described.

## Cases Reported by Other Observers.

Sir Frederick Taylor contributed a very complete and exceedingly interesting account of "the chronic relapsing pyrexia of Hodgkin's disease."<sup>1</sup> His article included a reference to the previous literature on the subject, a reference which I have found of the greatest value in enabling me to trace the original descriptions by Pel, Ebstein, and others. His detailed description of these cases, together with a résumé of the types of pyrexia which are encountered, I shall briefly epitomise before referring to the case I have myself had the opportunity to observe.

Sir Frederick Taylor points out that the following types of fever may be encountered in cases of lymphadenoma: (1) A continuous pyrexia with slight diurnal variations. (2) Alternating periods of pyrexia and normal temperature. (3) Daily variations of temperature (in excess of the normal physiological limits) which are higher in the evening than in the morning. (4) Mixed types. Cases exhibiting at different times temperature phenomena corresponding to more than one of the above-mentioned types.

Ebstein published a paper entitled, "Chronic Relapsing Fever, a New Infectious Disease."<sup>2</sup> He first gave a detailed description of the clinical peculiarities of the case and afterwards its termination with the condition found at autopsy. His case was under observation for 238 days, during which there occurred 10 attacks of pyrexia, each of 13-14 days' duration, with apyrexial intervals of 10-11 days. An eleventh attack was of longer duration and

that this pyrexial variety of lymphadenoma is more frequent under than over 20.) There was no history of any antecedent illness, and he was admitted on Oct. 3rd, 1918, with "influenza." At that time the hospital was inundated with cases of pyrexia, all of which, very naturally at that time of epidemic, were, in the absence of any distinctive features, labelled, provisionally at any rate, influenza; and although it is probable that on his admission the disease from which he was suffering was a mild attack of influenza, no particular attention was attracted or directed to anything which might have suggested the subsequent diagnosis. He was sent to a convalescent hospital on Oct. 15th, and 28 days later he was returned with a history of attacks of pyrexia and malaise, of greatly enlarged spleen, and of doubtful signs of fluid in the left side of the chest. On his arrival he complained of no symptoms, his temperature was subnormal, no physical signs were present, but the spleen was very definitely enlarged and extended three fingers' breadth below the costal margin.

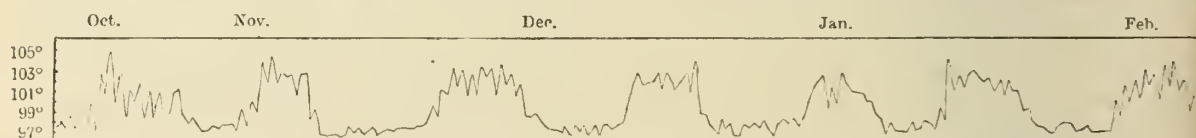
Three days later the spleen was quite impalpable, and in the absence of any other explanation it was thought that the patient was now convalescent from what was a fever of the typhoid group. But on the 22nd there was a recrudescence of pyrexia and malaise, with gradual but rapid enlargement of the spleen. Pathological investigations instituted at this time gave the following results:—

Total leucocyte count, 1560 per c.mm. Differential count: polymorphonuclears (per cent.) 47, lymphocytes 39, large monocytes 12, eosinophiles 1, mast cells 1. Erythrocytes, 2,675,000 per c.mm. Haemoglobin, 52 per cent. Blood film showed anachromasia of red cells; otherwise nil abnormal. Urine nil. Blood culture negative. It will be observed that resemblance to typhoid fever is again manifest in the leucopenia.

Apart from the enlarged spleen no abnormalities were ascertainable; there was no trace of enlarged lymphatic glands. It will be remembered that these negative findings were characteristic in the cases described by Ebstein and Pel.

## Remarks.

Many chronic infections are capable of producing an irregular sort of fever. "Anomalous typhoid," "anomalous influenza," tuberculosis, Malta fever, were all specifically excluded. It may be added that the picture of true relapsing fever differs from that of the condition described, in that the periods of pyrexia terminate suddenly by an unmistakable crisis, quite apart, of course, from the unequivocal evidence afforded by the spirilla in the blood. Cases of lymphadenoma without any enlarged external glands are sufficiently rare to



was followed shortly before death by a brief twelfth attack. During life an enlarged spleen was identified, but no abnormal appearances in the blood and no enlargement of external lymphatic glands were observed. At the autopsy there were discovered enlarged bronchial, mediastinal, and mesenteric glands, as well as nodules of lymphoid appearance in the lungs, liver, kidneys, and spleen. Both liver and spleen were substantially enlarged and both exhibited infarcts.

Pel's case was described actually two years before Ebstein's publication. He referred to his case under the title "Pseudoleukæmia or Chronic Relapsing Fever?" At that time the association of pyrexia with Hodgkin's disease was unknown. Again, in Pel's patient, as in Ebstein's no enlarged external glands were evident, although hyperplasia of the spleen, retroperitoneal, mesenteric, and bronchial glands was found post mortem. Pel's idea was that the exacerbations of fever were produced by solid food, a view which nobody else has supported, and one, indeed, which observation appears completely to refute.

## The Author's Case.

The patient whom I have had the opportunity to investigate was a boy 17 years of age. (It appears from Taylor's account

excuse the failure to diagnose the patient's illness earlier, but once the condition has been recognised it may be said that the occurrence of such periods of pyrexia with corresponding periods of enlargement of the spleen afford a most characteristic picture.

Osler, in referring to this disease, says:—

"In a few rare instances (of lymphadenoma) Pel has described remarkable periods of fever of 10 to 14 days' duration, alternating with intervals of complete apyrexia. They occurred in two of my cases. Ebstein described it as a form of chronic recurring fever. It is probably due to an intercurrent infection."

The last suggestion would appear to be indisputable, and, bearing in mind the character of the pyrexia, one would suspect the parasite to be of a protozoal character. So far as I am aware, no supposed infective agent has been identified. During one pyrexial period of the present case the spleen was punctured and the blood extracted examined bacteriologically, but with negative result.

Little further description of the case is necessary. As will be seen from the chart, a remarkable regularity of periods of pyrexia and apyrexia was on the whole sustained, although the apyrexial intervals were on two occasions only one-half the usual duration. During each period of fever the spleen increased in size, although not to so great an extent in the last periods observed as in the earlier intervals.

<sup>1</sup> Guy's Hospital Reports 1906 vol. ix.

<sup>2</sup> Berl. Klin. Woch., 1887, vol. xxiv., pp. 365 and 337.



During the apyrexial phases the patient always felt quite well and walked about, taking ordinary diet, and regaining the four or five pounds' weight he had lost during the previous period of pyrexia. So far as I could estimate, his general condition on Feb. 15th was no worse than on his first admission to hospital. He was transferred in order to be nearer his home, and it is probable therefore that at some future date a further history of the progress of the case will be forthcoming.

I must express my gratitude to Lieutenant-Colonel W. Turner, C.M.G., R.A.M.C., O/C. Connaught Hospital, Aldershot, for permission to publish the notes of this case, and to Lieutenant-Colonel Herbert French, R.A.M.C., consulting physician to the Aldershot Command, to whom I am indebted for much valuable advice in the investigation thereof.

## THE RELATION OF GRAVES'S DISEASE TO DIABETES AND GLYCOSURIA.

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A NUMBER of interesting facts indicate the relation of Graves's disease to diabetes mellitus and glycosuria. Many writers have drawn attention to this relationship. In this paper, however, I do not propose to refer to interesting articles already published on the subject, but shall briefly refer to cases in my own practice which illustrate this relation from the clinical side.

1. Graves's disease is occasionally followed by, or associated with, diabetes mellitus, well marked or mild.

(a) Graves's disease followed by *severe* diabetes mellitus.

CASE 1.—Mrs. A. H., aged 47. Seven years before she came under my observation she had suffered from a very severe mental shock. Her husband's hand was torn off in an accident at his workshop. The patient was greatly shocked on hearing of the accident, and the mental distress was very soon followed by symptoms of Graves's disease. For some time these were severe; then she improved slowly; but about six years after the shock thirst and symptoms of diabetes were noted, the symptoms of Graves's disease having persisted.

When admitted into hospital under my care definite symptoms of Graves's disease could still be detected, though they were not very marked (exophthalmos, tachycardia, pulse 120 to 180, thyroid slightly enlarged, and fine tremor of hands). Symptoms of diabetes mellitus of medium severity were also detected. She was under my care in hospital for three months and was treated for diabetes, which was the prominent affection. The sugar in the urine was estimated daily. The daily amount of urine during this period varied from 80 to 140 ounces, but sometimes it was more than the latter figure; sp. gr. 1030 to 1040; sugar 18 to 30 gr. to the ounce (about 4 to 6.5 per cent.), total amount of sugar in 24 hours 1500 to 2000 gr. In course of time the urine gave a deep reaction with ferric chloride for diacetic acid; then albumin was detected in the urine, and finally casts. Death occurred from a sudden attack of hemiplegia.

CASE 2.—Mrs. J., aged 39. Suffered from Graves's disease at the age of 21; goitre, palpitation, and other symptoms well marked. Suffered for four years from these severe symptoms (seen by the writer at that time). Then recovered practically from Graves's disease, but suffered long from attacks of asthma. At the age of 35 diabetes detected. At the age of 39 seen by writer again. Marked diabetes; diacetic acid also found in urine in large quantity. No goitre, pulse 108; only slight prominence of eyeballs; no tremor.

CASE 3.—Mrs. M., age 41. Symptoms of Graves's disease developed at the age of 17, and continued until the age of 30. Then practical recovery occurred. At the age of 40 symptoms of diabetes developed and eyeballs became again prominent. When seen by writer at the age of 41 the symptoms and urinary condition were those of severe diabetes; also the eyeballs were prominent and the pulse rapid, 104, but the thyroid was not enlarged.

(b) Graves's disease followed by *mild* diabetes mellitus (or persistent glycosuria).

CASE 4.—Male, aged 39. At age of 34 Graves's disease developed after a period of excessive mental work. Palpitation, exophthalmos, tremor, and thyroid enlargement developed. A trace of sugar was detected in the urine for a time. After careful treatment the symptoms of Graves's disease gradually diminished, and the urine became quite free from sugar. Two years later, at the age of 36, he began to suffer again from severe palpitation and was obliged to discontinue all work. Three years later, at the age of 39, a trace of sugar was again detected in the urine; but a month later the urine was free from sugar. A month afterwards sugar was again detected, and the glycosuria continued. The condition developed into one of mild diabetes mellitus or persistent chronic glycosuria, the urine always containing sugar. (Urine 60 oz. daily, later 90 oz., sp. gr. 1018, considerable amount of sugar, no albumin, no diacetic acid.) The patient lost weight very much. He became nervous and excitable; pulse 120; no thyroid enlargement; eyes not prominent, but Stellwag's and von Graefe's signs, and slight tremor of hands detected. After 8 months the urine became quite free from sugar; and he gained flesh. No exophthalmos could be detected, the thyroid was practically normal, pulse 96, no tremor. With exception of insomnia he was practically well.

CASE 5.—Middle aged man, goitre well marked. Marked palpitation, and exophthalmos; persistent glycosuria. No other diabetic symptoms.

CASE 6.—Young man; typical symptoms of Graves's disease; persistent glycosuria; no other diabetic symptoms.

2. In Graves's disease frequently a temporary or intermittent slight glycosuria can be detected. This fact is well known, and examples need not be given.

3. Mild diabetes is, in rare instances, followed by Graves's disease; such cases are extremely rare. C. Grube has recorded the case of a patient who was greatly shocked by hearing that her urine contained sugar. The amount was only small, but the mental shock was great owing to the fact that a relative had died of diabetes. In a very short time Graves's disease developed and steadily advanced and proved fatal.

4. *Graves's disease and alimentary glycosuria.*—In Graves's disease alimentary glycosuria is often produced much more readily than in health by the administration of a large quantity of sugar. In some cases of Graves's disease glycosuria is produced by 20 or 30 g. of grape sugar, whilst in others 100 g. are required to produce this effect. (In healthy persons 180 to 250 g. of grape sugar are required to produce alimentary glycosuria—v. Noorden.)

5. Both Graves's disease and diabetes mellitus occasionally develop directly after a sudden mental shock, or after great mental anxiety of short or long duration.

Thus in Case 1 recorded in this article symptoms of Graves's disease developed in a female after the mental shock of hearing her husband's hand had been torn off in an accident at his work. In another of my cases the symptoms of Graves's disease developed in a young female directly after the great mental shock caused by seeing a boy knocked down in the street by a motor-car. In a third case they followed the mental shock caused by the capsizing of a small boat in which the patient was rowing on a river. In another instance I was called to see a man who was dying of acute pneumonia. At that time his daughter was apparently not suffering from any illness. The man died next day. The shock to the daughter was very great and she began to suffer from severe palpitation. The symptoms increased rapidly and a month after the father's death I was called to see the daughter, and found her to be then suffering from marked Graves's disease.

Probably in these cases the mental shock was the last factor, or exciting cause, in the development of the disease in individuals whose nervous system was already in some way abnormal.

In diabetes mellitus we also sometimes find that the disease has developed directly after a sudden mental shock. I have recorded a number of striking instances.<sup>1</sup>

Amongst discharged soldiers we now find many cases of Graves's disease, and my own impression is that the number of cases of Graves's disease amongst discharged soldiers is much greater than the number of cases amongst men in civil life before the war.

As regards diabetes mellitus, however, I am inclined to think that this disease is certainly not more common in discharged soldiers than amongst the male civil population of military age before the war. These are, however, only general impressions and not based on statistics.

6. *Family history of diabetes in cases of Graves's disease.*—Occasionally the history shows that the two diseases have occurred in different members of the same family. If we take the family history in cases of diabetes we occasionally find that one or more relatives have suffered from Graves's disease, and if we take the family history in cases of Graves's disease we occasionally find that one or more relatives have suffered from diabetes mellitus. The following are a few examples:—

1. Mrs. S. consulted me on account of diabetes mellitus. One daughter had died of diabetes mellitus four years previously. Another daughter developed Graves's disease afterwards. The daughter of the brother of Mrs. S. suffers from Graves's disease. The brother of the husband of Mrs. S. suffers from diabetes mellitus.

2. Male; severe diabetes mellitus. Sister suffers from Graves's disease.

3. Female; Graves's disease. Mother suffered from diabetes.

4. Female; Graves's disease. Father, one brother, and a cousin all suffering from diabetes mellitus.

5. Female; Graves's disease. Mother and one brother suffer from diabetes mellitus.

6. Girl, aged 6; diabetes mellitus. Father's brother and father's cousin suffered from diabetes mellitus. Another cousin of father suffered from Graves's disease.

7. Female; Graves's disease. Father and mother, mother's sister, and mother's father all suffered from diabetes.

Many other points of interest respecting the relation of the two diseases, based on experimental work, might be added; but in this note I desire to refer only to the clinical

<sup>1</sup> Brit. Med. Jour., Feb. 2nd, 1918, and book on "Diabetes Mellitus and its Treatment." Lond. and Edin. 1898.



facts. As von Noorden states with reference to the action of the thyroid gland and the pancreas:—

"Here we are in no doubt whatever. The thyroid and pancreas have antagonistic actions, the former inhibits the excitability of the latter. The more powerful the action of the thyroid the more marked the inhibition."<sup>2</sup>

The recovery from Graves's disease or the marked improvement in the symptoms, followed by the development of diabetes, and the other facts mentioned in this article, also raise the question as to the possibility of both of these diseases, in certain cases, being due to fine changes in the nervous system (? medulla)—changes which, by vaso-motor or other influence, at one time produce Graves's disease by altering the thyroid activity, and at another time, by extension to adjacent parts of the central nervous system, alter the activity of the pancreas.

7. *Graves's disease and acetonæmia.*—In Graves's disease occasionally the patient suffers from nausea, sickness, and persistent vomiting, and may be unable to take food and may rapidly become very wasted. In some of these cases we find a marked diacetic acid reaction in the urine (claret coloration with perchloride of iron), though the urine is free from sugar. The condition resembles the acetonæmia of diabetic coma in many respects. (A similar acetonæmia, apart from diabetes, is occasionally observed in cases of persistent vomiting from gastric affections and in a number of other affections.)

#### Remarks on Treatment.

The occasional development of diabetes after Graves's disease, and the frequent occurrence of temporary or intermittent glycosuria in this disease, are facts which should be considered in the treatment. I think it is advisable in the treatment of all cases of Graves's disease to discontinue the addition of sugar to food and drinks, and also to avoid foods and drinks which contain much sugar. These precautions are especially desirable and sugar and sweet food should be cut off entirely if glycosuria, temporary or intermittent, has ever been detected. Not infrequently in the treatment of Graves's disease nitrogenous foods are restricted or cut off, and a diet chiefly of non-nitrogenous food is given; but if such a diet is advised I think it desirable that the *sugar* carbohydrates should be much restricted, as just stated.

If glycosuria is frequent or permanent then a diet chiefly of *starchy* carbohydrate food is unsuitable in such cases of Graves's disease. In definite diabetes, associated with or following Graves's disease, of course the diet suitable for the form of diabetes detected should be advised, as the diabetes is usually more serious than the Graves's disease.

To these statements one exception may be mentioned. In cases of Graves's disease complicated with persistent vomiting, with acetonæmia, and with diacetic acid in the urine, if no glycosuria is detected *sugar* carbohydrates, such as sweet fruit, tinned apricots, and syrup of such tinned fruits, may be of much service for a *short time*, along with alkalis (citrate of soda or potash, or bicarbonate of soda in large doses). I have found such treatment followed by sudden marked improvement in the condition just named when vomiting has been most persistent, obstinate, and serious.

Many cases of Graves's disease, especially incompletely developed forms, are now met with amongst demobilised soldiers, and the points just mentioned, as regards diet, are worth bearing in mind with respect to the prevention of diabetes or glycosuria as a complication, or at a later date.

<sup>2</sup> New Aspects of Diabetes. By Professor von Noorden. Bristol, 1912, p. 59.

MEANS TO AVERT MENTAL COLLAPSE.—Dr. M. J. Nolan, in the forty-ninth annual report of the Down District Lunatic Asylum (of which he is resident medical superintendent), pays a tribute—probably the first of its kind or, indeed, of any kind—to the out-of-work or unemployment donation. While admitting it was not without evil results in other directions, he thinks it undoubtedly operated to save many deserving individuals from complete mental collapse arising from anxiety about the future, following a long period of stress. The rate of admission to the Down District Lunatic Asylum has fallen, the total population of which in 1918 was 714, with an admission of 105 (53 men and 52 women).

## CHOLERA OF THE SHEEP

(JAUNDICE; YELLOWS OR YELLOWSES; HEADGRIT OR PLOCACH).

By J. P. MCGOWAN, M.A., M.D., B.Sc., M.R.C.P. EDIN.

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THE epizootic and enzootic disease of sheep dealt with in this preliminary article is recognised throughout Scotland, under the various synonyms given above, during the months of August and September usually. It affects lambs of the year usually, that is to say, when they are about six months old. The names "jaundice," "yellows," and "yellowses" are derived from jaundice being present in some cases, whilst "headgrit" refers to a swollen condition of the head in the parotid region, also occurring in certain cases. The term "plocach" is Gaelic and is synonymous with headgrit, meaning, as it does, "big head" or swollen head. The designation of the disease by the name of cholera is a proposal of my own, justifiable, in my opinion, as will be seen later, by the frequency of choleraic symptoms. That the disease has not before this been designated by farmers and shepherds with a name indicative of these important symptoms may in part be explained later.

#### Account of the Disease by a Farmer.

I had my attention first drawn to this condition in September, 1915, by the receipt of a letter from a farmer in whose flock the disease was markedly present. This letter may form a fitting introduction to a discussion of the natural history of the condition and is quoted in full. Under the date of Sept. 9th, 1915, he writes as follows:—

"From August 12th up to the present date I have lost 61 lambs with the disease. In only one or two cases was the death sudden. Most of the lambs after being noticed ill, linger for some days, and in some cases longer, on to a fortnight. I have one or two which have lived on for three weeks.

Most of them start with a scour and in a day or two shrink to nothing. They just hang about, and if water is available drink constantly. If they are unable to get to water they hang about the hedges with nose down and very dull, lie down for a few minutes and then up again. Some of them emit a grunt when breathing. Others of them froth at the mouth, but the froth is not blood-stained. They also dribble saliva from the mouth when they can get water.

Most of them that I have seen skinned and opened have a lot of water in the stomach and intestines, while their skin is glued to their flesh and very difficult to take off. When one of the ailing sheep is caught hold of, you can hear the water jumbling about inside.

On opening them we have found, as a rule, the fourth stomach and the gut proceeding from it much congested and discoloured, and in most of them a gritty stuff like the husks of cotton cake and sand mixed (no great quantity, however). The other stomachs are mostly quite natural. In one or two cases we found the first and second stomachs compacted with dry, hard faeces. There seems to be no food in the bowels, only a greenish-yellow water.

Their livers are, as a rule, all right, but in one or two cases they are much inflamed and brittle. The kidneys seem all right and are quite firm. Diaphragm is often inflamed and dry. There is no water or fluid in the chest. The heart is natural and the pericardium contains no excess of fluid. Lungs in most cases (all I have seen) are much inflamed and discoloured (one, however, finds this often in cases of illness which hang on for some time).

We have had a good few yellowsed sheep (with jaundice, swollen head, and loss of ears) this season, and they are by no means immune. Also many of those dying are affected with 'orf' (lip and leg evil).

The cases look to me more like poisoning of some sort. The whole of the sheep have had a biggish check, not only those which have died or are ill, and I cannot conceive how they have got the check, as the treatment has been good all along.

The grass this year is very rank, but when most of the cases occurred it was a clean hay faggage. We have some cases from a field which was 'hained' for a bit, and this field is very rank and a bit 'tathy,' but nothing to complain of. The lambs on this grass are getting tares laid down to them. Those on the fog are being run off at nights on to an old grass field and are now getting turnips."

At the request of the owner I visited the flock on Sept. 17th and was able to confirm the substantial



accuracy of his observations as just given. I ascertained further from the shepherd that the affected animals "squirited out" the fluid bowel contents. There were two lots of lambs on the farm. The worst affected lot was on a field with very rank foggage; the lot that had practically no cases was on a better pasture, inasmuch as it consisted more largely of clover. Several of the surrounding farms were affected with the disease.

#### Summary Account of the Disease.

The facts thus ascertained with regard to the disease may be shortly summarised as follows. It is an epizootic disease affecting lambs during the months of August and September. Affected animals in the fatal cases live for a period varying from a few days up to a fortnight or three weeks. The disease commences with a colliquative diarrhoea, and in a few days the animals shrink markedly in size. The disease is characterised by great thirst. Jaundice and headgrip cases and cases with loss of ears are occurring at the same time, and these cases are affected with this same diarrhoea. There is marked dryness of all the tissues of the body on post-mortem examination; the intestinal tract, however, is empty of food and is full of a large quantity of a greenish-yellow watery fluid, which can be detected during the life of the animal by its "jumbling." There is marked inflammation of the fourth stomach and duodenum. The fact of the whole of the lambs, apart from those obviously ailing, having received a bad check would seem to indicate that there were a large number of them suffering from the disease in a milder and not so noticeable form. It is a disease with a high mortality at times and can cause great financial loss to the owner.

#### Post-mortem Findings.

On the occasion of my visit time and circumstances did not permit of me doing an exhaustive series of post mortems and on account of various factors I had not an opportunity of revisiting the farm during the continuance of the disease. I performed, however, two post mortems, one on an acute case and the other on a chronic case, and the record of these cases are as follows:—

*Lamb 1.*—This lamb was seen ill for the first time on the preceding night. On examination copious colliquative diarrhoea was present; very dull and listless; temperature in rectum 105° F. Killed by bleeding from throat. It was in fairly good condition. There was no gangrene of ears, no swelling of parotid region, no jaundice. No discharge from nose, no frothing at mouth; no hæmorrhages subcutaneously or in muscles. The lungs were healthy; no effusion into pericardium. Heart healthy, including valves; no myocardial hæmorrhages. The liver was apparently healthy; no flukes; gall-bladder very large and very full of green bile. The kidneys, spleen, pancreas, and bladder were apparently healthy. The first stomach contained a quantity of moist grass; the fourth stomach was inflamed and contained a little clear watery fluid, but no food; duodenum was markedly inflamed. In jejunum, ileum, cæcum, colon, &c., no evidence of inflammation. The whole intestinal tract from the duodenum to the rectum was filled with a greenish fluid devoid of solid matter. No round worms or tapeworms were found. The mesenteric glands were not enlarged or congested. When this animal was lifted up prior to being killed the jumbling of the intestinal contents was distinctly heard and felt.

*Lamb 2.*—This case, a chronic one, dated from the onset of the disease in the flock about August 19th. It appeared to be getting better slowly, but latterly became very emaciated and dwindled to a shadow. When seen the emaciated condition was noted, as also that the animal was suffering from diarrhoea. There was no evidence of difficulty of breathing; its temperature was not taken. It was killed by bleeding from the neck. There was no gangrene of ears, no swelling of parotid region, and no jaundice. No discharge from nose and no frothing at mouth; no hæmorrhages subcutaneously or in muscles. The lungs and heart were perfectly healthy except for a few worm nodules in lung. There was no enlargement or congestion of the lymphatic glands anywhere. The liver was much enlarged and very fatty. Gall-bladder was much distended, and contained a golden-yellow watery fluid; turbid with particulate material. The wall of the gall-bladder was thickened, and its lining membrane inflamed. No flukes in the liver or bile passages. The spleen, kidneys, pancreas, and urinary bladder appeared healthy. The first, second, and third stomachs contained moist grass; fourth stomach congested and contained a watery fluid. The duodenum showed an intense hæmorrhagic inflammation with a diphtheritic exudate on its surface. No apparent congestion of the ileum, cæcum,

colon, rectum. The contents of the intestine were greenish and watery, containing slightly more solids than was the case in Lamb 1. There were a few whip-worms in the cæcum; no other round worms or tapeworms found.

The points to be specially noted are with regard to the acute case, the watery contents of the intestine, and the inflamed nature of the duodenum. In the more chronic case attention may be drawn to the character of the intestinal contents, to the condition of the duodenum, liver, and gall-bladder, and to the emaciated condition of the animal.

#### Bacteriology.

Facilities for an extensive bacteriological examination, under the circumstances, were not good and I confined myself to doing a little, and, if possible, doing it well. With the idea that the acute case would be the most likely to contain the cause of the disease, I ligatured a portion of the duodenum and removed it to the laboratory in a sterile bottle. Suspecting that the conditions found in the more chronic case might be caused by secondary invaders I contented myself with making a careful naked-eye examination of the specimens. As the sequel will show, portions from the liver for histological and the contents of the gall-bladder for bacteriological examination might have been of great service in helping to elucidate the condition further.

Before proceeding to record the experimental results obtained with the material removed from Lamb 1, it might be well here to deal with any literature bearing on the subject. There are many references scattered through the books dealing with such conditions as jaundice, but the only notice which I can find bearing indubitably on the disease entity described above occurs in May's book on the sheep.<sup>1</sup> Under the names acute jaundice, hepatitis, the bile condition, bile fever, he describes a disease which, he states, had occurred very seldom in Germany, but had often been observed as an enzootic in France and Holland. He mentions fever as being a symptom of the disease, and, of course, jaundice. He lays stress on the swelling of the head, but although he mentions colliquative diarrhoea as being very obvious at one stage of the disease, he does not emphasise it. Indeed, he rather emphasises a constipative stage of the disease. More will be said on this point when we come to deal further on with a disease which he calls cholera of the sheep.

#### Results of Bacteriological Investigation.

I now proceed to detail briefly the results obtained with the material derived from the duodenum of Lamb 1. The contents of the duodenum were diluted in peptone water and plated out on MacConkey lactose-agar. After 24 hours' incubation the plates were seen to contain two types, and two types only, of organisms—namely, a non-lactose fermenter which I shall call B, and a lactose fermenter which I shall call A. Four colonies of the A type were picked off and six of the B type. Both were Gram-negative coliform bacilli, both were slightly motile, while the reaction of the two organisms on various media may be given in tabular form as follows:—

—	(A)	(B)	—	(A)	(B)	—	(A)	(B)
Lactose.	A G	0	Litmus milk.	A C	A	Saltin.	A G	A G
Dulcitate.	A g	A G	Glucose.	A G	A G	Inulin.	0	0
Saccharose.	A G	0	Mannite.	A G	A G	Galactose.	A G	A G
Raffinose.	A G	0	Maltose.	A G	A G	Gelatin.	Growth*	
Sorbitate.	A G	0	Dextrin.	A g	A g	Peptone water.	†	Present.

A = acid formation; G = gas formation; g = small amount of gas formation; C = clot formation; 0 = no change.

\* No liquefaction. † Indol formation.

It will be seen that type A organism is a lactose fermenter of advanced *B. coli* type, while type B organism is a paratyphoid-like organism. In papers about to be published I am submitting evidence which goes to show that type B organism can, and does, mutate into type A organism; that these two organisms, for all practical purposes, are one and the same; and that in consequence the infection of the duodenum in this case was a pure infection with one organism only. The further experimental results, however, recorded in this paper are to be regarded as pertaining only to type B organisms, with which the experiments were performed, although a fair number of experiments have been performed by me with type A organism with results differing, if they differ at all, quantitatively not qualitatively.



*Animal Experiments.*

The next question to be decided was whether the disease described above could be produced in animals.

Sheep were not available, consequently rabbits were used; and as infection of rabbits with other pathogenic organisms of an intestinal type, such as typhoid, had markedly failed when the organisms were administered by the mouth, the cultures here were given intravenously through the ear vein. When the organism was administered thus—speaking always of the non-lactose fermenter—it was seen to be very lethal, and a minimal lethal dose had to be established for working purposes. Working with a sublethal dose, 16 experiments on rabbits were performed, and the clinical symptoms observed, and the pathological and bacteriological findings obtained at various intervals subsequent to injection, will now be briefly described.

With regard to the symptoms produced, the animal became very ill about an hour after injection, and a profuse colliquative diarrhoea commenced which lasted for about 48 hours. Subsequent to this the faeces became oat-shaped, small in size, dark in colour, hard in consistence, and covered in some cases with mucus and blood. A few cases recovered after this, but in most cases the faeces continued more or less of this nature, the animal refused its food, became more and more emaciated, and died, in the more prolonged cases, in three to four weeks.

When an animal was killed after 48 hours the contents of the intestine were observed to be entirely fluid, and there were no faecal pellets in the rectum; the duodenum was markedly inflamed; there were hæmorrhages throughout the liver, and the gall-bladder was distended with pure blood. Pure cultures of the organism injected, without any contamination, were obtained in all such cases from the gall-bladder and duodenum.

If the animal were killed at a later period—say, from a week to three to four weeks after injection—the intestinal and duodenal changes were not so noticeable, the extreme emaciation was very marked, and changes in the liver and gall-bladder were pre-eminent. Thus in some cases there was acute necrosis of a whole lobule of the liver, while in cases not so marked as this there was evidence of a fibrosis round the small bile-ducts, a small-celled infiltration, a fibrosis, and proliferation of the bile capillaries in the portal spaces.\* The gall-bladder showed small-celled infiltration of the submucosa (and in one case ulceration) and fibrous thickening of the walls. The common bile-duct and cystic duct in one case were greatly thickened and greatly dilated. The contents of the gall-bladder, instead of being green and viscid as in the normal condition, were watery-like and turbid, with a white sediment, which in some cases suggested calculus formation.

A pure uncontaminated growth of the organism injected was obtained from the gall-bladder in these cases; in one case after the lapse of four weeks. In all these cases, too, a pure uncontaminated culture of the injected organism was also obtained from the duodenum.

This is a remarkable result, not because the organism was obtained, for the gall-bladder would act as a supply reservoir, but because it was obtained *uncontaminated*, considering that food, containing organisms of all sorts, was being eaten all the time. Certain other observations which I made during the course of the experiment would support the view deducible from this that normally the contents of the duodenum are sterile, at least, as far as growth on MacConkey lactose agar is concerned. On several occasions I made cultures from the duodenums of healthy rabbits, killed for other purposes, and found them sterile. The bile may act as an antiseptic for various organisms, but this can hardly be the case for coliform organisms.

It is to be noted that none of the experimental animals developed jaundice, swelling of the parotid, or gangrene of the ears. This is not surprising, considering the comparative rarity of these conditions in the natural disease among sheep.

A few experiments were performed by me relative to the protective value of a previous intravenous injection, to a similar subsequent inoculation of a much larger dose. The experiments are few in number, but they go to show that a protection is developed in this way. Thus, rabbits so treated withstood a subsequent intravenous injection of three to six times the original dose (which was just a subminimal lethal one) and showed practically no symptoms.

*Provisional Results of Inquiry.*

One may provisionally here sum up the finding so far in connexion with the disease. It would appear that the disease

in the sheep is primarily a duodenitis characterised by a marked colliquative diarrhoea and which has as sequelæ the production of jaundice, swelling in the parotid region, and local gangrene of the ears. Evidence has been adduced by me from the bacteriological examination of the sheep and from experimental work on rabbits, that a bacillus of the paratyphoid group has strong claims to be considered as causal. This work, of course, will have to be, and is being as opportunity arises, extended especially in the direction of further examination of diseased sheep, the production of the disease in healthy sheep with the organism in question, and the development of further prophylactic measures, vaccinal and otherwise.

*Comparison of Certain Symptoms in Cholera in Man.*

I have already alluded in passing to the resemblance of this disease to cholera in human beings. I was so struck with the marked resemblance of the colliquative diarrhoea of this disease to that of cholera, that I began to investigate whether the other symptoms observable in this disease had been recorded in the case of cholera.

In this connexion it is interesting to note that authorities on the subject, such as Manson<sup>2</sup> and Leonard Rogers,<sup>3</sup> state that jaundice, parotitis, and gangrene of extremities, such as the nose, the penis, the scrotum, the fingers, and toes, &c., are among the sequelæ of cholera in the human subject.

Further, Greig, in a series of papers,<sup>4,5</sup> has brought to light many facts in relation to the pathology of the liver in cholera. He quotes Kntescha as having examined post mortem 109 cholera cases and found the cholera vibrio in the gall-bladder of 49 cases, while in 10 per cent. of these 49 cases its presence was associated with marked pathological changes in the biliary passages. Again, he quotes Bruloff as having found the cholera vibrio in the gall-bladder of 76 per cent. of his cases. Greig himself, in an examination of 271 fatal cases of cholera, found the cholera vibrio in the gall-bladder of 80, and associated with distinct pathological changes in 12 out of these 80 cases. His histological findings in the gall-bladder and liver in these cases, as also in the gall-bladders and livers of his experimental rabbits which he injected intravenously with the cholera vibrio, are practically identical with what I have described above in this disease.

The further point from a pathological point of view in the comparison of the two diseases is that cholera is primarily a duodenitis (Leonard Rogers, loc. cit.). This raises the further interesting question of the cause of the colliquative diarrhoea in the two cases.

*Causation of the Colliquative Diarrhoea.*

It may be due to the same or a similar specific cathartic toxin in the two causal organisms, but it seems to me that it is more likely that it is due to a toxin (much less specifically and drastically cathartic and which occurs in very many intestinal organisms besides the two mentioned), acting on a *specific locus* of the intestinal tract. The emphasis of the specificity is rather on this locus—the duodenum—than on the toxin.

I have had in progress, though the progress has been interrupted latterly, since 1915 some experiments on the pharmacological action of emulsions of various intestinal pathogenic organisms, such as typhoid, paratyphoid, the dysenteries, &c. The organisms were killed by heat and the emulsions so prepared were injected intravenously into rabbits. In every case tested, with the exception of Shiga's dysentery bacillus, colliquative diarrhoea was produced, and post mortem the duodenum was found to be markedly congested and dotted over with hæmorrhages. No diarrhoea and no duodenal change was produced, however, when these emulsions were injected subcutaneously or intraperitoneally. Catharsis, again, is not produced by the subcutaneous injection of *V. cholerae* (Manson).

My reading of these results is that the toxic material was excreted by the bile and, arriving at the duodenum first, exerted its action there and produced what one may call the duodenal result—namely, colliquative diarrhoea. That this same result is produced in cholera and in the disease we are dealing with here, in my opinion, is due to the fact that their causal organisms grow in the duodenum and produce their effects from there; while the fact that colliquative diarrhoea, which is absent in the natural diseases such as typhoid, can yet be produced on intravenous injection of the

\* The details of the changes are at present the subject of further investigation by Professor Beattie and myself.



causal organisms, to my mind is explained similarly, in that the site of growth of these organisms in the natural disease is not the duodenum, but farther down.

Other evidence of a specific duodenal action lies in the fact that in both the diseases we are dealing with here, cholera and the sheep disease, parotitis is a marked sequel, while in medicine generally it has long been recognised that various grave affections of the duodenum give rise to parotitis. It is highly speculative, of course, but it is permissible to wonder if mumps may not primarily be a duodenal affection.

#### *The Overlooking in the Disease of the Diarrhoea.*

The next point I will deal with is the question as to how the diarrhoea so evident in the disease has up to the present time been overlooked.

May describes at another part of his book (p. 31) as an entirely different disease a condition in sheep which he calls "the cholera-like disease of sheep." He himself had not seen the disease, and he is quoting from an article in the *Journal de Médecine de Bruxelles*, September, 1854. The disease was a very fatal one and was characterised by colliquative diarrhoea and swelling of the parotid glands. The European epidemic of cholera, 1851-55, was raging at the time, and the writer of the article, a Dr. Liegen, suggested a relation between the two conditions.

Now diarrhoea in sheep is almost, one might say, an everyday occurrence, even although it may not be of a colliquative nature, and no special importance is attached to it by shepherds. Familiarity, however, with the diarrhoea of cholera, as happened in this case, and as might have happened in Scotland had cholera epidemics been more frequent, and had they synchronised, as in this case, with this disease in sheep, might have led shepherds and others to recognise more fully its exact nature and ascribe to it, by name or otherwise, the importance it undoubtedly has in a disease up to now designated only by its sequelæ.

#### *Epidemic Jaundice.*

In conclusion, a further point needs to be discussed. Attention has been drawn, owing to the war, to the prevalence of a type of jaundice among the Balkan troops.

Sarrhailé and Clunet,<sup>7</sup> in dealing with an epidemic of this sort, came to the conclusion that the epidemic of jaundice at Gallipoli was a manifestation of paratyphoid A fever; C. J. Martin<sup>8</sup> opposes this view on bacteriological grounds, and suggests, from histological examination of livers of affected cases, that the infectious jaundice of Gallipoli, although much milder, presented analogies to the severer form, *Spirochaetosis Ictero-hæmorrhagica*, and believes that the symptomatology and morbid histology are consistent with the view that it is primarily a systemic infection. Hurst<sup>9</sup> and Wilcox<sup>10</sup> believe that the condition is of the nature of a catarrhal jaundice spreading from the duodenum.

Cantacuzène<sup>11</sup> describes the disease as it occurred in Roumania. It was of a very mild type, and in the rare cases which died there was fatty infiltration of the liver due, in his opinion, to primary angiocholitis of the intralobular biliary canaliculi. The search for spirochaetes by the injection of guinea-pigs was negative. Blood culture was positive in one-third of the cases and yielded atypical paratyphoid bacilli resembling somewhat paratyphoid B. He records experimental production of the disease by people voluntarily swallowing cultures of the organism. He regards this organism as the cause of the disease.

Hategan,<sup>12</sup> in an outbreak of epidemic jaundice, obtained, with the duodenal sound, bile which showed in 65 per cent. of the cases on first examination a very actively motile bacillus which he thinks is the cause of the disease. Meyer<sup>13</sup> records an epidemic of jaundice in the Waziristan Field Force, and comes to the conclusion, on rather insufficient evidence it would appear, however, that an organism of the enteric group, probably closely allied to the paratyphoid, might be the causative agent.

The question of the cause of this disease cannot be said to be settled and, on the whole, the evidence so far adduced would appear to be against the disease being of the nature of a catarrhal jaundice.

In a previous paper<sup>14</sup> I suggested that head-grit might be a hæmorrhagic septicæmia manifestation. This I did because from the head of a lamb, sent in to me diagnosed as head-grit, I obtained a pure culture of the *B. bipolaris septicus*. As swelling of the head is also one of the marked symptoms

of hæmorrhagic septicæmia I concluded that this was the nature of the disease in question here. Evidently the diagnosis, for which I was not responsible, as so often happens, though unavoidable under the circumstances, was wrong, and I was in consequence misled.

This paper was first submitted for publication six months ago.

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## AURAL SUPPURATION IN EARLY CHILDHOOD:

### ITS PREVENTION AND TREATMENT.

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In every clinic devoted to the ear and throat diseases of childhood two affections command the attention to such an extent that all others fade into insignificance—viz., (1) tonsil-adenoid disease, and (2) middle-ear suppuration. 90 per cent. of the work comes under one or other of those headings. But while parents and practitioners are fully aware of the ill-effects wrought by lymphoid enlargements about the throat and of the improvement, often quite dramatic, which follows their removal, suppurating ears are apt to be overlooked and neglected.

Middle-ear suppuration is not in itself a fatal disease; indeed, the majority of cases tend towards natural cure, but it brings many evils in its train. The constant swallowing of septic material causes ill-health and sometimes enteritis, meningitis is not rare as a sequel of otitis, whilst the destruction and cicatrization resulting from the inflammatory process may so damage the delicate ear mechanism as to lead to deafness, which to a young child commencing its education is a severe handicap. Even though the cure of an otitis in childhood appears complete, it is conceivable that some of the deafness of later life—for example, certain cases of otosclerosis—may be traceable to aural suppuration during early years.

Text-books give scant information on suppurative otitis media as it affects children. True, the disease in a child of school age may closely resemble the adult type, but a glance at the temporal bone of an infant suffices to show the extent to which pathology may be modified and altered by anatomy.

#### *Anatomical Data.*

If we look at the base of a foetal skull, such as is used for obstetrical demonstrations, we see that the most prominent features, next to the foramen magnum, are the large tympanic membranes, lying almost horizontally. There is no osseous meatus, and the drum lies so obliquely as to be practically in the same continuous plane as the upper wall of the membranous meatus. The mastoid process, as the specimen shows, is as yet undeveloped, but the mastoid antrum is relatively large, is well drained by a roomy aditus, is close to the surface of the skull, and lies higher in relation to the middle ear than does the adult antrum. The Eustachian tube is relatively shorter, wider, and more horizontal than it is in the adult, so that it acts as a good drain, though, on the other hand, infection of the middle ear from the nasopharynx is favoured. A final anatomical, or rather histological, fact of importance is the occasional presence in the middle ear or antrum of a network of embryonic tissue. Usually this completely disappears before birth, but at times it persists in the antrum or attic during the first few months of extra-uterine life, and in such cases the presence of so delicate and vulnerable a structure may render its possessor peculiarly liable to otitis media.

#### *Otitis Media in the Infant.*

As a matter of fact, aural suppuration occurs with extreme frequency during the first year of life. The results recorded



in various papers on the subject by eight different observers who examined the ears at a series of post-mortems on infants show that otitis was present, on an average, in 82 per cent. It has been doubted whether the presence of pus in the middle ear after death in so large a percentage of cases was really pathological. Indeed, Aschoff regarded it as a "foreign body" suppuration, resulting from the presence of vernix, meconium, &c., which had entered by way of the Eustachian tube. While this explanation may hold good for new-born infants, the pus has seldom been found sterile, and bacteriological investigations have only confirmed the extraordinary prevalence of the disease. Most of the cases yield the pneumococcus, while next in frequency comes the streptococcus, the latter giving rise to a more severe infection, sometimes complicated by mastoiditis.

The close connexion between otitis and pneumonia has often been remarked, and it is said that the middle ear is infected in every fatal case of infantile pneumonia. The commonest cause, however, of otitis in infants is the ordinary cold, which is a serious disease in early life. The nasal passage of a baby is easily blocked, feeding is rendered difficult, and infected secretions are readily forced into the middle ear.

*Symptoms.*—Among all the diseases of children probably none is so frequently overlooked as otitis media. Before the occurrence of perforation and consequent appearance of pus in the meatus the diagnosis is no easy matter.

The ears should be examined in all infants who suffer from fever of obscure causation. The temperature may be high, or it may not rise above 100°; and in the latter case, as Still has pointed out, it is apt to continue even after the inflammation has subsided. Pain, as evidenced by continuous crying, restlessness and sleeplessness, and boring of the head into the pillow are often noted, while the appearance of head-retraction, vomiting, and convulsions may lead one to suspect meningitis, until, with the occurrence of perforation, the true nature of the case is revealed. Pain is not constant, however, and may sometimes be altogether absent. In the average case the drum perforates in three or four days, with prompt relief of all symptoms. At first the pus is profuse, but later it becomes thin and scanty, and as a rule the ear is dry within two or three weeks.

Unfortunately, otoscopic examination does not always assist us to diagnose otitis prior to perforation. The tympanic membrane may, indeed, appear normal if the stress of the disease has fallen upon other parts of the middle ear, and such cases are very deceptive. On the other hand, a red and bulging drum will often betray the condition, though we must remember that in a crying infant the normal drum appears red. In examining the infant's ear remember the obliquity of the drum. The meatus is a mere slit, whose walls must be separated by pulling the auricle downwards. The use of a speculum with an obliquely cut end and a collar to give a good grip in manipulation may assist one to secure a glimpse of the drum, and a fleeting glimpse is often the best obtainable.

Considering the frequency of otitis in infants, mastoiditis is not a very common complication. When it does occur, the thin outer wall of the antrum breaks down, and a subperiosteal abscess forms above and behind the ear, causing considerable downward and forward displacement of the auricle.

*Treatment.*—In the early stages of otitis, dry heat and the use of the well-known cocaine, carbolie, and glycerine drops will relieve symptoms, but surgical treatment is more effective, and the small operation of paracentesis tympani might with advantage be performed more frequently. The incision should divide the posterior part of the drum from below upwards, and should be continued a little way along the inflamed meatal wall. General anaesthesia is advisable. The small clot which forms over the incision must be syringed out a few minutes later, as it is apt to impede drainage. Pus may not appear at once, but the flow will become established within a couple of days.

#### *Tuberculosis of the Middle Ear.*

This disease is not uncommon in the infant, though it becomes less and less frequent as age advances. In a series of 150 consecutive cases of chronic middle-ear suppuration in children under ten years of age attending the Royal Hospital for Sick Children, 13 cases were of definitely

tuberculous origin. In all of the 13 cases save one, a child aged 3, the disease commenced during the first year of life.

As regards symptoms, all cases were characterised by a painless and gradual onset, and all showed enlarged glands around the ear. Facial paralysis was noted in 7 cases, while in 3 cases a mastoid abscess had formed and ruptured, causing a mastoid fistula.

The ætiology of aural tuberculosis is most important from a public health point of view, for there is little doubt that the infection is milk-borne and reaches the ear by way of the Eustachian tube. Ten of my patients were bottle-fed, and only in one instance was the milk boiled.

The treatment of the condition consists in a very radical mastoid operation. This was carried out in 9 cases, in all of which extensive bone necrosis was found, and microscopic examination of the granulations confirmed the diagnosis. Six did well and 3 died, one of meningitis a week after operation, and the other two several months later, of pneumonia and convulsions respectively.

#### *Otitis Media in Older Children.*

Let us now consider the problem of aural suppuration in older children. At the age of 2 the mastoid process is already developed, and the disease tends more and more to approach the adult type. Acute inflammation is common, but the important lesion, the disease which destroys hearing and yet goes untreated in so many cases, is chronic suppurative otitis media, or for short, aural suppuration. Even in the framing of child welfare schemes the prime importance of this disease is not recognised, while the provision of skilled aural treatment in fever hospitals remains an urgent necessity. The ears of the school child are nowadays well inspected and treated, but the child of more tender years is apt to be forgotten.

Indeed, a recent writer goes so far as to say that "there is little ear disease amongst children until the beginning of the school period." Surprised by this statement, I looked over my records of cases of aural suppuration in children, and found that of 145 patients no less than 95 were under the age of 5 years. It would therefore appear that ear disease is by no means uncommon in children under school age.

School medical inspection reports in Scotland show that of school entrants 1.3 per cent. have discharging ears. The figures range from 0.5 per cent. in Linlithgow county to 1.9 per cent. in the town of Stirling, but rural and urban populations appear to suffer with equal frequency. These estimates are probably low, as the ears may not be discharging at the time of examination. How familiar is the statement that "the ears have been running for months (or years) off and on."

#### *Ætiology.*

Now what is the cause of all this ear disease, and how may it be prevented? In 130 cases of aural suppuration in children aged 1 to 10 years, I have on 66 occasions obtained from the mother a statement as to the supposed cause, with the following result:—

Measles ... .. 40 cases (31 %)	Whooping-cough 5 cases (4 %)
Scarlet fever ... 8 " (6 %)	Injury (?) ... 3 " (2 %)
Pneumonia ... 8 " (6 %)	Diphtheria ... 2 " (1.5 %)

The most striking fact revealed by the table is the high percentage of measles cases. It may be mentioned that these figures were drawn from two different years, so that they are not swelled by any particular epidemic. The small number of scarlet fever cases arises from the fact that two-thirds of the patients had not yet reached the age at which scarlet fever attains its maximum incidence.

Downe, who investigated the cause of otitis in 500 cases, found 26 per cent. due to measles and 12 per cent. due to scarlet fever. Scarlet fever is well known for its destructive effects on the ear, but on the whole it is well treated, as it is a notifiable and a hospital disease. Measles, on the other hand, is not notifiable, is treated at home, and is too often regarded as a trivial complaint. In reality, it is a more dangerous and disabling disease than scarlet fever, and the importance of measles, as a cause of chronic middle-ear suppuration, cannot be too strongly emphasised. All measures for the prevention of measles, whether by improved housing and greater cleanliness, by prompt isolation and more careful nursing, or by better treatment during the convalescent stage, will go far towards lessening



the tendency to aural complications and reducing the number of cases of preventable deafness in later life.

A second factor in the aetiology of aural suppuration is perhaps the most important factor of all. The great majority of children who suffer from chronic otitis are also sufferers from adenoids, and the septic infection of those adenoids are not only the cause of the otitis, but also the cause of its chronicity. The adenoid operation, therefore, has an important place in the prophylaxis as well as in the treatment of ear suppuration. As a portal of infection, the pharyngeal tonsil is second to none. Here enter measles, meningitis, and many another ill, and infection may readily pass from septic adenoids, along the Eustachian tube to the middle ear.

Measles and adenoids, then, are the two principal causes of aural suppuration in young children, and merit even greater attention than has hitherto been accorded to them.

#### *Treatment.*

The following scheme of treatment may be a useful guide in average cases: (1) cleansing and antiseptics; (2) removal of adenoids; (3) conservative operation; and (4) radical operation.

(1) and (2) will cure the majority of cases. After having tried many methods, I now advise the mother to make some mops with matches and cotton-wool, and with these to mop out the ear until dry; then to instil a few drops of peroxide of hydrogen and mop out once more until dry. This is to be done twice a day. Syringing, in unskilled hands, is worse than useless, and, indeed, I have known ears to cease discharging when the only advice was to stop syringing. The mopping method is a much more effective measure. As the discharge lessens, rectified spirit may, with advantage, be combined with the peroxide.

The importance of adenoids has already been noted. Large, firm masses may be present, but more frequently a small block of friable and pus-soaked tissue is removed at the operation. Should the removal of adenoids, and two or three months of systematic "mopping and drops," fail to effect improvement, operative methods must be considered.

The radical mastoid operation is seldom indicated in childhood and should only be performed in carefully selected cases—e.g., cholesteatoma, necrosis of ossicles, &c. One naturally hesitates to perform, upon a small child, an operation whose effects upon the sense of hearing cannot be foretold.

For this reason the so-called "conservative" mastoid operation (modified radical) should be chosen whenever possible. Into the details of the operation I do not propose to enter here, but shall merely enumerate its various stages—the opening of the antrum, the removal of the greater part of the posterior wall of the bony meatus, the curetting and clearing of the aditus (for this a bayonet-shaped dental excavator is most useful), the construction of a wide meatal flap, and the treatment of the bone cavity with bipp, which gives such excellent results in mastoid surgery. By this operation drainage is provided, while the drum and ossicles are left untouched, and the middle ear may recover, with full possession of its functions.

I lately had the opportunity of examining six cases, upon all of which I had performed the operation over two years ago. The ear was dry in five cases, and in all cases hearing was good (whisper at 6 feet).

**LEICESTER ROYAL INFIRMARY.**—On the promotion of Dr. T. V. Crosby to be honorary physician to the infirmary two vacancies were offered for assistant physicians, and to these Dr. J. D. Slight and Dr. Arthur Foster have been appointed. During the war Dr. Slight has been in charge of medical patients, officers as well as other ranks, at the 5th Northern General Hospital, and has also acted as temporary physician to the Royal Infirmary. Dr. Foster has been in charge of medical beds at the same military hospital. Mr. R. S. Lawson was at the same time appointed assistant surgeon. Mr. Lawson has been lecturer in anatomy at Edinburgh University, and acted as assistant lecturer and demonstrator in the pathological department there. During the war he was operating surgeon at the Royal Naval Hospital, Chatham, and on a hospital ship, and since demobilisation has been doing surgical work at Alder Hey Military Orthopaedic Hospital.

#### A NOTE ON

### PROPHYLACTIC QUININE IN MALARIA.

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It was with an unbiassed view of its value or otherwise that the following investigations into the use of prophylactic quinine in malaria in two units of the Mesopotamian Expeditionary Force were carried out, and as they led to definite opinions they are now reported.

#### *The Investigation Described.*

A medical unit to look after a thousand hospital or convalescent patients was located at Mohammerah, some 25 miles from Basrah, with little or no opportunity for the personnel to visit other units, so that any infection by the malarial parasite was due to the conditions in the camp. As these conditions seemed to indicate that it was a suitable opportunity an investigation was undertaken. The troops permanently posted there consisted of three officers and about 30 N.C.O.'s and men, who had only been one month in the country, and had come direct from England. During this month one man had contracted malaria while in Basrah, and he was excluded from the investigation. None of the others had ever had malaria. No quinine was issued to or taken by any of them, as I explained to them that as it was a new camp, and the presence of mosquitoes infected by the malarial parasite was doubtful, experience alone would show whether it was necessary to take quinine or not, as every anopheles is not necessarily a carrier of malaria. If any of us became infected the administration of quinine would be reconsidered. For nine months, from September, 1916, to June, 1917, no quinine was taken and no malaria occurred. Towards the end of June two of the nursing orderlies reported sick with high fever on the same day, but it was not till four days later that a diagnosis of malaria was made. On this day a warrant officer reported sick and a blood film showed B.T. parasites present. Quinine sulphate, gr. v., in a mixture daily was ordered for the remaining 30 as a prophylactic measure. A list of their names was made and each dose taken was recorded. The men were told that an investigation was being carried out and they showed their interest by their methodical attendance at the dispensary to take quinine without any attempt to evade it. Three days later one of the men went sick and was also found to have malaria, but he must have been infected some ten days at least before quinine was started and 5 gr. daily was not sufficient to stop an attack. *During the next three months no further case of malaria occurred.* Major S. R. Christophers, I.M.S., visited the camp during this period to make an examination for anopheles in the area, and in the first tent found over a dozen. The value of the administration of prophylactic quinine in this camp seemed to be demonstrated.

I was then transferred for duty to a hospital five miles from Basrah. The female nursing staff of this hospital consisted of nine nursing sisters, none of whom had had malaria, though several of the orderlies were then sick with it. I advised them all to take quinine, but emphasised the importance I attached to being informed beforehand of the names of those who would take it regularly. The matron very kindly gave every assistance and the quinine mixture was handed round at their mess, where it was taken regularly by five of them, but the other four declined it, and these I regarded as controls. The five taking quinine did not develop malaria then or at any time while they were in Mesopotamia. Of the other four, two of them had malaria with parasites demonstrated in blood films within a month.

Shortly afterwards four new sisters were added to the nursing staff. Two of them took quinine from the first day, while two others preferred not to take it, and were therefore regarded as further controls. In less than three weeks both the controls developed a temperature on the same day, and parasites were found in their blood. The two who took quinine did not develop malaria. Experiences such as these make it impossible to accept the view that prophylactic quinine is useless at all times.

#### *Remarks.*

Far more elaborate investigations than these have been frequently reported, and still the opinion for or against



prophylactic quinine is divided. Why, then, this apparently conflicting evidence? The work of these investigators must be accepted on both sides. It appears, then, that the solution can only lie in the discovery of the variable conditions under which the conflicting experiences have been obtained. To explain my meaning, let me refer to the opposing views which in the past have been held over the value of digitalis in heart disease. It is now known that the beneficial effects are exhibited in patients with the rapid pulse-rate of auricular fibrillation or auricular flutter, but has practically no effect on other cardiac conditions. The solution, then, lay in the discovery of the variable conditions under which the conflicting experiences had been obtained. What are these variable conditions in prophylactic quinine? May it be in the variable amount of the dose at the time of infection, or, in other words, in the variable number of bites received in 24 hours from infective anopheles?

Mesopotamia is not a very malarious country. Death from uncomplicated malaria is rare. The mortality is larger when complicated by heat stroke. The incidence of malaria is not high when compared with a badly malarious country like Northern Persia or Salonica, where prophylactic quinine is said to be almost useless. The conditions under which prophylactic quinine was demonstrated to be so beneficial in the above investigations was in a country where, as a rule, the infection was not severe and therefore probably the infecting dose was small—i.e., the numbers of bites from infective anopheles was small in any one day. It is suggested that the value of prophylactic quinine varies, and the prophylactic dose should be in direct proportion to the severity of the infection in any given area. There should be an optimum prophylactic dose for that area. The cases receiving an exceptionally large number of infective bites will still develop malaria, but the rest will be protected. In a very malarious country, when one is frequently bitten in the 24 hours by infective mosquitoes, gr. v., gr. x., or even larger doses may be insufficient to kill the parasite in all but a very few cases, and then prophylactic quinine might be regarded as useless.

#### Conclusion.

Prophylactic quinine in Mesopotamia is of the greatest benefit, but in certain other places it is almost, if not quite, useless, and it may be that, provided the dose necessary is not too high for regular administration, an optimum prophylactic dose will be demonstrated for every malarious area, varying even with the seasons and indicated perhaps by the rising or falling incidence of the disease.

## X RAYS IN THE TREATMENT OF CERTAIN FORMS OF DYSMENORRHOEA:

### A PLEA FOR THEIR MORE EXTENSIVE USE.

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THE object of this article is to call attention to certain methods of treatment which often succeed in cases of menstrual disturbance, when more orthodox measures, medical and surgical, have failed. I hasten to say that certain conditions should be fulfilled before any case of such a nature is undertaken by the radiologist. They are: (1) treatment by ordinary medical methods (drugs, regulation of way of living, &c.) should have a fair trial—by this is meant a matter of a few months; (2) surgical investigation must be made to exclude any gross deformity, and any minor surgical procedure not dangerous to life—e.g., dilatation of the cervix—tried if it seems indicated.

By this I do not mean to convey that no cases presenting any abnormality of an organic nature should be accepted. Cases in which serious malposition of the uterus was found and surgically corrected have failed to benefit, but have subsequently been cured by X rays. The presence of a certain amount of congestion in the ovaries and uterus is also not a bar to success; but it is important that the radiologist should know of any condition which may, should he fail, require surgical interference. Cases in which the uterine contents are septic—as after abortion—or where large fibroids are present, are obviously suitable for surgical treatment only. On the other hand, there

are those in which nothing in the nature of a possible organic cause can be demonstrated. But, inevitably, there must be borderline cases in which opinions will differ as to what treatment should be followed. In making a decision it should be remembered that X ray treatment can be conducted without risk; if it fails, surgery can still be resorted to. But operations for straightening out uterine kinks are not wholly free from danger, and an excised ovary cannot be replaced.

#### Characteristics of a Suitable Case.

The type of case most suitable for X rays presents the following characteristics: (a) It is free from gross organic lesions. (b) There is excessive and prolonged bleeding at the menstrual periods, which follow one another with undue rapidity. (c) There is more or less pain of the usual menstrual type, and frequently headache and mental depression. (d) Owing to the excessive loss of blood and the shortness of the intervals the patient never really feels fit.

Cases conforming closely to the above type yield to X ray treatment with great regularity. A wide cone of rays is used, filtered through 3 mm. of aluminium, so that the ovaries and uterus receive radiations more or less equally at each sitting. The external genitals are protected by ray-proof material to prevent any possibility of temporary epilation. These patients are rarely able to attend for treatment for much more than two weeks out of four; and endeavour should be made to give at least seven sittings during each interval. The first period after starting treatment is usually worse, and the second may be little better. But if the treatment is going to succeed, the third should show distinct improvement. If it does not, ultimate success is unlikely. When improvement is obtained, X rays are omitted during the fourth interval, and a final course given during the fifth.

#### Objections to the Treatment.

Two objections have been raised against this form of treatment: (1) that there is risk of sterilisation; (2) that the integrity of the skin is endangered. The one question is in reality bound up with the other. It is practically impossible permanently to sterilise a woman below 40 without injury to the skin. In the literature on the X ray treatment of uterine fibroids great stress has been laid upon a technique which will produce sterilisation, and in consequence the method has not been recommended for patients who have not completed their fourth decade. But in dealing with young subjects who suffer from menstrual disturbance no attempt is made to carry the dosage beyond what is necessary to restrain excessive ovarian function. This statement implies a theory as to the cause of the type of dysmenorrhoea under discussion. The theory is that just as excessive thyroid—or possibly thyroid and thymus—action is the immediate cause of the symptom-complex known as Graves's disease, so does excess of ovarian hormone produce what the present writer has ventured to call the "ovarian syndrome": excessive bleeding, prolonged periods, diminished intervals, headache, and depression. In exophthalmic goitre the thyroid can be "tamed" without in any way interfering with its normal function. In a similar way the ovary, regarded as a ductless gland, can be restrained from excessive exuberance by comparatively small doses of X rays. It was proposed some years ago by a well-known surgeon that portions of the ovaries should be removed in such cases. This procedure would, of course, be exactly on a par with partial thyroidectomy for Graves's disease, and could only be regarded as justifiable if all other measures failed. Also, as regards X rays, their effect upon low forms of inflammation in general must not be forgotten. In chronic colitis, for instance, their beneficial effects are well established, and therefore the lining of the uterus, if congested, is in all probability directly benefited by their application.

#### Effects on the Skin.

As to visible effects on the skin, a sun-burnt appearance is generally produced about the end of the second course. There should be no redness or tenderness; at the most a slight itching at night, which is readily relieved by cold cream. This browning occurs only when small, graduated doses are given, and appears to be protective.<sup>1</sup>

<sup>1</sup> I have found that in treating cancer once this browning is produced very large doses are tolerated for months and even years without any breaking down.



With the small dosage necessary in dysmenorrhœa cases, the brown layer begins to peel off in about one month after the cessation of treatment, leaving a perfectly healthy skin surface. The skin is fully fit to stand operation, should this be necessary, within two months.

#### *Danger of Faulty Technique.*

That great harm can be done by faulty technique must be admitted; but this can be said of most modern methods of treatment. The risk in skilled hands is practically nil. And it must be remembered that—if the conditions stated at the beginning of this article have been fulfilled—either there is no alternative, or the alternative is a major operation.

To the majority of such patients life is literally not worth living, and I personally have found no class of sufferers so pathetically grateful for relief as women thus afflicted. It is essentially a disorder of young women, and ruins the best years of their life, often preventing marriage; or, what is worse, making it a failure.

As to choice of cases, the more nearly one approaches to the type described in the early part of this paper, the more likely is it to benefit by X ray treatment. When pain is prominent rather than loss of blood, cure is less probable, but a trial should be made.

#### *Recent Cases.*

The present writer first referred to this subject in an article published some years ago, in which details of several cases were given.<sup>2</sup> Two more recent ones are quoted below.

L. B., school-teacher, 30. First seen January, 1918. All her life had been troubled by excessive loss at periods. Of late years the condition had become steadily worse. Periods lasted ten days, and the free interval was less than a fortnight. There was a good deal of pain and headache at the time, and 2-3 days had to be spent in bed. She was in danger of losing her position and was in a very depressed state, threatening suicide. She had had prolonged treatment from her medical attendant and was certified by a gynaecologist to be apparently free from organic disease. X ray treatment at first aggravated the condition, and the interval succeeding the commencement of treatment was so short that X ray dosage was continued through a part of the second period—a departure from the usual procedure. The free period following lasted three weeks, and the succeeding period—the third after the commencement of treatment—was almost normal. A complete cure seems to have resulted, as the patient wrote in December, 1918 (seven months after stopping all treatment), to say that she was quite well.

The above case is typical of those in which a large measure of success may reasonably be expected. In one such as the following less confidence can be expressed.

C. M., 28, spinster. Had suffered since the age of 14 from painful menstrual periods lasting 6-7 days. Flow somewhat greater than normal. Headache severe for 3-4 days at the time of periods. Year by year the condition had become worse. General health in intervals indifferent, and patient was unable to follow any regular occupation. The uterus and both ovaries were slightly enlarged and tender to palpation. The girl was very miserable, and a gynaecological surgeon suggested complete removal of the organs if no other means of relief could be found. As a final resort before operation it was decided to try X rays. The second period after the commencement of treatment was considerably better, in so much that the bleeding was less and that it lasted only five days. Pain also was not so violent. Two more "interval courses" of X rays were given, but no further improvement occurred, and, in view of the possible final necessity for operation, it was not considered desirable to push the treatment. Result: Periods reduced to five days instead of 6-7. Flow normal. Pain more bearable. General health improved. Patient writes three months after cessation of treatment to say that, on the whole, she remains much better than before she had X rays.

In the above instance X ray treatment succeeded only to a limited degree, but it enabled the patient to avoid a serious and mutilating operation, at least for the time. I am not to be taken as opposing the operation of pan-hysterectomy in intractable cases of dysmenorrhœa, provided every other possible means of relief have been tried without success, but X rays should always be remembered as among the most powerful of these means.

The radiologist, holding, as it were, a position midway between that of the physician and the surgeon, has no need to encroach upon the domain of either. The patient with

dysmenorrhœa should first receive medical treatment—the term "medical" being used in its more limited sense. If this fails, it should be ascertained whether there is any recognised surgical cause for the trouble, such as a contracted os, or whether any condition exists dangerous to life—e.g., septic endometritis, large fibroid, uterine cancer, &c. Failing the presence of any of the above, X rays should be tried before major surgery is resorted to.

The vexed question as to the treatment of uterine fibroids I do not purpose entering on here, except to say that *small* fibroids associated with excessive bleeding at the menstrual periods, but not in the intervals, can be successfully dealt with by X rays in women near the menopause.

Harley-street, W.

## IODIDES AND THE THYROID.<sup>1</sup>

BY FRED RANSOM, M.D. EDIN.,

READER IN PHARMACOLOGY IN THE UNIVERSITY OF LONDON.

THE specific relationship between the thyroid gland and iodine was first pointed out by Baumann, who discovered that the normal thyroid contains a considerable amount of iodine in organic combination. Iodine is a frequent constituent of cells generally, but the thyroid contains relatively 8-10 times more than any other organ.

Baumann obtained from the thyroid by a somewhat drastic means a substance which he believed to be the active principle called iodothyron, and looking upon it as the cause of the remarkable effects upon metabolism. Oswald has, however, shown that iodothyron is an artificial product, and that its mother substance is an iodised protein, iodothyeoglobulin, from which iodothyron can only be obtained by breaking up the protein molecule.

An extract of the gland made with physiological salt solution contains all the iodine-containing substance, and gives relief in hypothyroidism; but so do various organic and inorganic preparations of iodine, though to a less degree.

#### *Considerations as to the Active Principle of the Gland.*

Are we, then, entitled to consider that iodine is the active principle of the gland? This theory has been advocated by Swingle, who considers that the iodine plays the part of an hormone, but before accepting it certain points require consideration; the presence of iodine in the thyroid is no proof that the activity of the organ is dependent upon its iodine-content, for one function of the thyroid may be to absorb iodine, another to provide a specific internal secretion. Even the fact that iodine is specifically absorbed by the thyroid, and perhaps stimulates secretion, does not prove that iodothyeoglobulin constitutes the internal secretion of the gland. Carlson and Woelfel failed to find iodine in the lymph flowing out of the thyroid. Moreover, the iodine-content of the thyroid is subject to much variation and is greatly influenced by the amount of iodine in the food. The thyroid of carnivora contains little or even no iodine; the amount of iodine is greatest in herbivora, omnivora take a middle place. The thyroid of dogs can be made iodine-free by feeding on an exclusively flesh diet, and still the functions of the gland remain unimpaired. The foetal thyroid and the thyroids of newly born infants contain no iodine, yet in sucking animals thyroidectomy, after removal from the mother, produces its characteristic effects.

The iodine-content of the human thyroid is very variable; Jolin, in extensive investigations in Sweden, found these variations so great that he regards the iodine as of quite secondary importance; he was also unable to detect any connexion between iodine-content and health. Abelin found that a thyroid extract containing much iodine did not differ in activity from one containing little. During the administration of an iodide the iodine-content of the gland may rise to 4-5 times the average normal, and yet in the treatment of cretinism or myxoedema iodides are not so successful as is the taking of the gland itself. In view of these facts it appears at least improbable that the iodine plays an important primary rôle in the activity of the internal secretion of the thyroid.

Is, then, the active principle likely to be a protein? There are several facts which tell against such a

<sup>2</sup> Practitioner, vol. xcii., p. 716.

<sup>1</sup> Abstract of a post-graduate lecture delivered at the London (R.F.H.) School of Medicine for Women.



hypothesis. Abderhalden and also Herzfeld and Klinger got characteristic effects with protein-free extracts of thyroid. Abelin found that thyreoglandol, a protein and lipid-free preparation, has the same effect on metabolism as the gland itself; indeed, the efficacy of the *per os* treatment with the dried gland would seem to indicate that the active principle is not a protein. An iodised protein which v. Fuerth employed was split up in the cat's intestine so that iodine appeared in the cells of the gut wall and in the blood, not as iodised albumin or peptone, but in inorganic form. Abelin considers it likely that the active principle of the thyroid is formed from protein in the cell metabolism of the gland, much as adrenalin arises from the protein of the adrenals. The investigations of Kendall go a long way to confirm this opinion, for he has obtained from thyroid a crystalline body of definite chemical constitution to which he gives the name thyroxin. It is an indol derivative, trihydrotriiodo-a-oxyindol-propionic acid, and Janney, who has clinical experience in the use of Kendall's preparation, considers that it is an hormone possessing the functions ascribed to the thyroid secretion. Kendall does not think that the iodine is of primary importance, and hence the omission of any reference to it in the name which he has given to his preparation.

#### *An Apparent Paradox.*

There is, then, considerable probability that the active principle of the thyroid is a breakdown product of protein which may be, but is not, necessarily iodised. Iodine, if present, has apparently no direct effect upon the activity of the internal secretion, and yet there is no doubt that when that activity is diminished it can often be restored to a certain extent by administration of iodides. Is there any explanation of the apparent paradox?

Jobling and Petersen have shown that unsaturated fatty acids have a powerful effect in inhibiting autolysis, but that in presence of iodine these acids on becoming saturated lose their inhibitory effect, so that the ferments causing autolysis are free to act. We have seen that the active principle of the thyroid is probably produced by the breakdown of protein in the gland—i.e., by autolysis. This process would, according to Jobling and Petersen, be facilitated by the presence of iodine in the gland, because the inhibitory effect of unsaturated fatty acids in the blood would be diminished or done away with owing to their saturation with iodine.

An inefficiency of the thyroid secretion might conceivably depend upon an excess of unsaturated fatty acids in the blood checking the autolysis by which the thyroid secretion is formed, and in such cases the administration of iodides would be effective by promoting the saturation of the acids. If the inefficiency of the thyroid were due to destruction or removal of part of the gland, the activity of the remainder might well be increased by iodides which are specifically taken up by the gland, and would there favour the characteristic autolysis by checking inhibition.

Possibly the curative action of iodides in tertiary syphilis may be explained by the thyroid effect of the drug in thus favouring an increase in the active secretion passed into the blood, and so facilitating the absorption of lowly organised tissues such as gummata, &c. The same would apply to the use of iodides in the treatment of enlarged lymphatic glands.

If the above premises are correct they suggest that tertiary syphilis might be at least as successfully treated with thyroid as with iodides; indeed, one might anticipate a quicker result, and, moreover, there would be no fear of iodism.

#### *Summary.*

The action of iodides in relieving a condition in which the thyroid secretion is deficient is due to two facts: (1) iodine is specifically absorbed by the gland; (2) the iodine in the gland in saturating the unsaturated fatty acids of the blood-supply favours the autolysis by which the active principle of the gland is produced.<sup>2</sup>

The efficacy of iodides in tertiary syphilis may be explained on these lines, and it is anticipated that tertiary syphilis may be successfully treated with thyroid.

<sup>2</sup> The usefulness of cod-liver oil in tuberculosis may be in part due to its high content of unsaturated fatty acids limiting to some extent the production of thyroid excretion, and so serving to prevent the absorption of the lowly organised tubercle tissue and the setting free of the bacillus.

## Clinical Notes:

### MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

#### A CASE OF

#### NERVE TRANSPLANTATION.

By NEVILLE I. SPRIGGS, M.D. LOND., F.R.C.S. ENG.,

CAPTAIN, R.A.M.C. (T.); MEDICAL REFEREE TO MINISTRY OF PENSIONS; CITY POLICE SURGEON, ETC.

NERVE transplantation now being on its trial for war injuries of nerves, the following case, though only partially successful, is deemed worthy of record.

#### *The Case Described.*

Pte. S. was wounded in the left arm on Jan. 6th, 1916. There was a fracture of the humerus with clinically complete musculo-spiral paralysis. Several operations were needed before healing occurred, and then a large scar resulted very adherent to the bone. On Oct. 1st, 1917, the musculo-spiral nerve was exposed and found to be completely divided, with bulbs adherent to the bone. After excision of the bulbs the nerve ends could not be stretched to within an inch of each other. The external cutaneous nerve of the thigh was then searched for, and found with some difficulty as it was abnormally small. A length of two inches was removed, divided at its middle, and the two one-inch lengths so formed were stitched into the gap in the musculo-spiral side by side. A branch to the triceps, which was also implicated, was at the same time stitched in to the upper junction. The muscle was then stitched over the bone, between it and the bridged nerve, and the wound closed.

The wound healed well and the man was shortly after discharged from the Army and went to reside nearer his home in the north, where he was treated by electricity and massage as an out-patient. It was thought that his chance of recovering the function of the injured nerve was very small.

He was next seen by me on May 31st, 1918 (about eight months after the operation). Epicritic sensation, which had been lost on the outer side of the forearm owing to the low branching of the nerve, had then recovered. The wasting of the extensors and supinators was obviously less. There was slight but definite action both of the supinators and of the extensors of the wrist. There was no action of the extensors of the fingers and thumb. The grasp was good and the man was starting work. He was supplied with a "long cock-up" splint and told to wear it at night only.

#### *Result of Further Examination.*

Another examination has been made recently (May, 1919). The patient has been working since last seen. There is fair power in the supinators and in the wrist extensors, and there is slight power in the long extensors of thumb and fingers, so that one may hope that the man will still continue to improve.

The scar in the arm is still somewhat adherent to the bone, and probably to the repaired nerve also. I consider that had more attention been given to the excision and "toilet" of this scar a more complete and earlier recovery would have resulted.

I am indebted to Colonel C. J. Bond and to Dr. Annie C. Greenep for advice and help in this case.

### A CASE OF STOMACH AND BOWEL ATONY IN INFLUENZAL PNEUMONIA.

By NORMAN BRADLY, M.D.

IN THE LANCET of March 15th Mr. R. Eccles Smith has drawn attention to this condition in his paper on "Influenzal Intra-abdominal Catastrophes." The following case is recorded to show the value of pituitrin in this condition.

#### *Account of Case.*

Miss —, aged 21, was taken ill on March 4th and developed signs of pneumonia on the 9th. Toxæmia was profound, hæmoptysis was a recurring symptom, and severe cyanosis was constant, the administration of oxygen being almost continuous. On the 15th occasional vomiting of altered blood commenced and the pulse became markedly intermittent; on the 18th the temperature dropped to sub-normal, resp. 40-48, pulse 96; vomiting persisted and became



almost continuous; everything by mouth was stopped and replaced by salines per rectum; the vomiting became less frequent, but recurred at once on allowing anything by the mouth.

On the 20th her condition was desperate; temp. subnormal, pulse very intermittent and infrequent (50-60), resp. 40-48, deeply cyanosed, persistent vomiting, petechial hemorrhages under skin of chest; the liver dullness absent, upper part of abdomen distended, very restless and no sleep.

Six doses of pituitrin (0.5 c.cm. intramuscular and four-hourly) were given; in addition salines per rectum, fomentations, and gentle massage to abdomen. Forty-eight hours after the third injection of pituitrin the vomiting ceased, pulse became regular and more frequent (70-80). Respirations 20. The temperature had been subnormal for six days, a rise to 101° now occurred and gradually came down in a few days. The patient made an uninterrupted recovery. The condition was without doubt acute toxæmic dilatation of the stomach as seen in several post-mortems on these cases.

#### Remarks.

"Early stomach washing," as suggested by Mr. Eccles Smith, would no doubt have helped towards recovery, but was quite impossible on account of the extreme cyanosis; pituitrin and salines saved this patient. The irregular, and particularly infrequent, heart action as an additional sign of this condition may be worthy of note.

Crowborough, Sussex.

### A CASE OF LETHARGY.

By GRACE H. GIFFEN DUNDAS, F.R.C.S. IREL.,  
D.P.H. CAMB.

THE interest in this case lies partly in the question of diagnosis—was it a case of encephalitis lethargica?—and in the fact that the patient, being intelligent, was on convalescing able to tell something of her psychological state during her three weeks' cataleptic-like condition. I have permission from Dr. G. E. Oates, medical superintendent of the Ilford Isolation Hospital, to report the case.

#### Notes of Case.

*Previous history.*—Patient, aged 26, had erysipelas of face and scalp four years ago; very ill, high temperature, delirium, &c. She is nervous and quick-tempered. A few years ago she took up shorthand and typewriting, but was too "nervous" to continue, whereupon she confined herself to housework at home, at which she is very energetic. She was very nervous during air-raids, trembling violently. Three months before her present illness she had a great shock on hearing that a soldier to whom she had been engaged for years was killed. Her mother's illness (bronchitis) greatly worried her during the three months preceding her own illness.

*Present illness* began on Jan. 31st with a feeling of great restlessness. Patient had great difficulty in getting through her work that day. For a week previous to this she had headache and constipation. On Feb. 1st she remained in bed thinking she had "a nervous breakdown." That night she went into her sister's bedroom, not liking to be alone and not liking the dark. She got worse daily, and was admitted to the Ilford Isolation Hospital on Feb. 6th.

On admission patient lay supine without endeavouring to make the slightest movement. Limbs rigid. Elbows flexed and forearms lying across chest. Sweating profusely. Sordes on lips; mouth dry and dirty. Severe headache. Pupils reacted sluggishly to light. Partial ptosis of both lids. When asked to open her eyes she did so with difficulty. No squint, no diplopia, no evident loss of vision or paralysis of accommodation. Mask-like expression of face. Could neither raise her eyebrows nor frown; could not smile or close her eyelids firmly, or close her lips (upper teeth and part of gum exposed); could not use muscles of mastication. Understood all that was said. Answered with difficulty and in monosyllables; could phonate, but articulated badly. Could not depress lower jaw. It was not possible to ascertain if there was sensory paralysis of skin. No paralysis of taste. Thns there was no evident paralysis of third, fourth, and sixth nerves, but paralysis of motor branch of fifth, seventh, eleventh, and twelfth. Kernig's sign was absent; knee-jerks and Babinski's sign present. Arms and legs paralysed. Patient gave not the slightest indication of being aware that one was manipulating her. The back was red in places, she not having been moved during the seven days she had lain in bed. Menstruation present, had smelling discharge.

*Treatment.*—Patient was placed on a water bed and put on two-hourly milk feeds, occasionally varying the milk with Valentine's beef juice. Mouth toilet was attended to. Catheterisation and enemata were given when required.

*Subsequent history* until March 13th, when patient was discharged well. Temperature dropped to normal after two days; thereafter subnormal. Pulse gradually dropped to 80-90, respirations to 20. She slept deeply most of the time. Bed-sores occurred during the first week, but rapidly healed when she began to move a little. Retention of urine for the first few days, then incontinence. Constipation was extreme. Epsom salts, 1 drachm in each feed, had no result. Two large soap-and-water enemata with 1 ounce ol. ricini were retained. The gut was thereupon washed out, after which incontinence set in.

It was difficult to feed the patient, as she could not open her jaw. Fortunately, one or two teeth were absent. She could manage nothing but fluids for the first fortnight, after which she began gradually with solids. The first bite of bread and butter she tried had to be taken out of her mouth again, neither the power of mastication nor deglutition having returned.

Gross tremors of the limbs formed a prominent sign, especially marked if the patient tried to put out an effort to move the limb. Movement began three weeks after the beginning of the illness, first seen in the upper lip when asked to try to close her lips. Each day thereafter the orbicularis oris improved. The existing light did not allow of a series of photographs showing the daily improvement in frowning, smiling, &c. Movement in the arms next came back, the left being the last to recover. Then followed movement in neck, back, and lower limbs, the left leg being the last to recover. Strychnine was cautiously exhibited by the time the legs began to recover.

#### Sensations of Patient during Illness.

No emotional symptoms of any description accompanied convalescence. Patient was neither hilarious nor depressed. She voluntarily showed her daily progress in movements and expressed herself as grateful to the nurses for everything done for her.

She willingly told of her sensations during the three weeks when to all outward appearance she had no sensations. She thought she had lain five weeks without movement. There was an occasional hiatus in her mind as to the sequence of events, which may have been due, of course, to deep sleep. When awake she heard all that was said and would willingly have answered the questions I asked the nurse if she had had the power to. She was acutely aware of catheterisation, incontinences, &c. She had terrifying dreams usually, of someone trying to do her a bodily harm. Occasionally she had a distinct sense of well-being, but was unable to say if this sense followed on her gut being emptied or what.

She had lost sense of position and direction, having no idea of how her legs and her left arm were placed. Eyes and teeth seemed misplaced, her eyes up at the roots of her hair and her teeth several inches in front of her mouth. She resented her friends trying to keep her awake during the visiting hour. She resented them "chaffing" her, as she "could not chaff them back." I have only to add that the ward sister resented the friends expressing surprise at the cure nature had effected.

No case of encephalitis lethargica has been notified in this sanitary area. During the last 12 months two cases of poliomyelitis and one of cerebro-spinal fever were notified.

A fortnight after the patient's discharge from hospital—i.e., two months from the commencement of her illness—she was perfectly well with no untoward symptom, either mental or motor.

THE Dorset Education Committee has decided to appoint an additional assistant medical officer at a salary of £450 per annum.

HOUSING IN BELFAST.—A scheme has been evolved in Belfast (which, however, has still to be sanctioned by the Local Government Board), under which it is hoped that the first instalment of 1500 houses will be built within the next year at an estimated cost of £1,000,000. The Corporation have had several offers of sites for the new houses, so that no difficulty is likely to arise in this respect. But how will a workman pay a rental commensurate with the enormous cost of building houses? Will an increased city rate be acceptable to people who have suffered from the war if the great industries which require more houses contribute only in the same proportion? It is felt that the ship-building companies, who have earned much money during the war, might erect the houses themselves for their own operatives as part of their business. One thing is clear—owing to its increasing population, Belfast is badly in need of working-class houses.



## Reviews and Notices of Books.

*The Future of Medicine.* By Sir JAMES MACKENZIE, F.R.S., F.R.C.P., Consulting Physician to the London Hospital. London: Henry Frowde and Hodder and Stoughton. (Oxford Medical Publications.) 1919. Pp. 238. 8s. 6d.

EDUCATIONAL reform is an acknowledged need of the present day and the new Education Act is an earnest and well-thought-out attempt to satisfy that need in so far as general education goes. If a nation is not to drop behind in humanity's race its members must be educated, and in addition, they must be placed in the best position for profiting by the education supplied. A prime necessity for this desirable condition is health, for no sickly, ill-developed, or unhealthy learner can use the knowledge or means of knowledge supplied by his teacher to the best advantage. This being so, the next necessity is that that portion of the community in whose hands lies the preservation of the nation's health—namely, the medical profession—should learn how to carry out the great work entrusted to them in the best and most profitable manner. This is the simple message from Sir James Mackenzie to his fellow-students contained in this book. Over and over again it has been said in different ways and with different arguments, so that no one, medical or lay, will be found to dispute the proposition; there is plenty of room for its enthusiastic support, and never has there been provided finer advocacy than that of Sir James Mackenzie.

Despite all the advances which have been made in medical science during the last 50 years, no one realises more keenly than do medical men themselves, that our knowledge of disease practically only begins when the patient is already more or less damaged, and that though the ideal of medicine is "*pricipiis obsta*," yet only in very few instances are we able to carry out this precept. Teaching is at fault, teachers are at fault, examinations are at fault, and consequently practice is hampered; even while in this country our tests are fair, our examinations standardised, and our instructors in the main keen and often distinguished, if poorly-paid men. Sir James Mackenzie treats in admirably simple language, and with a wealth of illustration, the position outlined above, and is able to do so from a strong position, for he has personally triumphed over the difficulties which lie ahead of the reformer, and has vastly improved medical practice by his personal teaching. His thesis includes three heads, which seem obvious to absurdity and yet are apparently but little realised. Shortly, they are as follows: 1. If a problem is to be solved, the nature of the problem and its difficulties should first be comprehended. 2. Disease is only made manifest by the symptoms which it produces, and to get a thorough understanding of disease we must recognise the symptoms not merely by detecting their presence, but by understanding the mechanism of their production and their bearing on the health of the patient. 3. He who conducts the investigation should have had the opportunity of seeing disease in all its phases, and of observing the various symptoms which it produces. Allow these premises, and it follows that only one class of individual has the opportunity for acquiring the knowledge, and that is the class of the general practitioner. This position leads Sir James Mackenzie to a chapter upon medical education wherein he puts his finger upon one of the weak points in the present system of medical education—namely, its divorce from the work of the general practitioner. The average teacher either has no experience of the difficulties which the majority of his pupils will meet with in their life's work, or if he has had any experience of such difficulties in his own training he seems to have forgotten them.

It must have occurred to many persons of intelligence—both teachers and taught—that books written with the idea of instruction might well be written not by a master of his subject alone, but in collaboration with an intelligent learner. The master might write a chapter and then hand it over to the learner for comment and the latter could then, when he came to a passage which puzzled him, say "What do you mean when you say this?" Written after this manner, a book would gain infinitely in value as an educational agency, but the teaching in hospitals, which are at present

the only schools of medicine, cannot be conducted after the same model. The value of the old apprenticeship system, the return of which we are not advocating, was that it offered personal communication between the learner and a teacher who was living and working under the very difficulties which the learner would one day have to deal with. At the present day, says Sir James Mackenzie, the student is instructed by a number of teachers not one of whom has had any experience of the life he is to lead as a general practitioner; and, moreover, the general practitioner, who has sometimes suffered from a defective education, is never consulted on educational matters. In the system of apprenticeship, however, there would never be any guarantee that the master was able, or had the leisure, to teach the pupil properly, so that the system can find no place in a standardised curriculum.

We have said enough to indicate the line of argument which Sir James Mackenzie pursues, and we think that his suggestion that in every school of medicine there should be one or more teachers who have passed through 10 to 20 years of general practice is an admirable one. We can see no better method of supplying teachers who have a knowledge at first hand of what ought to be taught.

*Text-book of Ophthalmology.* By Hofrath ERNST FUCHS, former Professor of Ophthalmology in the University of Vienna. Authorised translation from the twelfth German edition, by ALEXANDER DUANE, M.D. Sixth edition. London and Philadelphia: J. B. Lippincott Company. Pp. 1067. 30s.

THIS text-book is too well known to need recommendation. The present edition is nearly a reprint of the fifth which appeared two years ago, but the changes between the fifth and earlier editions were numerous and important. For these Professor Duane is almost wholly responsible. No new German edition has appeared for some years, and the book, though based on Fuchs's original text, tends to become more and more the work of the American translator. Its composite nature remains, and in most parts additions and alterations are indicated by the use of brackets and the translator's initial D. Some parts are rewritten; for instance, the chapter on disturbances of motility, a subject which the translator has made peculiarly his own. All this tends to increase the bulk of the volume. And yet in parts it still needs to be brought up to date. In the chapter on Glaucoma, for example, we find a good deal about the older theories of its pathology, but no sufficient directions for taking the visual fields, or of their importance in early diagnosis. Again, the older theories of colour blindness are explained at considerable length, but the newer ones nearly ignored. For the beginner we should recommend a smaller text-book, but as a book of reference and for the advanced student, the work of Fuchs will still be deservedly popular. The chapter on Diseases of the Cornea and the sections on Pupillary Reactions are hard to beat. Therefore, we say that for anyone who has time to study the book in its entirety it will doubtless be of great value, but he will soon discover that, in a subject which is alive, no single text-book can possibly be sufficient for all that he will need. Especially in the chapter on Operations, more references would be useful, so that the full description of any particular operation that the operator is at all likely to require could be easily found at a library. The same principle might perhaps be applied to the rarer diseases and to important observations relating to the commoner ones.

*Auto-Erotic Phenomena in Adolescence.* By K. MENZIES. With a foreword by Dr. ERNEST JONES. London: H. K. Lewis and Co., Ltd. 1919. Pp. vii. + 88. 4s. 6d.

THERE is so much nonsense written on the subject of masturbation that such an analytical study of the psychology and psycho-pathology of onanism as has been prepared in this small volume has become an unpleasant necessity. Mr. Menzies has read widely in his subject and writes as a psychologist. The mental conflict engendered by false conceptions of this habit is considered to be the most serious aspect of the problem. Whether it is necessary to invoke the aid of psycho-analysis in treatment of the numerous sufferers is a question the reader will answer according to his belief in this method of



psychotherapy. When once the condition itself is properly understood, a little common sense and a rational education of the young may well make the somewhat painful and cumbersome efforts of the skilled psycho-analyst unnecessary. But whatever we think of Mr. Mcnzies's views of treatment, or of his ethical considerations, we cannot but be grateful that he has handled his subject in a sane way. In the result he has achieved nothing new, but he has made available in a small compass the experience and conclusions of many writers whose opinions are worth knowing.

*A Short Practice of Medicine.* By ROBERT A. FLEMING, M.A., M.D., F.R.C.P.E., F.R.S.E., Lecturer on Practice of Medicine, School of the Royal Colleges, Edinburgh; Senior Lecturer on Clinical Medicine, Edinburgh University; Physician, Royal Infirmary, Edinburgh. Third edition. London: J. and A. Churchill. 1919. Pp. 676. 21s.

THE purpose of this manual is to provide students attending lectures on medicine with a general synopsis of that subject. The author suggests that its use will free the teacher from dictating, year in and year out, statements which can be mastered as well, if not better, from a text-book. It is perhaps not surprising that the index of a text-book on the practice of medicine contains no reference to acidosis or vagotonia, but when one looks in vain for colon bacilluria or encephalitis lethargica one is forced to the conclusion that the writer either has not taken the full advantage which a new edition offers for the inclusion of new material, or considers such subjects more suited to oral instruction. However this may be, the opportunity has been taken to rewrite and bring up to date the descriptions of many diseases, and various medical diseases met with during the war, such as trench fever and trench nephritis, have received recognition. The book is arranged on the usual plan adopted in works of systematic medicine. We notice that rickets, scurvy, and beri-beri are classed together as diseases due to faulty nutrition. Rheumatoid arthritis is not very clearly distinguished from osteo-arthritis and is found, with osteomalacia, hypertrophic pulmonary osteoarthropathy, osteitis deformans, and achondroplasia, under diseases of bones and joints. No mention is made, we observe, of the association between diabetes insipidus and morbid change in the pituitary body, but the writer of a synopsis has to confine his work within definite limits, so that some omissions become imperative, the author being the arbiter. The old anatomical terminology is used throughout the book and we think the author is to be commended on its retention; for the sake of those who are accustomed to the international nomenclature a table of such equivalent terms in the two systems as have been made use of in the text is provided. Several new illustrations have been added and these now number 64, nearly half of them occurring in the section devoted to diseases of the nervous system.

The book provides a very fair summary of the current views on medicine, but we are inclined to think it is likely to prove of greater use to students than to practitioners.

*A Text-book of Practical Therapeutics.* By HOBART AMORY HARE, M.D., B.Sc., Professor of Therapeutics, Materia Medica, and Diagnosis in the Jefferson Medical College of Philadelphia; Physician to the Jefferson Medical College Hospital. Seventeenth edition. London: Henry Kimpton. 1919. Pp. 1024. 28s.

This work thoroughly justifies its title of "practical therapeutics with especial reference to the application of remedial measures to disease and their employment upon a practical basis." Although there is of necessity a certain amount of theoretical discussion the practical element is never lost sight of. Great care has been taken to bring this edition fully up to date, and so many alterations and additions have been found necessary that a large part of it has been reset in new type. Though we are dealing with a seventeenth edition, it is not an old treatise.

Most of the book is taken up with a consideration of "drugs." Under this heading the various preparations used in the practice of medicine are fully discussed. A uniform method is adopted throughout. A description is first given of the drug, then its physiological action is explained at sufficient length to enable the reader to appreciate fully its effect upon the various systems of the body. Next, its

therapeutic use is considered, and the indications for its employment. The mode of administration is also explained, and when necessary the symptoms of poisoning are also given. In the preface Professor Hare remarks that "many important drugs heretofore made in Germany, or under German patents, are now made in this country and have been given names whereby they may be properly designated." It may be that practitioners will not at first recognise these names; for instance, the word arsenamine is adopted for salvarsan (although in the full description which follows the name salvarsan is retained throughout); procaine is substituted for novocaine, and barbital for veronal.

Experience during the war has increased the knowledge in relation to shock, and has emphasised the need of careful methods of intravenous injection or of direct transfusion; therefore the technique of these procedures is fully and clearly described. The use of Dakin's fluid and dichloramine-T by Carrel's methods is also discussed. We would draw attention to the valuable remarks on chloroform and the method of its administration. The section of the book dealing with the treatment of various diseases will be appreciated by practitioners, as will also be the index of diseases and remedies.

We believe that this work will particularly appeal to those in general practice, who will find it a useful work of reference; the material contained in it is essentially practical, and owing to the general arrangement of the book the information required can be easily found.

*Anti-malaria Work in Macedonia.* By W. G. WILLOUGHBY, M.D., and LOUIS CASSIDY, M.B. With 14 plates. London: H. K. Lewis and Co. 1918. Pp. x. + 68. 3s. 6d. net.

THE authors in their preface to this little book of about 50 pages of text expressly state that it is "not intended as a scientific work," after which we cannot expect the subject-matter to be treated in a scientific way, though the authors' efforts are commendable. But we must express our sorrow that it should be necessary to issue a book of this kind for the use, apparently, of medical officers. If we may read between the lines, the authors appear to have had to struggle against "regulations" and, indeed, to put it bluntly, against ignorance, for on p. 65 they say coöperation in anti-malarial measures is far more satisfactory when its basis is intellectual. We see no indication that the authors lived in an atmosphere of research. What anopheline or anophelines were the carriers, what percentage of these were infected, what was the infection rate amongst the indigenous population and the troops, what were the breeding-places of the transmitting species, are not stated. It is information such as only specially trained medical men could give. We believe that an anti-mosquito campaign can only be scientifically and economically carried out if these factors are known, and that it is unscientific to proceed in the dark and take measures against all anophelines. Suppose, for instance, that the main carrier is a species restricted in numbers with restricted breeding-places, a supposition that in certain cases actually agrees with the facts, then it is good policy, especially where labour is a difficult question or money is scarce, to proceed against this species first.

This book, then, gives the impression that research was not in progress in the field of malaria operations in question. The authors, however, believe that the actual anti-malaria operations were successful, though the data for forming an independent opinion are not given.

*Life and Its Maintenance: A Symposium of Biological Problems of the Day.* London, Glasgow, and Bombay: Blackie and Sons, Ltd. 1919. Pp. 297. 5s.

*Lectures on Sex and Heredity, delivered in Glasgow, 1917-1918.* By F. O. BOWER, J. GRAHAM KERR, and W. E. AGAR. London: Macmillan and Co., Ltd. 1919. Pp. 120. 5s.

THE first of these books is a volume of 15 lectures which were delivered to a mixed audience at University College, London, during the spring of 1918 and which were designed to deal with the vital war problems such as the supply, nutritional value, and production of food, the physiological aspects of flying, the anaerobic treatment of wounds, and industrial efficiency and fatigue, the lecturers being selected from professorial chairs of the universities of the country or



from important institutions for research such as the Lister Institute of Preventive Medicine. Although the lectures were called forth by the exigencies of war, they cannot but have an important bearing in times of peace, more especially during the reconstruction period, in the throes of which we now are. The Problem of Food, by Professor William Bayliss, and War Bread and its Constituents, by Professor F. G. Hopkins, discuss important matters which expanding populations and economic needs make vital, while Vitamines, by Miss E. Margaret Hume, is a subject equally urgent in its bearings. Professor Cushny's lecture on Alcohol and other Beverages in War Time, while not encroaching upon the controversy which is engaging the attention of America at the present moment, and which in the near future may react upon our own country, inquires how far beer, and incidentally domestic beverages, may be regarded as food. The Physiological Aspects of Flying, by Lieutenant-Colonel Martin Flack, will be read with interest now that the commercial possibilities of aviation are something more than a dream, and the subjects of Efficiency and Fatigue and Fresh Air and Efficiency, respectively dealt with by Dr. H. M. Vernon and Professor H. R. Kenwood, are matters with which the new Ministry of Health will have much to do.

The lectures on Sex and Heredity deal with a somewhat abstruse subject in simple language. Scientific terms are freely introduced, but their definition is repeated in paraphrase again and again as occasion suggests, while abundant illustrations and a glossary further help the reader. No indication is given as to where or to what audience in Glasgow the lectures were delivered, but presumably they were given in the University, as two of the three lecturers are respectively Regius professors of botany and zoology there. The aim is to give the leading facts in relation to sex in animals and plants, together with suggestions bearing on the use and effect of sexual propagation, and this has been abundantly fulfilled. The lectures make a simple and admirable introduction to such subjects as race regeneration and eugenics, which, after the devastations of war, are likely to occupy the minds of thoughtful people for many years to come.

*The Urethroscope in Diagnosis and Treatment of Urethritis.*

By Major N. P. L. LUMB, O.B.E., R.A.M.C. (T.C.). London: John Bale, Sons, and Danielsson, Ltd. 1919. Pp. 52. 10s. 6d.

THIS book performs two useful tasks: First, it emphasises the necessity for the use of the urethroscope in all cases of urethritis; and, secondly, it gives to the practitioner some idea as to what he may expect to find by looking through the instrument. The illustrations, which are all coloured, are quite good, although perhaps a little diagrammatic in places, but suffer from the disadvantage that the references in the text necessitate a repeated turning over of pages. Still, this is a minor point. The advantages of the Wyndham Powell aero-urethroscope are wisely taken into account. The author does not pretend that the book is complete. It is a useful contribution in that it depicts in the illustrations the effect of treatment on the pathological condition found in cases of urethritis.

*Ten Lectures on Field Sanitation.* By C. B. MOSS-BLUNDELL, M.D., D.P.H.; Captain, R.A.M.C. (T.F.). London, Aldershot, and Portsmouth: Gale and Polden. 1919. Pp. 134. 5s.

THIS book, which has a commendatory introduction by Major-General Gerald Cree, contains a series of lectures delivered by the author at a school of sanitation in France of which he was the commandant, and their object is to teach the practical side of sanitation in the field. The lectures discuss the general principles which underlie the sanitary problem in active service, the details of the syllabus embracing the dangers from horse manure and the menace of flies, the disposal of excreta and refuse, the method of dealing with water-supplies, food, and disinfection. Diagrams are freely used in elucidation of the text. The author, who is county medical officer of health for Huntingdonshire, has brought to the compilation of the lectures a wide experience of sanitary matters gained both before and during the war, and his treatment of the subject will prove valuable, not only to R.A.M.C. officers, but also to officers in other branches of the service.

## JOURNALS.

In the *Military Surgeon* for July, Colonel B. K. Ashford completes a lecture on Field Hospitals, in which he tells the newly arriving officers of the American Medical Corps what they should aim at in providing accommodation for their wounded. The wounded sent back from the advanced dressing station are examined at the field ambulance and there sorted as to their next destinations. This sorting or, as the French call it, triage, must never be done except at a place where there is a chance of dealing with grave emergencies. Therefore, he says, in action the field ambulance must be able to deal with cases of hæmorrhage, shock, severe compound fractures, chest and abdominal cases, all untransportable, and consequently it must be strengthened in time of action by an advanced surgical section and a radiologist. He discusses the French and English field hospitals as he has seen them, and notes how field ambulances are in turn taken out of the line and made to do duty as gas hospitals, rest stations, hospitals for medical, infectious, or scabies cases. He gives high praise to the British for cleanliness. Never, he says, has he smelt fæces in the British lines; their latrines may never be near their kitchens, which, like the cooks, are spotless. Many trades were represented about the hospitals of rest—tailors, cobblers, saddlers. Much, too, was done for the comfort of the men, who had a gymnasium, library, entertainments, theatricals, and plenty of open air, so that 80 per cent. go back to their units. Colonel Ashford expresses a high opinion of the French Bessoneau tent, of their mobile surgical units, and of their hospitals for gassed cases. He notices that in one attack only some 15 of those supposed gassed were really so; the others were mentally and physically exhausted, but they, too, required treatment. In the same issue Major G. A. Soper recounts the history of the notorious "Typhoid Mary," who in 18 years is believed to have originated ten outbreaks of enteric while acting as a cook in various circumstances.

*Journal of the East Africa and Uganda Natural History Society.* July, 1919. London: Longmans, Green, and Co. 5s. 4d. to non-members.—This number contains two papers of medical interest, Major C. E. Southon's description of plague and its history, and Mr. R. E. Montgomery's story of insects in relation to the diseases of stock. Dr. J. H. H. Pirie has a note on the Ebnrrn steam jets (natural emanations of hot aqueous vapour from the ground), some of which have been used for obtaining a water-supply, the steam being condensed on metal plates. Mr. V. G. L. van Someren sends some notes on East African birds and on the European crane, and Dr. R. van Someren is responsible for a group-picture of sacred ibis, cormorants, and stone curlew on an island on the Victoria Nyanza. A contributor asks whether albinism is only found among males in South Africa, as in the half a dozen cases he has met with he has never seen an albino woman, and another contributor describes an albino child at Malende, south-east of the Taita Hills; this boy was about 10 years of age, with skin and hair quite white. The eyes were of a watery blue, and he complained of the bright sunlight. There were marks on his face resembling very large freckles, and his lips were badly blistered by the sun. The boy seemed intelligent, and his father, mother, and two sisters were all quite black.

## SOCIÉTÉ DE BIOLOGIE, PARIS.

At a meeting of this society held on July 26th the following papers were read:—

Dnbois.—Pseudo-cellules Symbiotiques Anaérobies et Pathogènes.

On peut obtenir des pseudo-cellules pathogènes et même des pseudo-tissus parenchymateux avec des photobactéries, mais cela ne peut pas que les cellules animales ou végétales en général et en particulier les cellules pathogènes, soient formées par des agglomérations microbiennes.

Le Moignic et Sezary.—Lésions Pulmonaires Consécutives aux Injections Intraveineuses d'Huiles Végétales.

Des injections intra-veineuses uniques ou rarement répétées, d'une dose d'huile d'olive variant de 0,03 c.cm. à 0,2 c.cm. par kilogramme d'animal, ne déterminent que des altérations légères du poulmon. Des injections répétées 15 à 30 fois provoquent une sclérose interstitielle diffuse, enserrant les alvéoles, diminuant notablement le champ de l'hématose. L'incorporation à l'huile de substances médicamenteuses produit des lésions graves de broncho-pneumonie nécrotique. L'huile camphrée seule est bien tolérée expérimentalement.

Le Moignic et Norero.—Recherches sur la Distribution des Huiles Injectées dans la Trachée.

On injecte à un gros chien par piqûre de la trachée de petites quantités d'huile colorée par des substances peu ou non diffusibles. Autopsie après 24 heures. L'huile ne se départit pas en définitive dans tout le parenchyme pulmonaire, elle se rend surtout à des lobules des parties inférieures du poulmon; il est rare qu'elle se distribue abondamment au lobe supérieur.



# THE LANCET.

LONDON: SATURDAY, SEPTEMBER 6, 1919.

## The Future of Liquor Control.

IN view of the approaching extinction of the Liquor Control Board and the proposed establishment, in its place, of a permanent authority directly responsible to Parliament, special interest attaches to the speech delivered by Lord D'ABERNON at Carlisle last week dealing with the future of drink policy in this country. Lord D'ABERNON was in the position of being able to point to a record of successful administration in a difficult sphere where generations of reformers and legislators have failed. At a time when public opinion is showing itself much more alive to the shortcomings than to the achievements of the State in the many unusual activities thrust upon it by the war, the Liquor Control Board stands out as a department of the Government whose work during the national emergency has won general recognition not merely for its accomplishment of the immediate purpose for which it was created, but also as having made a contribution of permanent value to the solution of a notoriously difficult social problem. We know all the directions from which the Liquor Control Board has been criticised, but the fact emerges that when something had to be done the Board did it successfully. And readers of Lord D'ABERNON'S speech will not be at a loss to find the explanation of this success.

The history of liquor legislation in the past has been marked by an entire blindness to the fact that the problem of alcoholism is in a very large and important measure a problem of pharmacology. Lord D'ABERNON, with the intuition of statesmanship, and with the even more useful quality of being able to trust scientific advice, grasped this fundamental and neglected truth. The potential efficacy of legislation against intemperance depends largely on the fact that the conditions which physiology indicates as necessary to prevent the injurious action of alcohol appear generally to be such as can be adequately secured by legislation or regulative measures. When, for example, the physiologist teaches that alcohol gets into the blood very quickly and gets out of it very slowly, and that its persistent presence in the system is the main cause of chronic alcoholic poisoning, the obvious precaution is the quite feasible one of providing against public-houses being open for long continuous periods. Similarly, when it is shown that an alcoholic drink taken in dilution is very much less injurious than the same dose taken in an unduly concentrated form, the obvious precaution is to provide against the sale of alcoholic beverages at excessive strengths, and to bring about effective dilution by encouraging the consumption of alcohol with meals instead of offering dangerous facilities for drinking on an empty stomach. The regulation of the liquor trade in accordance with these principles has brought about a reduction of intemperance and a consequent improvement in national health and efficiency which a very few years ago would have appeared impossible of attainment by any practicable measures of reform, and the accompanying interference with the liberty of the subject cannot

be described as a counterbalancing mischief. The lesson which Lord D'ABERNON draws from this experience is that the pre-war prevalence of alcoholism in this country was primarily attributable to the absence of any rational system of liquor legislation, and that, should relapse to these pre-war evils occur, it will similarly be the fault of the legislation. In this matter the immediate responsibility of the State is clear and definite: under the existing licensing system, the retailers of liquor are not traders in the ordinary sense of the term, they enjoy a monopoly granted to them by the State, and it is the duty of the State to regulate in the public interest the conditions under which that monopoly is exercised. In the United States the abuse of their privileges by the liquor traders has led the legislature to adopt the extreme policy of absolute prohibition. In this country the experience of the Control Board has shown that more moderate methods may be at least as effectual in safeguarding public health and order, while they have the additional advantage—of no small account at the present moment—that they do not involve the sacrifice of a source of State revenue which may be capable of such development as should make it second only to the income-tax in productiveness.

Whether the system of regulation by which certain beneficent results have been achieved during the war can be effectively carried out in peace time without the direct management of the liquor business by the State is a question which only experience can decide. The answer will depend, no doubt, in a very large measure on the capacity of the licensed traders to take an intelligent view of their own interests. With the example of America before them—where the intolerable abuses of the American saloon were the chief argument for prohibition—they should be able to appreciate the full force of Lord D'ABERNON'S epigrammatic warning that "the noisy advocates of unrestricted indulgence are the cats-paws of Pussyfoot." And it is equally desirable that the nation should realise the immediate and inevitable results of complying with the demands of these advocates. If we withdraw reasonable restrictions we shall create almost a legitimate demand for unreasonable ones.

## Some Housing Questions.

THE influence which housing conditions exercise upon the incidence, spread, and permanence of disease is so enormous that no apology is needed for recurring notices of the developments now taking place. The housing problem is being dealt with seriously, and upon what is intended to be a scheme of general application, for the first time in this country, and this general application is, perhaps, indicated by the absence of any definition of the class of citizen whose need for accommodation is exercising the community at large. A series of questions has been addressed to Dr. ADDISON by the Council of Rotary Clubs of London, and other inquiries have been directed to this point. Dr. ADDISON, in reply to the Council of Rotary Clubs, said that he had deliberately "and obstinately" refrained from defining "a workman." "A type of house," he said, "is sanctioned, and it is left to the local authorities to use their own common-sense as to who shall occupy the houses." Dr. ADDISON was, however, betrayed into something very like a definition such as he had obstinately declined to give, for he



continued: "A workman is a man who works, and it is immaterial to me whether he works as a bank clerk or a navvy." This indicates at any rate that the honourable term of workman is not to be confined to manual labour, but it does not say with what strictness the new dwellings are to be confined to those who "work." Are they to be denied to the naval or military pensioner debarred by war injuries from work? Is the widow of a man who has saved a little money for her and his family to be excluded from them? Will a worker of any sort, in receipt of wages which fairly might enable him to rent a more expensive house, be made to do so? This last question was actually answered by Dr. ADDISON by saying that rents will be fixed according to the type of house, and cannot be graded according to the proposed tenant's earnings. Where there is competition for the new houses there will be a good field for the exercise of the common-sense with which we are willing to credit the local authority, and for allotting the new habitations to those for whose benefit they were provided. From the health point of view this may be of importance; competition for the houses will promote rivalry in keeping them decent, and once a neighbourhood begins to pride itself upon being clean half the battle of public health is won.

In London the conversion of houses into working-class flats will presumably be the branch of rehousing which will first show tangible results. Such conversion has taken place before, but not on the large scale now contemplated, and the securing of satisfactory health conditions will not always be as easy as the mere conversion itself. To turn a house, built to contain one middle-class family, into three or four self-contained tenements for workmen may dispose of that number of families so far as their lodging at night is concerned, but when streets or rows of houses are thus treated a comparatively crowded area will take the place of one more sparsely populated. The children have to be considered in places where the children of former occupants played in the back garden of the one house belonging to or rented by their parents and gave no cause for anxiety to anyone. We doubt the children of four families living in one house sharing its yard or garden harmoniously. Children will do better in larger playgrounds, where they can find friends adapted to their tastes and have some kind of supervision, official or voluntary, to keep them out of mischief. We hope that in all housing and building schemes the health and enjoyment of the children when out of school will be kept well in view, and recognised as an essential aid to the well-being as well as the happiness of the population. The streets and public roads in urban districts are not proper playgrounds whether for babies or for bigger girls and boys. A public park or playground may accommodate thousands and be an excellent place for holiday time, but at half a mile distance or even less it is of no use for everyday purposes. Small playing areas for the children coming from ten up to a hundred houses, standing open within easy reach, might make it possible to forbid absolutely their enjoyment of the danger of the highway.

The reconstruction of houses into flats should lead to increased housing accommodation more quickly than the construction of new buildings, but it is to the new buildings that the medical man looks for such a solution of the housing troubles as may lead to an actual improvement in public

health conditions. Conversion of large houses into flats is an economical proceeding of itself and should have considerable advantages, because the quality of fabric is higher than may be available in these days. But no choice of site is left, and it is here and in the planning of the arrangements of roads and approaches that we look for the main improvements in the houses of the future. Much of the insanitary horrors of the existing workmen's dwellings has been due to the absence of any prevision in building; but now that housing and town planning are being carried out under the ægis of a Ministry of Health neglect of the real sanitary outlook should not be feared.

### Dearer Milk and Bread.

GREAT and immediate efforts are needed upon the part of all local authorities to protect the population against the hardships arising out of a milk-supply at famine prices. Mr. McCURDY, the Parliamentary Secretary to the Ministry of Food, in a speech delivered at a recent meeting of the Consumers' Council, issued a warning that it is probable that the retail price for milk throughout the country next winter will be at least 1s. a quart, which is an advance of 2d. per quart on last winter's rates. This will mean a heavy burden on the resources of the working-class families and, likely enough, a serious increase in the rate of infant mortality. "We have to make good," Mr. McCURDY concluded, "the wastage of human life that took place during the war. Our baby crop for the years 1914 to 1919 is in danger. We must save it." It is well to remind local authorities of the powers conferred upon them by an order of the Ministry of Food last year. Subject to such conditions as might be laid down by the Food Controller, any local authority could arrange for the supply of milk for children under 5 years of age, and in necessitous cases such milk might be sold at less than cost price, or even supplied free. The dairy farmer, of course, must have a reasonable return, and with the increased cost of production and shortage of hay and roots the price of dairy produce must rise. It is to be hoped that the Government are taking steps to secure auxiliary supplies in the shape of dried milk, which appears to meet the dietary requirements of the infant quite well, and further attention should be given to the possibility of imitating milk by emulsion mixtures containing fat protein and carbohydrate, plus, of course, the vital accessory factors. Lastly, the healthy adult should cut down his accustomed supply of milk, particularly in tea and coffee, and thus place a substantial quantity of milk at the disposal of those who need milk if they are to live. Milk can well be excluded from the healthy grown-up person's diet without the slightest dietetic sacrifice, and all who thus penalise themselves will be rendering the State a great service by foregoing an article of food which belongs essentially to the young.

Less anxiety, perhaps, need be felt in regard to the dearer loaf, as the advance in price is relatively small and the staple constituent of bread—carbohydrate—can be made good by other commonly occurring articles of diet. It may be remembered that, in dealing with the operative bakers' grievances, the Court of Arbitration, having regard to the hours and wages of the workers and the factors governing the cost of production, concluded



that the demands of the operatives, which were reasonable, could be met by slightly raising the cost to the consumer of the 4 lb. and 2 lb. loaf by one halfpenny and one farthing respectively. This advanced price is solely due to the increase in wages conceded to the baker. The new prices are based still on a State subsidy, which provides against a greater rise in the price of the loaf. This subsidy, of course, comes out of the pockets of the tax-payers. The period of the war showed that the general health of the community was not seriously affected by the restrictions placed on bread allowance or by the modifications which were enjoined as to its composition. The shortage of carbohydrate in the form of bread was easily compensated by the supply, amongst other things, of rice and potatoes, and this was done with no harm to anybody.

The adult can deal with such a situation without much inconvenience, but not so the baby. The process of turning pasture into milk involves greater economic interests than are present in the growth of seed and the development of the tuber and cereal. For the latter source of food-supply the home allotments should be kept going, as though the war is over the difficulties of food-supply evidently remain. Intensive home cultivation has proved a great success, and no hindrance should be put in the way of continuing the undoubted assistance which allotments gave to the food resources of the country. Neither should the healthy occupation which the allotment involves be checked. But the problem of milk for children remains, and it can best be met by rigid economy in its use by adults.

### Fees for Public Vaccination.

THE Association of Public Vaccinators of England and Wales has justified its existence in a number of ways. It has done much to promote a high standard of efficiency in the vaccination service; and although primarily concerned with the interests of public vaccinators and the conditions of service, the association has also been active in the defence of vaccination *per se* for many years. A deputation received by Major ASTOR at Whitehall during June stated—not for the first time—a case for improvement as regards fees and conditions of service for public vaccinators, and urgently called for a recision of the Act of 1907 which has been the cause of much neglect of vaccination by substituting a statutory declaration for the certificate of conscientious objection required under Section (2) of the Vaccination Act of 1898. Major ASTOR, in his reply, was by no means unsympathetic, and assured the deputation that he would lay all their points before the President of the Local Government Board, who would give them his most careful consideration. On July 14th the Association addressed a letter to the Minister of Health on the subject of the increase of fees payable to public vaccinators, and Sir ROBERT MORANT replied on July 24th:—

"I am to state that the Minister has it in contemplation to modify the existing Order by raising to 5s. the present minimum fee of 2s. 6d. or 3s. 6d., as the case may be, for primary vaccination performed at the residence of the person."

We congratulate the Association upon its success in obtaining this concession, even though it be not immediate, for contemplation in Government offices may take some time to develop into action.

## Annotations.

"No quid nims."

### HOME "DOCTORING" AND THE SPREAD OF INFECTIOUS DISEASE.

THE medical officer of health for Ealing has recently presented to his public health department an interesting report dealing with a local outbreak of scarlet fever. Of 25 cases in all, 18 were in children attending North Ealing school, 1 attending Drayton school, 1 a private school, and 4 were under school age. The outbreak began in May, two cases being notified in that month, one on May 6th and the other on May 9th. Further cases were notified on June 2nd, 11th, and 12th. To determine the actual source of infection Dr. T. Orr arranged that on June 18th the hands of all the children in the three classes in which scarlet fever had occurred should be examined, but no child was found to show evidence of infectivity. Absentees were followed up and one child was found whose hands were desquamating, and the mother said that the child had had a rash on May 30th. This child was in the same school class as the two cases notified on June 2nd and 12th. On June 21st all cases in the North Ealing area which had been notified during May and June as suffering from measles or German measles were visited, with the result that one child attending North Ealing School, notified as a case of German measles, was found to be desquamating in a manner typical of scarlet fever. On June 23rd and 24th every child in the North Ealing School was examined and three children in classes not previously examined were found to be desquamating, while one child, in a class already examined as far as the hands, was found to be desquamating on the chest. All these children were sent home and visited, when it was found from the mothers that in every case the children had had a rash from two to three weeks previously. Among the absentees who were also visited two other cases of missed scarlet fever were found, making in all eight cases which had been missed, one of these having been notified as German measles. After this a constant daily supervision was kept over all absentees, who were visited at home, their parents being warned in any cases of suspicious illness, with the result that three new cases were discovered at an earlier date than they would otherwise have been. Dr. Orr remarks upon the large number of missed cases, i.e., 8, in comparison with the number of notified cases, 25. The affected school is in excellent sanitary condition, but, continues Dr. Orr—

"I have been remarkably struck on my visits to some of the houses of the children found to be recovering from scarlet fever to find the mothers so full of knowledge as to what the children suffered from, a knowledge which was pitted against mine in discussing the nature of the condition, and which was gleaned ostensibly from some 'Family Physician,' a volume which was handed to me on two occasions to see on what authority they relied."

It is obvious that in such conditions as Dr. Orr describes we have an ideal position for the spread of scarlet fever or any other infectious disease. Scarlet fever is sometimes very easy to diagnose, and sometimes very difficult, or even impossible. An untrained observer, relying upon information gained from such a volume as Dr. Orr mentions, is subjecting the community of his or her residential neighbourhood to a criminal risk.



## ACUTE THYROIDITIS.

To the *Albany Medical Annals* for June Dr. G. E. Beilby has contributed a careful study of a very rare condition—acute thyroiditis. It might be supposed that the proximity of the pharynx, tonsils, and lymphatic structures of the throat would predispose to infections of the thyroid by lymphatic extension. But it has been shown that there is no lymphatic circulation between the structures of the throat, which are so commonly the seat of acute infections, and the thyroid gland. Cases in which infection occurs by way of the lymph vessels seem to be always preceded by infection in the upper trachea or larynx. Infection from the blood-stream appears to be the most frequent cause of inflammation in cases of tumour or hypertrophy of the thyroid, the consequent processes of degeneration lowering the resistance. It is particularly in adenomata undergoing degeneration and containing free blood and necrotic material that infection occurs. The following is an example:—

A married woman, aged 33 years, the mother of three children, was admitted to the Albany Hospital on Jan. 10th, 1919. She first noticed enlargement of the neck four years previously, just after the birth of her youngest child. The enlargement was gradual until about six months ago, since which time it had been more rapid. The pressure of the growth caused discomfort, and at times difficulty in breathing. About three months before admission she had a severe attack of influenza. Before she left her bed her neck began to swell and to be painful, and there was a rise of temperature every day. On New Year's day she had a chill and from that time grew rapidly worse. Her breathing became more difficult and she lost her voice. On admission she was suffering from dyspnoea and dysphagia. She was profoundly septic and in a critical state. There was a large and very tense tumour in the median line of the neck, a little more prominent on the left side. The temperature was 103·5° F. and the pulse 120. Infected thyroid adenoma was diagnosed. Under local anaesthesia the mass was opened and a large amount of purulent fluid, mixed with blood and broken down thyroid tissue, escaped. Free drainage was instituted. Cultures of the fluid yielded a hæmolytic streptococcus. The patient was very ill for two weeks, but eventually was able to leave hospital with a small discharging sinus. This completely healed and she slowly regained weight and strength. She was advised to return later for removal of the adenoma. The adenoma had undergone cystic degeneration and the infection was undoubtedly hæmatogenous and part of the general influenzal infection.

Two other cases are related in which the infection of the thyroid was a direct extension from the throat, which was inflamed. The symptoms of acute thyroiditis vary according as the inflammation of the gland is primary or arises in some lesion previously existing. In the former case there are usually chills, malaise, and headache. Pain is felt in the region of the gland, more pronounced on one side, because the process usually begins in a single lobe, often radiating to the ear and side of the neck, lancinating and greatly aggravated by extension of the head. As a result the attitude may be somewhat characteristic, the head bowed and held very rigid. Local swelling is never noticed as an early or a marked symptom. Dyspnoea and dysphagia are present, the degree depending on the severity of the infection and the extent of gland involved. The voice may be affected; there may be aphonia and an irritative cough with slightly blood-stained expectoration. The diagnosis is usually difficult and the condition is unrecognised for a considerable time because the usual signs of inflammation and suppuration are absent. The gland is surrounded by a closely adherent connective tissue capsule derived from the pretracheal layer of deep cervical fascia. A layer of the capsule also encloses the larynx and

trachea and pharynx and oesophagus. Hence the swelling of the gland produces its first and most marked effect upon the trachea and oesophagus. The cause of the resulting stenosis is usually sought in the throat. But there is a pathognomonic symptom—stony hardness of the gland on palpation. As the condition of the throat renders administration of a general anaesthetic difficult and dangerous, operation should be performed under local anaesthesia. A free opening should be made and drainage established. As little injury as possible should be done to the gland, and no extensive measure, such as partial excision or removal of tumours or cysts, undertaken in the presence of such serious infection.

## THE PLIGHT OF HOSPITALS IN AUSTRIA AND HUNGARY.

AN appeal drawn up by Dr. Hilda Clark, who has recently joined Dr. Hector Munro in Vienna, brings up to date<sup>1</sup> the urgent conditions of want in which the hospitals of Austria and Hungary find themselves. In both these countries, while the standard of professional skill and permanent equipment remains very high, the staff is faced with the impossibility of giving their patients the treatment which they require. In Vienna, where the hospitals are maintained by the State, milk and eggs are only provided for infants under 1 year, as although the cost at which these articles can be obtained in the country is lower at the present rate of exchange than the prices which are paid for them in England, the State is too poor to buy them and other requisites. The hospitals have therefore to carry on without linen, surgical dressings, rubber appliances, drugs, anaesthetics, soap, or disinfectants. Paper clothing and bandages are everywhere in use, better dressings being reserved for very special cases. The shortage of coal and gas has reduced the opportunities of sterilisation far below the limit of safety. In Budapest a sudden crisis in the food position, which up to that time had been better than in Vienna, was produced by the Roumanian occupation. The shortage of hospital requisites, including dressings and drugs, and the limited opportunities of sterilisation were, however, already more acute in the Hungarian capital. Some spread of sepsis and of skin diseases in the general wards and an increased morbidity rate in the maternity wards has so far been one of the results. The lack of anaesthetics has been partially met by the extended use of local anaesthesia, but it is obviously impossible for the whole medical profession to acquire at a moment's notice the skill and experience thus necessitated. The shortage of general anaesthetics and of morphine has been particularly felt in the obstetric clinics. The appeal suggests help in three directions. The first essential is coal, which can presumably be paid for on credit if not in money; secondly, some help with the hospital supplies is urgently needed; and thirdly, assistance to the hospitals and sanatoriums to cope with the increase in tuberculosis, to be continued until industry regains a proper footing. Another problem which vitally affects the health of the people in both countries is the shortage of clothing. The supply of new material on credit for the manufacture of clothing on the spot would, in the opinion of the signatories, meet the risk of demoralising by the giving of help. Relief for all the hospitals in

<sup>1</sup> See THE LANCET, August 2nd, p. 203.



Austria and Hungary is being administered through a representative medical committee, under the chairmanship of Professor Wenckebach, professor of internal medicine in the University of Vienna, with offices at Singerstrasse 16, Vienna I.

#### MENTAL DEFICIENCY IN PROSTITUTES.

Lieutenant Paul A. Mertz, psychological examiner at Newport News, one of the principal ports of embarkation and debarkation of the American army, records<sup>1</sup> the results of his psychological examination of women arrested for prostitution and similar offences in the course of six months. It is noteworthy that 74 per cent. of the white women and 79 per cent. of the coloured women were found to be infected with a communicable venereal disease. Of 69 women whose ages were obtained, 50 per cent. were under 21 years of age, and over half of these were between 18 and 20. In 126 women in whom the mental age was determined by the Binet-Simon scale, 53 per cent. had a mental age of ten or under, this figure closely agreeing with the 51 per cent. feeble-minded reported by the Massachusetts Commission for the Investigation of the White Slave Traffic in its examination of prostitutes. At the Chicago Morals Court the percentage of mental deficiency among 126 prostitutes was still higher—85·8 per cent. Only 10 per cent. of the cases, however, examined by Mertz were so deficient as to warrant under existing laws segregation in an institute for the feeble-minded. In addition to the mentally deficient, 15 per cent. of the cases showed mental disorder, 11 being emotionally unstable, three epileptic, one a drug addict, and two subjects of dementia præcox. As only few opportunities were given for detecting deviations from the normal, this number is probably considerably understated. The ignorance of the prostitutes, according to Mertz, was appalling, and therefore it is not surprising to learn that 50 per cent. of the women did not reach the fifth grade at school.

#### THE FIRST ANTITUBERCULOSIS DISPENSARY AT NAPLES.

ON June 1st there was inaugurated at Naples, in the Piazza Salerno, near the industrial quarter, the "Preventorium pro Salute," instituted by the Neapolitan Antituberculosis Society. According to *La Riforma Medica* this is the first of the three dispensaries that the society intends to establish in various parts of the city; the second will be built during the present year on a suitable site in the hospital area in the centre of the town, while the third will be erected next year in the western quarter. These represent part of the social programme which has been determined on in order to encourage methods of prophylaxis adapted to the special conditions of the city; later on the other preventive institutions of the society will be added—namely, day sanatoriums, floating sanatoriums, country camps, and open-air schools—leaving to other antituberculosis associations the task of providing permanent sanatoriums and seaside hospitals. It must be acknowledged that the installation of three dispensaries in two years in a city where none previously existed is a record of rapidity and energy which has only been possible when the artificial barriers of small committees have been broken down and in

their place a powerful organisation set up, such as the Neapolitan Antituberculosis Society with its committee composed of such men as Professors Bianchi, de Giaxa, and Jemma, and a band of commercial and industrial men and women well versed in practical philanthropy. The dispensary consists of a central block and two wings, the former having in front a large waiting hall communicating by three openings with a corridor leading respectively to bathroom, surgical and laryngological rooms. The left wing contains an office for the registration of patients, a large laboratory and X ray room, while the right, which faces the south, is occupied by the dispensary, and two ample medical rooms. In the basement are washhouses and stoves for disinfection or destruction. Over the wings are spacious terraces for heliotherapy, while the whole front leads on to a large garden. The medical staff, two of whom are volunteers, are assisted by ladies, who undertake the difficult task of domiciliary visiting for which they are made efficient by a special course of lectures held at the Institute of Hygiene in the University. The choice of a locality for the dispensary, isolated in the middle of a large open space close to the industrial quarter, is happy, and the beneficence of the project and the lavishness of its details have aroused the most enthusiastic approbation of all competent judges. The sound organisation is the outcome of the long study of an expert committee of management presided over by the superintendent, Professor de Giaxa.

#### THE WELFARE OF THE BLIND.

THE welfare of the blind is a matter of pressing importance, even more pressing to-day than heretofore, on account of the large accession which has been made to the ranks of the blind by the ravages of war. Loss of sight is one of the most serious disabilities which can affect humanity, although there are well-known instances of blind persons, such as Milton and Henry Fawcett, who were able to do good work after having lost their sight. When blindness is accompanied by deafness, as too often happens—the latest figures as given in the Report of the Advisory Committee on the Welfare of the Blind, dated June, 1919, show that there were in England and Wales 1009 deaf blind persons, of whom 660 were reckoned as "unemployable"—the disability is enormously increased. We therefore refer again with pleasure to the publication of a circular by the Ministry of Health, dated August 7th, from which we learn that an estimate has been laid before Parliament for a grant to be distributed in aid of certain services carried on for the benefit of the blind. If voted by Parliament this grant will be appropriated in aid of these services from the period July 1st, 1919, to March 31st, 1920, and thereafter, subject to the consent of Parliament, a grant will be payable in respect of each financial year ending March 31st. Grants will be payable to approved agencies (an "agency" is defined as an institution, society, or body engaged in work for the blind) in respect of the following services: workshops for the blind, provision of assistance to home workers, homes and hostels for the blind, home teaching, book production, counties associations, miscellaneous. In regard to the first two services, grants will be allocated at rates not exceeding £5 to £20 per annum per worker or per blind person incapable of work who is cared for in a home. Provision is made for granting to any home teacher employed by

<sup>1</sup> Journal of the American Medical Association, 1919, lxxii., 1597-99.



an agency a sum not exceeding £78 per annum, and grants will be made to any approved agency producing books and music in embossed type. Under the head of "Miscellaneous," we see that the Minister will be prepared to consider applications from an agency for a grant towards expenditure incurred or estimated for any service other than the services mentioned in the regulations, and we earnestly hope that training in music will be considered by the Minister as suitable for a grant, for a blind man who can play a musical instrument with skill is not only a source of great pleasure to himself but may be so also to his fellows. Everyone will remember Thackeray's pathetic account of George III.—old, blind, and mad, solacing himself with Handel. If the suggestions made in the circular are carried out then the lot of the blind will be made appreciably easier than we fear it is at present.

#### MASSAGE AND MASSEURS.

A PETITION to His Majesty in Council has been presented recently to the Board of Trade begging that a charter may be granted to a society to be known henceforward as the Chartered Society of Massage and Medical Gymnastics. The object of the proposed society is to unite the older Incorporated Society of Trained Masseuses, founded in 1894 and incorporated in 1900, with the more recent foundation of the Institute of Massage and Remedial Gymnastics, which was founded in 1916. Such an application has been *in posse* ever since September, 1918, and we can but repeat what we wrote upon the subject in our issue of Sept. 21st, 1918, that it should protect the title of masseur from fraudulent usurpation; and while the council of the new amalgamation should be empowered to coöpt as members all those who can produce satisfactory evidence of training in recognised schools abroad, they must take steps to examine those whose training appears deficient. Only thus can the public be protected from the danger of the un-instructed dabbler in remedial gymnastics, while the elimination of the quack will be in the interest of all genuine masseurs.

#### GENERAL PARALYSIS AMONG JEWS.

GENERAL paralysis of the insane is stated to be a modern disease amongst Jews. Whilst epilepsy has been notoriously rife amongst them from an early date, being mentioned, indeed, by the Talmud writers, general paralysis has practically only occurred in the last 50 years. Sichel<sup>1</sup> finds the reasons for this state of things in the social and religious seclusion in which this people lived from mediæval nearly up to present times, and in their former habit of early marriage. The older Jew was of strict sexual morality. It is quite plausible, therefore, that the Jew suffered less often from syphilis and its sequelæ than did the Gentile. But if a change in life conditions favoured and actually produced more frequent syphilitic infection, then conceivably the type of the disease might be more severe in a race long unfamiliar with it. The same conditions, a pent-up life continuing for many generations, which have resulted in familiarity with tuberculosis, followed by some slight racial immunity to it, have, on the other hand, resulted in unfamiliarity with syphilis and consequent lack of

resistance; in particular lack of resistance on the part of the cerebral tissues. At any rate, the facts of the case will bear some such interpretation. In the first place, the increase of general paralysis coincides in date with the Jew migration from small towns and villages into the great cities, Berlin now containing a quarter of all the Jews in Germany, and New York over a million American Jews. Big cities, of course, offer opportunities for impure sexual commerce, and the life in them is exhausting to the nervous system. In Vienna two different alienists found 20 per cent. of Jews among their general paralytics, and the disease in the whole of Austria occurred more frequently by nearly a third in Jews than in Gentiles. The same phenomenon appeared in London (Beadle), and in Frankfort. However, Russian Jews have (or perhaps one should say had) been compelled to be urban dwellers, agricultural pursuits being forbidden them. Yet general paralysis was rarely observed in their community. The explanation of this is probably that the Eastern Jew is more of the primitive national type than his Western brother, and keeps more strictly to Biblical and Talmudic precepts as to early marriage and pre-marital continence. The Talmud enjoins that every member of the religious community shall be married at 20 years of age. Western social life, especially urban, tends more and more to make such a precept, especially in the upper classes, quite impossible of fulfilment: the age of marriage is commonly much nearer 40 than 20, and pre-marital continence is consequently very much rarer, syphilitic infection very much commoner. It is further confirmatory that general paralysis in Jewish women is as uncommon as in Gentile women: the increase spoken of only occurs in males. Again, it is suspected that alcohol as well as syphilis has a place in the ætiology of general paralysis—it may be an important place, for Mohammedans, who are often syphilitic, but rarely alcoholic, suffer very little from paralysis. Formerly Jewish commercial travellers were those of their nation who suffered most with the disease, but this well-nigh exclusive incidence in one occupation has progressively declined, artisans and the labouring class having become more and more affected. The disease is becoming, as it were, popularised. At all events, the breaking down of national seclusion and tradition has run very closely with the decline in freedom from general paralysis, and the arguments advanced do, as far as they go, suggest a certain measure of causal connexion between the two processes.

#### KÖHLER'S DISEASE OF THE TARSAL SCAPHOID.

THIS condition is described by Dr. F. W. O'Brien,<sup>1</sup> of Boston, who reports a case in a girl, aged 3 years, as probably a non-infectious process, seen only in children and characterised clinically by swelling of the foot, pain on palpation and weight bearing, usually without constitutional signs and with some history of trauma. The disease appears to be due to delayed development of the ossification of the scaphoid, which is stimulated to osteogenesis by traumatism, and the pain and swelling may be due to post-traumatic osteitis. Less than 20 cases have been recorded since Köhler first reported three cases of the disease in 1908. It is probable, as Dr. O'Brien remarks, that both before and since it was frequently mistaken for cold tuberculous abscess. The diseased scaphoid

<sup>1</sup> Max Sichel: *Zeitschrift für Sexualwissenschaft*, June, 1919.

<sup>1</sup> Boston Medical and Surgical Journal, 1919, clxxx., 445-7.



presents the following X ray appearances: (1) It is one-half to one-quarter smaller than usual; (2) its form is entirely regular; (3) its architecture cannot be recognised, the cortex and spongy portion running together; (4) its density is increased two- to four-fold. The prognosis is invariably good, and recovery takes place independently of treatment, though the disease may last two or three years. Rest or support in some form is usually employed.

#### THE STUDENTS' NUMBER.

WE wish to thank all those who helped us so promptly in the production of the Students' Number of THE LANCET, which appeared last week. We desired to revert at the earliest opportunity to our practice for the last 60 years of issuing shortly before the commencement of the October session an educational guide to the medical profession for the use alike of those who are joining it, those who are in it, and their relatives. Circumstances will compel us from time to time to add to the statements made in the last Students' Number, as many things were in course of deliberation and re-arrangement at the time of issue. For example, there were published on Saturday last from the India Office new announcements concerning appointments to the Indian Medical Service. The announcements include the new rates of pay, and those are the same as we were able to publish; while the information in respect of the vacancies and of the circumstances qualifying the applications are now published in another column. We regret as yet to be unable to publish the new rates of pay in the Army Medical Service.

The following corrigendum has been brought to our attention. The Branch Medical Council office for Scotland of the General Medical Council is now situated at 20, Queen-street, Edinburgh, and Mr. T. H. Graham has succeeded Mr. James Robertson as Registrar.

#### THE STING OF THE BEE AND THE WASP.

THE grave symptoms which sometimes follow the sting of a wasp or bee render the observations of Mr. Edward R. Speyer, M.A., F.E.S., Investigator of Diseases of Trees at Oxford University, in a letter in the *Times*, of great interest. Little is known really of the nature of the poison of these insects, but it was for long accepted that the chief toxic agent was formic acid and that, therefore, the prompt application of an alkali to neutralise the acid, such as ammonia or the blue bag, avoided serious consequences. However effective that method may be in the treatment of a bee-sting, it is not only unsound in the case of a wasp-sting, but is likely to aggravate the toxic effects of the subcutaneous injection, for Mr. Speyer now shows that the sting of the bee is decidedly acid, while that of the wasp is distinctly alkaline. If, therefore, the toxic factors are an acid in one case and an alkali in the other, the choice of a neutralising agent is clear, depending upon the particular insect which discharged the venom. But it is doubtful whether the issue is as simple as this, for toxins, apart from any question of alkali or acid, though these may respectively be effective vehicles of toxins, are not negated by simple acid or alkaline applications. The case of the toxin of the serpent fang may be quoted. Still, the evidence is interesting that by extracting the stings of wasps and immersing them for a short time in an acid no

ill-effects resulted when they were driven as deep as possible into the flesh. We have ourselves observed that water in which wasp-stings had been immersed becomes distinctly alkaline, and, further, that the prompt application of vinegar as the nearest acid in domestic service will prevent inflammation. Onion juice, which is acid, acts similarly, and no doubt other acid vegetable or fruit juices would answer equally well. That the bee-sting is acidic and the wasp-sting basic is an interesting differentiation which should be widely known, for not uncommonly the sting proves to be not a simple puncture but the beginning of a toxic process sometimes fatal. A wasp-sting on the moist mucosa, as in the mouth, invariably leads to serious inflammation, with most distressing results. If the simple gargling or washing of the attacked spot with an acid fluid in such a case keeps down the swelling lives may well be saved. The season of wasps is with us, and these observations are therefore opportune. Amongst gardeners there is the belief that the wasp draws its venom from young laurel leaves, which are rightly reputed to contain prussic acid. Wasps certainly are fond of the laurel leaf, but while it seems certain that prussic acid is not the business element of their sting this acid may be the foundation of basic nitrogenous bodies of a toxic nature passed on by the sting. It will be remembered also that wasps, different from bees, are voracious flesh eaters, and meat materials easily enough give rise to basic substances.

THE death is announced of Dr. Alexander Macalister, F.R.S., professor of anatomy in the University of Cambridge, and a member of the Senate of Dublin University.

Two cases of rabies have occurred in the Colchester borough, one on August 15th and one on August 17th, and a third suspected case is now reported. No case of rabies has occurred in the administrative county of Essex.

THE Ministry of Health were notified on August 19th by the deputy medical officer of health of the Port of London Sanitary Authority that a member of the crew of the s.s. *Clan Lamont* was suffering from plague. The vessel was then in dock, but has since been taken into the river and fumigated. The clinical symptoms of the patient are those of plague, but the bacteriologist of the Ministry has been unable to verify the diagnosis, and no plague-infected rats have been found on the vessel. No further cases of illness have occurred on board, and the ship has sailed from the Port of London.

NATIONAL PHYSICAL LABORATORY.—The Lord President of the Council has appointed Professor Joseph Ernest Petavel, D.Sc., F.R.S., M.I.Mech.E., &c., to be Director of the National Physical Laboratory in succession to Sir Richard Glazebrook, C.B., F.R.S., who retires on reaching the age limit on Sept. 18th next. Professor Petavel is professor of engineering and director of the Whitworth Laboratory in the University of Manchester. He is a member of the Advisory Committee for Aeronautics of the Air Ministry. He was educated at University College, London, and undertook scientific research at the Royal Institution and at the Davy Faraday Laboratory until 1898. He was elected John Harling Fellow of the Owens College, Manchester, in 1900, and was scientific manager of the Low Temperature Exhibit of the British Royal Commission for the St. Louis Exhibition, 1904.



## AMERICAN MEDICAL GATHERINGS.

THREE important medical gatherings were held in the United States of America during the month of June. The seventieth annual session of the American Medical Association, which took the form of a "victory meeting" at Atlantic City, from June 9th-13th, has already been reported in THE LANCET.<sup>1</sup> There remain for brief comment the twentieth annual meeting of the American Therapeutical Society, the sessions of which, on June 6th and 7th, preceded the victory meeting at Atlantic City, and the Congress of American Physicians and Surgeons, of which the eleventh triennial session occupied June 16th and 17th at the same city.

At the American Medical Association the afternoon of June 11th was devoted to various aspects of industrial hygiene and their relation to public health, and this discussion, at which Dr. H. E. MOCK (Chicago) presided, merits attention.

Dr. W. J. CLARKE (Worcester, Mass.) dealt with

*Preventive Surgery as Demonstrated by Industrial Practice.*

In the treatment and repair of hernia the question often arose whether the condition was to be classed as an industrial accident. He had found that the sac was often congenital, and there was a distinct racial susceptibility. The question of recurrence was a difficult one. He often saw a sac adherent to the cord, with a small neck, and after amputation of the sac, although the repair appeared to be without a flaw, yet the patient was apt to come back later with a recurrence. No man with a definite bulge should be put to do heavy work.

Dr. W. S. SHERMAN (Pittsburgh, Pa.) said employers were coming to realise the importance of keeping their workers fit, and the immense loss entailed to industry by illness. Fortunately, injuries received in the steel mills were often sterile, as coal, coke, and iron did not produce infection. Dakin's hypochlorite solution, used according to the Carrel technique, had been found a useful solvent of necrotic tissue.

Dr. O. P. GEIER (Cincinnati) indicated how the industrial surgeon might stimulate the patient to seek early advice from an outside surgeon—e.g., in cases of neoplasm or appendicitis.

The PRESIDENT said that the timely examination and removal of diseased tonsils might save such complications as appendicitis and gall-bladder invasion, and even rheumatism. This was an important side of industrial prevention.

Dr. J. W. SCHERESCHEWSKY (U.S. Public Health Service, Washington, D.C.) stated his belief that intra-abdominal pressure was the result of opposition to contraction of abdominal muscles. The development of musculature had much to do with the prevention of hernia and its recurrence. With impaired tonus relapse must take place.

Dr. C. E. FORD (New York) dealt with

*Industrial Medical Practice and Sickness Prevention as a Factor in Public Health.*

Some years ago the employment of a physician was regarded as benevolence on the part of the employer. It was now beginning to be understood that industry would best be benefited by the employment of qualified physicians. Part-time service was of little use. Men adapted to undertake this work were those who had seen at least five years' general practice, had had experience in health department and dispensary work, with opportunity of acquiring the social view-point. Sanitation, nuisances, garbage disposal, sewage disposal, flies, housing, prevention of infection were all subjects of great educational importance. The frank discussion of venereal disease, the control of tuberculosis, the necessity of rest, and the like, were all matters of vital importance. Educational films could now be obtained at a very moderate cost. In a survey of the funds spent by 99 leading industries he found that \$2.50 was being spent per head annually in this way.

Dr. W. A. SAWYER (Philadelphia) said that there were approximately 30 million industrial workers in the United States, and industrial medicine served to reach a class that

could be reached by no other means. There should be coöperation between public health workers and industrial physicians.

Dr. D. L. EDSALL (Boston) stated that at the Massachusetts General Hospital a survey of patients attending the occupational clinic showed that in 5000 cases, or one-tenth of the total attending, occupation had something to do with the disability. The average industrial worker was said to lose eight days in the year from sickness. The opportunity for community service by the industrial physician was illimitable.

Dr. C. HASTINGS (Toronto) gave his experience of the department of industrial hygiene started four years ago in that city. "Show," he said, "the employers of labour how the loss of 10 to 15 per cent. of efficiency in the employee could be saved, and they would be willing to put in good ventilation or any other desired improvement."

Dr. A. WADSWORTH (Albany, New York) spoke of the need for industrial physicians to avail themselves of the facilities offered by the State for laboratory examinations. Systematic examinations in the venereal diseases would be of great industrial service, but if a demand for the work arose there was no doubt that the legislature would see fit to appropriate the proper funds.

Dr. SCHERESCHEWSKY enumerated six lines along which federal management of industrial medicine had been planned:—

(1) Extension of health service in industries to determine extent and means of correcting health hazards; (2) development of system of medical and surgical supervision of employees; (3) securing reports of the prevalence of disease among employees and sanitary conditions in industrial communities; (4) establishment of minimum standards of industrial hygiene and prevention of occupational diseases; (5) improvement of sanitation of industrial communities by coöperating with State and local health authorities and other agencies; (6) medical and sanitary supervision by public health service of industrial establishments owned or operated by Government.

Dr. GEORGE A. SOPER (Sanitary Corps, U.S. Army) dealt with

*The Efficacy of Measures for the Prevention of Disease.*

Of the three great lines of effort—namely, sanitation, public health administration, and personal precautions—only the first two had been developed. Respiratory infections were ten times as numerous as the exanthemata, and personal precautions were the largest factor in this question. Disinfection had come to take a secondary place, and proper ventilation and a high standard of cleanliness had been found of first importance. The soldier had been taught how to take care of himself. The time to study respiratory infections was before the attack appeared. It was for the individual to learn that the lessons of the Army were not for the Army, but to be appropriated by the whole world in times of peace.

Colonel KRAMER (U.S. Army) feared that unless the medical profession approached industrial hygiene in a more scientific and thorough manner they might lose control altogether, as the work was being done most efficiently by sanitary engineers.

Dr. L. I. HARRIS (New York) said it was a pity that after many enthusiastic meetings nothing was done. Resolutions ought to follow the matters discussed and the advice obtained carried out.

Dr. SCHERESCHEWSKY said that the responsibility rested with the community itself. The State and national boards were there for guidance and control. The individual citizen must play his part in demanding the best conditions.

Dr. SOPER, in closing the debate, regretted that only about 70 per cent. of the population were included in the vital statistics of the United States.

The scientific section of the American Therapeutic Society on June 6th opened with an address by Dr. DOUGLAS VANDER HOOFF (Richmond, Va.), the President, on

*Therapeutics and Gastro-Intestinal Disorders.*

In making a diagnosis of gastro-intestinal disorders the services of the internist, the roentgenologist, the oculist, the neurologist, or the surgeon, were, he said, often required. 1000 private cases (excluding definite lesions of the alimentary tract) in which the patients complained of "indigestion" were studied and the causative factors tabulated. Laboratory analyses and X ray pictures were made in all cases, and a Wassermann test was performed. Where

<sup>1</sup> THE LANCET, July 12th, 1919, p. 78.



the presence of more than one lesion was demonstrated the condition most likely to be the causative factor was tabulated. The most frequent cause was found to be chronic appendicitis (one-fifth of all cases); this, with gall-bladder lesions added, made one-third of all causative factors. Peptic ulcer formed one-tenth of all cases. Kidney and heart involvement, one-tenth. Cancer cases formed less than 4 per cent. of the whole. Hypo-acidity was present in about one-sixth of the cases. As regards symptomatology, loss of appetite, though an important symptom in children and in animals, was not prominent in adults on account of the number of artificial stimulants to produce appetite. Coated tongue exhibited no relationship to affections of the stomach. An analysis showed that the same proportion was found in hypo- and hyper-acidity, and that 62 per cent. of perfectly healthy persons had coated tongues. The causes seemed to be: (1) nasal obstruction; (2) absence of friction (as in liquid diet) and where the arch of the palate was very high; (3) perversion of salivary secretion, probably the most common cause and often found in neurotic individuals. Nausea and vomiting were common and found to be due to: (1) toxic states; (2) reflex disturbances from eyes or ears; (3) pharyngeal irritation as in alcoholics and smokers; (4) habit vomiting; (5) brain and spinal cord lesions. These were not frequent in gastro-intestinal disease, except in pylorospasm. Hæmatemesis indicated peptic ulcer or obstruction of the portal circulation. Flatulence was due in most cases to the eructation of atmospheric air that had been swallowed. Abnormal secretion of mucus in the stomach was a protective adaptation against irritating ingesta. Similarly, mucus in the stools was a protective measure of the intestine against the irritation of cathartics. The first treatment for this condition was complete rest for the bowel. Then treatment by belladonna and mineral oil would effect a cure. Indigestion would be found to be caused, not so much by the food eaten as by the state of the gastric nerves during eating. As regards therapeutics, drugs had their place; belladonna was indicated in pylorospasm and digitalis in chronic passive congestion of the liver. In some cases psychotherapy was called for.

#### Discussion.

Dr. T. F. REILLY (New York) said that the last place to look for stomach symptoms was in the stomach itself.

Dr. JACOB DINER (New York) spoke of kidney lesions as the cause of indigestion; these were usually of the chronic interstitial or parenchymatous kind. In the very poorest dispensary class in New York City 65 per cent. of all complaints was of indigestion, and upon investigating the teeth large pus pockets and alveolar abscesses were frequently found. If these people would have their teeth looked after the indigestion disappeared of itself.

Dr. O. T. OSBORNE (New Haven, Conn.) laid emphasis on the character of the food taken. Many persons undoubtedly were eating wrongly. In order to gain weight young people were apt to drink milk as they would water with solid meals, thus putting too much work on the stomach. The giving of digestives, as such, outside of needed hydrochloric acid, was rarely necessary.

Dr. F. M. POTTENGER (Monrovia, Calif.) discussed the question from the standpoint of histology and neurology. Stimulation of the vagus nerve caused increased tension throughout the whole gastro-intestinal tract. Thus, with increase of tension the whole syndrome of appendicitis might be produced, as well as that of hyperchlorhydria. The stimuli did not explode in all individuals at the same time, and appendix stimulation might produce increased acid and motility of the stomach or intestinal tract with irregular contraction and pain in one case, or it might produce intestinal stasis with resulting biliousness in another. A large group of people were vagotonics. The main point in stomach indigestion was to find out whether the case was due to sympathetic or to vagus stimulation.

The regular sessions of the Therapeutic Society were devoted to a discussion on Physiological Researches in their Relations to Therapy, introduced by Dr. J. C. HENMETER (Baltimore) and Dr. R. T. MORRIS (New York); on Glandular Therapy, introduced by Dr. E. B. MCCREADY (Pittsburgh) and Dr. A. A. LESCHNER (Detroit); on Thoracic Affections and their Management, when papers were read by Dr. H. C. GORDONIER (Troy, N.Y.) and Dr. E. ZUEBLIN (Cincinnati); and a symposium on Epidemic Influenza, to which Dr. F. E.

STEWART and Dr. H. C. WOOD, jun. (Philadelphia), Dr. J. DINER, and Dr. N. P. BARNES (Washington) contributed.

#### *The Present Teaching of Therapeutics.*

At the concluding session Dr. S. L. DAWES (New York) gave an address on the Present-day Teaching of Therapeutics. Medicine, he said, had now become a science more or less exact, teaching being based more upon careful statistical data, case-histories, hospital records, laboratory findings than upon exposition of individual opinion. Students were taught to carry out a Wassermann reaction, to do a spinal puncture and examine stomach contents, to differentiate typhoid and paratyphoid, and to have intimate acquaintance with calories, opsonins, and vitamins; but excepting in surgery the cure of disease had become a secondary matter. Materia medica was not taught and therapeutics, with a few notable exceptions, ignored. The pendulum had swung far from the practice of polypharmacy and "shot-gun" prescriptions. The first assault of any magnitude upon this part of the curriculum was made by a clique of medical politicians who arranged the passage of the Medical Practice Act of 1909, when materia medica and therapeutics were removed from the list of subjects in which a candidate was required to pass in order to practise medicine, with the result that osteopaths could practise without any examination of any kind. Not one of the larger medical schools now taught materia medica, and pharmacological teaching consisted for the most part in studying the action of drugs on animals, and did not include the properties and dosage of drugs, their methods of administration, and their incompatibilities. Only two of the first-class medical schools taught applied therapeutics, in most of the 15 it was taught as an accessory. What wonder, therefore, that the practitioner gave fever tablets, kidney pills, coryza tablets, heart tonics, hepatic stimulants, and anti-this and anti-that, while the public crowded the waiting-rooms of osteopaths, chiropractors, Christian scientists and charlatans, or turned to religious newspapers to read the statements of ex-Statesmen and clerical incompetents as to the value of some patent article. The full-time teacher had pushed out the experienced clinician.

An animated discussion followed, in which Dr. VANDER HOF, Dr. DINER, Dr. REILLY, Dr. OSBORNE, Dr. C. E. DE M. SAJOUS, Dr. H. WOOD (Philadelphia), and Dr. POTTENGER took part.

The meetings of the Congress of American Physicians and Surgeons occupied two afternoons, of which the first was devoted to the Surgical, and the second to the Medical, Aspects of Reconstruction.

Dr. SIMON FLEXNER (New York) delivered the presidential address on

#### *Epidemiology and Recent Epidemics,*

basing his remarks on the wave of poliomyelitis which passed over New York and contiguous States in 1916, leaving its mark on a portion of the population during the lifetime of the youngest individuals. Medical literature afforded no parallel for that epidemic. 20,000 cases were recognised, of which one-fourth recovered and one-half are still suffering from the consequences of the disease. In 1917-18 there appeared in the camps of the country, spreading thence to the civil community, an epidemic streptococcus infection, localised in the lungs and affecting the pleura, creating a large amount of sickness and disability among troops, and resulting in many deaths; this infection increased in severity as the disease progressed. But these two visitations were mild and inconspicuous in contrast with the great epidemic of influenza, which caused so many more deaths than the war that the two calamities were hardly to be compared. And yet the havoc of disease left the great mass of people unmoved. It was the duty of the medical profession to ensure that the attitude of the people towards disease calamity was similar to that adopted towards ill-government. In regard to poliomyelitis we had two pieces of essential information—the nature of the germ and its dissemination—but there were things about the microbial origin of this disease which were still hidden. It was not enough for the germs to be identified, there were qualities of virulence, subject to fluctuations and variations, and called forth by circumstances over which we had as yet no control. These phenomena were by no means incapable of being discovered, but results could only go just so far as the public



mind was ready to receive knowledge and to adopt measures which flow therefrom. In regard to the epidemic of influenza, we were confronted with the question whether of that disease we had the essential fundamental knowledge. Epidemics of influenza had been recorded since about the sixteenth century. The great outbreak of 1889-92 coincided with the discovery of the Pfeiffer bacillus, fairly accepted by the world as the cause of influenza. But to-day the position of the Pfeiffer bacillus was not as strong as it was in 1892. The development of laboratories as accessories to medical practice had brought a practical knowledge of epidemic problems and of the application of knowledge to clinical purposes. If it had not been for the disorganisation of forces due to the war there would doubtless have been a frontal and massed attack on the problem. If scientific opinion was still uncertain as to the rôle of the Pfeiffer bacillus, the disease was at all events well under investigation, and certain lines of work, not yet published, were likely to have a profound effect on our views of the microbial origin of the disease. There was a movement towards the belief in a filterable or invisible micro-organism, but the evidence that this type of virus was related to the disease should be just as complete as in the case of a visible organism. The cause, whatever it was, of influenza was mysterious and elusive. It attached itself to persons and was carried about with them. The disease appeared, disappeared, and reappeared. In the history of epidemics influenza took its origin in a region somewhere near the Russian border of Turkestan, spreading along the trade routes as rapidly as transportation moved. In the last epidemic in which the speed of travel had been greatest it spread East and West, to Spain and to China, and in 1919 over the entire globe. Small numbers of individuals were first affected, then larger numbers, then whole communities fell victims. A curve representing the speed of travel of poliomyelitis, compared with that of influenza, showed the progress of the former by weeks and months, of the latter by days and weeks. The curves were extremely similar, first a slow rise, then a steep rise, then a level maintained, then a steep fall or decline. The seeming mystery was, in fact, due to definite causes, like ordinary infections. Particular organisms, the presence of which might or might not cause the actual disease, gained access to the body, the persons carrying it possibly being immune, and yet transmitting it to others. Both these diseases had homes. Poliomyelitis had an endemic home in North-Western Europe. In 1881 it was recorded in Norway and Sweden, where an epidemic outburst preceded the general spread to other parts of the world in 1903-5. If the disease could be arrested in the influenzal stage we should have little to complain of, but we were confronted with the menace of a second disease, pneumonia, more severe, which became grafted on a widespread, relatively innocuous infection. However influenza germs entered the body, we knew that the pneumonia organism entered by the nose and throat and spread under circumstances rendering possible an inflammation of the lungs. Whatever we might think concerning influenza, there was no doubt that we should prevent that most serious complication. What were the proper measures of eradication of these great epidemic calamities? We had a splendid example of eradication of disease in yellow fever. We did not wait for the disease to become epidemic, it was destroyed in its endemic home. The endemic focus of influenza was somewhere on the eastern border of Russia. It was not too much for a reconstructive medical profession to conceive the cleansing up of such a region as that, which by its inaccessibility and its neglect had every 25 or 30 years originated waves of disease spreading over the globe. We might imagine communities intelligent enough to hold their officials responsible for control of disease, as nations have proven that they have held their rulers responsible for control in the war. Communities should be so taxed for public health that they would have the means and power to put into office those best qualified to carry out measures on a parallel with knowledge, holding them responsible, and, if they did their work ill, letting them suffer the consequences.

On the second evening of the Congress Dr. FRANK BILLINGS (Office of the Surgeon-General, Washington, D.C.) gave an address on the Physical and Mental Rehabilitation of Disabled Soldiers of the United States Army, with an exhibition of films illustrating physical reconstruction in the military hospitals.

## MEDICAL MATTERS IN SPAIN.

(FROM OUR OWN CORRESPONDENTS.)

### *Patent Medicines in Spain.*

IN the interests of public health and in response to numerous representations made by the medical and pharmaceutical professions of the country the Spanish Government has at last undertaken to regulate the traffic in proprietary medicines, and to this effect it has promulgated an Order dealing with the manufacture and sale of such preparations equally applicable to national as well as foreign products. It defines a pharmaceutical specialty as "every medicament of known composition, distinguished by the name of its originator or by a fancy appellation, put up in uniform packages and destined for sale in a pharmacy or elsewhere. Preparations the composition of which is partially or totally unknown, as well as those merely stating that they 'are prepared from,' are to be regarded as secret remedies, the sale of which is prohibited." Unless the preparation marketed as a proprietary is made in accordance with a formula contained in the Spanish or in a foreign pharmacopœia, in which case it must be labelled with the official title, and without any additional qualification, it must be registered with the general inspection of the board of health before it may be sold in Spain. Application for registration of a proprietary medicine must be accompanied by the package (in the case of foreign preparations three packages must be submitted), the designs or proofs of the label, wrapper, and prospectuses relating to the preparation, the exact composition, and the grounds which induce the manufacturer to place the product on the market in the form of a proprietary medicine. When registered the preparation may only be sold provided the label and all printed matter referring to it mention the name under which it has been registered, the name of the maker and his profession, where it is manufactured, its composition, the serial number, and date of its registration. Proprietary medicines may only be manufactured by pharmacists or in establishments where the director and the technical personnel are pharmacists. In the case of foreign specialties the professional qualification of the applicant must be certified by the competent health authority of the country of origin on the back of the application for registration.

Questions relating to the therapeutic or pharmacological action of a proprietary medicine submitted for registration will be referred to the Royal National Academy of Medicine for its decision. The health authorities are entrusted with the task of supervising the sale of such products and of enforcing the observance of these regulations. If it is found that the composition of a registered proprietary has been altered, and does not correspond with that entered on the register, its sale will be stopped and a renewed application for registration by the same manufacturer will be refused. The registration in each case is strictly personal, and on the death of the holder, or in the event of his ceding his interest in the preparation to another person, or if the manufacture is entrusted to another party, a fresh application for registration must be made by the new owner. Proprietary medicines which contain potent drugs, defined as all substances of which the maximum initial dose ranges from a fraction of a milligramme to 5 centigrammes, as well as those possessing a drastic, antipyretic, emetic or emmenagogue action, and, in preparations for external use, a caustic or irritant effect, may only be sold in a pharmacy. If the preparation consists solely of one or more drugs answering this description, it may only be supplied on production of a medical practitioner's prescription. The manufacture and public advertisement in any form of any remedies directly or indirectly destined to prevent conception, is forbidden, as well as any references to the possibility of such use. In the case of proprietary medicines at present on sale in Spain, whether national or foreign, a period of two years is allowed in which registration can be effected. All new preparations of this class, as well as the importation of specialties not at present on sale in Spain, must comply with these rules before their sale in Spain is permitted.

### *Marine Sanatorium for Children Suffering from Surgical Tuberculosis at Gorliz, Vizcaya.*

Lately there was opened a magnificent public charity, which, it is hoped, will be a model of its kind for many



others in Spain. The writer first paid a visit to the place some six years ago, when the sanatorium was only in the early stage of construction. Founded by the Provincial Council of Vizcaya and aided by voluntary contributions, its progress to the present state of usefulness has been slow, but the result is highly satisfactory. For situation, plan, and internal arrangements it would be difficult to beat. The model is that of Berck-sur-Mer in France and also, as I was later informed, the Marine Sea Bathing Hospital, Margate. The sanatorium contains 300 beds and is on the Bay of Biscay some 15 miles from Bilbao, lying close to the sandy shore of a little bay, facing due west. It is surrounded by hills, which are only broken in their continuity by a gap which forms the bay. A more perfect arrangement for heliotherapy it would be difficult to plan. As a suntrap the aspect has been specially chosen. The wide verandahs in front and behind each ward are for morning and afternoon use respectively. The flat roof of the central block is also designed for open-air treatment. The sanatorium is a massive stone structure, cemented, and white in colour, with square blue tiles arranged in bands near the top, giving it a curious speckled appearance in Basque style. It consists of three floors with large wards identical in character, the walls and floors tiled, but with the angles duplicated, not rounded, the wider angles affording less lodgment for dust than the gutters of the usual kinds. In all the passages the gutter angle, however, prevails. Each ward contains space for 20 cots, with a cubic space of 50 metres for each. The cot is of white enamelled iron fitted with a movable lattice tray suspended by hooks for the purpose of raising or tilting the hair mattress upon it. A white-enamelled iron and glass locker is beside each cot. So far only 30 little patients are in the hospital, and these, when I last visited the place, were lying in their cots on one of the spacious verandahs outside the wards. They were basking in the afternoon sun on the western side practically in a state of nudity, many so sunburnt as to be peeling, for the doctors believe in the beneficial effects of the direct solar rays on skin tuberculosis and joint disease. Even dressings over open wounds were cast aside and pus welled up by the action of kicking legs. In front of the sanatorium the quiet ripple of the tide was creeping over the sand of a perfect bathing-place, where in suitable cases sea-bathing augments the cure. There is a complete installation for X rays adjoining the operating theatre, sterilising apparatus of up-to-date pattern, shoots for soiled linen, and many ingenious contrivances of a sanitary kind. The water-closets and baths are provided by an English firm, Twyford's. The large laundry in the basement is complete with the latest machinery. The whole building can be heated throughout by steam radiators. The kitchen is in a separate block at the back, and contains the most modern kind of boilers and cookers, worked by super-heated steam. There are buildings for the nursing staff, a chapel, and a special separate block called the "lazareto" for cases of doubtful tuberculosis for observation purposes. The cost of the whole sanatorium when complete will be upwards of £170,000.

## SOUTH AFRICAN NOTES.

(FROM OUR OWN CORRESPONDENT.)

### *A Mild Recrudescence of Influenza.*

THE Union Department of Public Health reports that after the epidemic of October and November last occasional sporadic cases and small localised prevalences have continued to occur throughout South Africa. Up to the end of April last the reported cases averaged 166 and the deaths 10 per cent. of the cases. May ushered in cold weather and increased influenza cases and deaths. It will be seen from the following figures that there was a remarkably large increase in the number of cases—though happily not in deaths—during the last week in June and first week in July. This is the South African mid-winter, and it has been a singularly mild one. The figures have been for the weeks ending—

	Cases.	Deaths.		Cases.	Deaths.
May 17th .....	1025	60	June 14th .....	1701	134
" 24th .....	691	56	" 21st .....	1933	165
" 31st .....	1363	116	" 28th .....	4272	163
June 7th .....	1297	10	July 5th .....	5706	196

Many mild cases escaped notification. While some of the localised prevalences have been fairly severe the disease, generally speaking, has been of much milder type than during last year's epidemic, and with less tendency to pneumonia or other complications. The incidence has been more severe on those localities and classes of population which escaped comparatively lightly last year. Although second attacks are not uncommon, persons who escaped last year are now the principal sufferers. The incidence of the disease on children and elderly persons, formerly light, has now become heavier. At Pietermaritzburg, and in certain other districts, the schools have been closed. The disease has been particularly severe in the Heilbron district, Orange Free State, where there have been over 60 deaths. The severity is now abating, but recent cases have much sooner developed pneumonia than previous ones. It is reported that influenza in the Hekpoort Valley and along the Magaliesberg, Transvaal, is worse than it was last year. Whole households are down in some cases, and, unfortunately, without any doctor, nurse, or medicine being available. Dr. J. Anderson, medical officer of health, Capetown, reported on July 4th that the influenza position in the city is quite satisfactory. Capetown suffered exceptionally severely in last year's epidemic.

### *A Stricken Transport.*

Epidemic influenza occurred on H.M.S. *Kursk*, which left Sydney, Australia, on May 4th, with a ship's complement of 213, military personnel 109, and 995 German internees. There were three doctors and three nurses on board. The vessel arrived at Durban on June 21st, and reported 635 cases of influenza during the voyage; deaths, 1 guard and 16 internees; 94 sick on arrival, 7 very seriously. The vessel was quarantined. All serious cases were landed and isolated in hospital, where two died. The vessel was thoroughly cleansed and disinfected, while the internees were kept on Salisbury Island and the Bluff; no further cases occurred, and the vessel sailed for Europe on June 28th.

### *Tribute to a Lady Doctor at Capetown.*

Dr. Jane Waterston, a medical practitioner and ardent social worker at Capetown, was presented on Friday, July 4th, with an illuminated address, a letter case, and cheque, subscribed for by the citizens, as a small mark of their appreciation of Dr. Waterston's medical, social, and missionary labours during the last 50 years. Dr. Waterston became half a century ago a coadjutor of Dr. Stewart at Lovedale Native College, and, embracing the medical profession, was afterwards a missionary in Nyasaland, following in Livingstone's steps. For the last 30 years she has done a great social work at Capetown, especially for the Free Dispensary there. The Mayoress of Capetown (Mrs. W. J. Thorne) presided at the gathering, and said that the example of self-sacrifice and devotion to ideals of duty displayed by Dr. Waterston in South Africa would be an inspiration to all the women of the country. A letter was read from the Right Hon. John X. Merriman, M.L.A., the G.O.M. of South African Parliamentary life, which concluded:—

"May God bless Dr. Waterston, and may she still live many years to shed the light of her holy and unselfish life over the dark places of South Africa is the heartfelt wish of her admiring friend,

JOHN X. MERRIMAN."

Sir John Buchanan, in paying his tribute to Dr. Waterston, said that she had embraced the medical profession because of her enthusiasm for the succour of humanity, and he had been credibly informed that she had actually walked hundreds of miles on foot in the interior of Africa, all in the cause that she had at heart. Dr. Waterston, in acknowledging the testimonial, said that it was the most trying time of her life. She intimated that she did not propose to leave off public work.

Dr. Alex. Ogg has accepted appointment to the chair of Physics in the University of Capetown.

BELFAST LOCAL GOVERNMENT BOARD MEDICAL INSPECTOR.—Dr. John McCloy has been appointed by the Local Government Board their medical inspector in charge of the Belfast district, in place of Mr. E. F. Stephenson, transferred to another area. This appointment will greatly strengthen the Local Government Board, as Dr. McCloy has a thorough knowledge of modern pathology and bacteriology, and was up to the date of his present appointment senior assistant in the work of the tuberculosis scheme in Belfast.



## NOTES FROM INDIA.

(FROM A REGULAR CORRESPONDENT.)

*Burma Pasteur Institute.*

At the Burma Pasteur Institute during 1918-19 595 persons sought advice as compared with 426 in the previous year. The number of persons bitten by animals of proved taint who submitted to the full course of treatment fell from 183 in the previous year to 105 in the year under review. There were no deaths during the year from hydrophobia amongst those who submitted to treatment, whilst at least four deaths from this cause are reported to have occurred amongst 34 individuals who declined to undergo treatment.

*Influenza Recrudescence.*

The following communique has been issued by the Government of India:—

Outbreaks of influenza are reported from Bombay, Calcutta, Rangoon, and Madras. These outbreaks do not (save in the case of Bombay) appear to have attained serious dimensions. Nevertheless, they coincide in time with the preliminary outbreaks of last year, and though there is at present no reason to apprehend an epidemic of the same proportions the measure of immunity conferred on any individual by a previous attack is uncertain. Accordingly the following steps have, among others, been taken as a preliminary precaution.

The Government of India have suggested to Maritime Governments the taking of power to notify by rule under the Indian Ports Act ship-borne cases of pneumonia, and discretionary power similarly to deal with ship-borne cases of violent influenza. They have requested early intimation of all outbreaks in order that timely warning may be given to the authorities in neighbouring areas and to the public.

Stocks of anti-influenza vaccine are being made ready for early transfer to centres of infection. Surgeons and administrative medical officers are being invited to indent for supplies to be ready on the spot in case of emergency.

A specialist has been deputed to Bombay to deal with the situation.

The Sanitary Commissioner with the Government of India has distributed widely a leaflet dealing with influenza and the course that should be taken in case of an outbreak. This has been communicated to the press. He has specially recommended the use of an aniline nasal douche as an effective prophylactic.

Though there is no immediate cause for alarm, it has been thought advisable to inform the public of these new outbreaks in order that the necessary precautions may be taken and, should the disease show signs of further extension, other communique will from time to time be issued.

Extra medical precautions have been taken at Howrah station to meet returning pilgrims from Puri. It has been ascertained that influenza is raging in epidemic form at Puri. At Howrah doctors treated 40 cases of influenza and 1 case of cholera.

*Infant Welfare Exhibition at Delhi.*

A maternity and infant welfare exhibition will be held in Delhi in February, 1920. It will be reserved for women on certain days, but will be open to men at other times. The proper care of mothers and babies will be shown by means of model exhibits, leaflets, lectures, pictures, magic-lantern slides, &c. The exhibition will be arranged in the following sections: pre-maternity, maternity, infant welfare, childhood, domestic hygiene, and sanitation, first aid and home nursing. A baby show will also be held. The whole will be under the patronage of Lady Chelmsford. It is hoped that this exhibition may be the forerunner of many others both in Delhi and in other cities of India, and that it may lead to a great improvement in the condition of childbirth and the welfare of young children.

*Shortage of Medical Officers.*

A leading Indian journal says:—

We understand that the Government of India are drawing the attention of the Secretary of State to the extremely serious shortage of regular officers of the Indian Medical Service and urging recruitment of a large number of European officers for enrolment permanently. The Government of India have also proposed that certain measures recommended by the Medical Services Committee as likely to increase the attractions of the I.M.S. should be announced in England at once. We further understand that the increased rates of pay for the I.M.S. in civil employment will be announced very shortly, and that these rates will take

effect from Dec. 1st, 1918.<sup>1</sup> This action of Government will help to allay the apprehension created by the grave state of affairs to which we have repeatedly directed attention, and it will also no doubt afford some encouragement to over-worked officers of the I.M.S. who are almost at breaking point. There is no disguising the fact that the present position is well nigh desperate. More than 60 per cent. of the I.M.S. civil officers are still in military employ, and military employments in India are increasing, not diminishing. India itself has been ransacked for doctors to make good the deficiency and the only hope now lies in making the terms of service so attractive that the necessary number of men will be forthcoming from the medical schools at home. We are glad to learn that the Government of India recognise that the matter is one of extreme urgency and are apparently determined to put it right. But it will not be so easy as it would have been before the war to obtain recruits by improving the conditions of the Service. There probably never was a time, indeed, when the opportunities open to medical men at home were so favourable as they are at present. This is an additional reason why there should not be a moment's unnecessary delay in taking the definite action which the gravity of the situation demands.

*War Gratuity of the Indian Army.*

Issuable on the British scale, the Government of India announces that it has been decided to issue to regular officers in the Indian Army, Indian Medical Service, and of the British garrison in India, and to departmental officers with honorary rank of the Indian Unattached List a gratuity for war service on the same conditions generally of those announced for officers of the British Army in Army Orders IV., dated June 7th, 1919. The gratuity will be payable in the case of officers still on the active list on August 4th, 1919, or the termination of war as defined by statutory authority, whichever is earlier. It is not payable to any officer commissioned after February, 1919. Officers who have retired and the legal representatives of officers who have died or been killed in the war should apply for a form of claim to the Secretary, Military Department, India Office, London, S.W. 1.

*New Medical Scholarship.*

Lieutenant-Colonel W. D. Smith, commandant of the Madras Guards, has presented a scholarship valued at Rs.1200 to the Madras Medical College for students in chemistry and drugs.

*Calcutta University Commission*

A summary of the report of the Commission has been published. It concludes as follows:—

We desire to make it clear that certain reforms in the University of Calcutta ought not to be postponed whatever scheme be adopted—namely, the provision of further residential accommodation, the provision of a teachers' training department, the provision of additional accommodation for teaching, and the provision of measures for supervising and improving the health of the students.

August 10th.

## CONTROL OF VENEREAL DISEASES.

*Early Preventive Treatment and the N.C.C.V.D.*

A RECENT deputation from the National Council for Combating Venereal Diseases, led by Sir Malcolm Morris, was received by the Public Health Committee of the London County Council. Its object was to urge the County Council to make provision, through its scheme for the diagnosis and treatment of venereal diseases in London, for early preventive treatment—that is to say, "treatment at an approved centre within a short time after exposure to possible infection." The question also arose of treatment before exposure, and of the alleged objections to such treatment on the side of public morals. It was stated by the deputation that for early treatment to be effectual in the prevention of syphilis, it must be initiated within six hours after exposure to risk. It therefore follows that it would be necessary to institute a very large number of early treatment centres, accessible at all hours of the night and day. The Public Health Committee stated that with one exception the committees of all the London hospitals at which venereal clinics were in operation had definitely expressed the opinion that it would

<sup>1</sup> The new rates of pay for the military and civilian sides of the Indian Medical Service were given in the Students' Number of THE LANCET, August 30th, 1919, p. 393.



be impossible for them to introduce early preventive treatment on these lines. The National Council has made inquiry of medical officers of health of certain provincial towns, but apparently no steps have been taken to provide opportunities for such treatment. The Public Health Committee came to the considered conclusion that quite apart from the moral issues involved, although benefit might accrue in individual cases, yet this would be nullified by the resultant increase in the number of cases exposed to infection. The Committee therefore recommended:—

"That in connexion with its scheme for the diagnosis and treatment of venereal diseases the Council is not satisfied that the public provision of early preventive treatment as suggested by the National Council for Combating Venereal Disease is desirable, and that the National Council be informed accordingly."

We would ask our readers to consider what the result will be if this policy of passivity be persevered in.

1. If we regard the question in its bearings upon public health we shall find that a far larger number of patients would ultimately require treatment for these diseases at a stage when it will be much harder and take more time to effect a cure, whilst in some instances it will be impossible for them to recover. Many sufferers before they recognise themselves as such will have communicated the infection to others. Some of these will be visitors to the large towns, who on returning to their country homes will find it difficult to secure adequate treatment for themselves or their conjugal victims. Whilst we are endeavouring to secure treatment for venereally-infected pregnant women and attempting to treat infants suffering from congenital syphilis and gonorrhœal ophthalmia, we shall be neglecting the obvious course of trying to eliminate the factors responsible for the production of such lamentable results—in other words, we shall be providing wilfully a constantly increasing and preventable stream of maternal and infantile infection.

2. The community will achieve economy if those responsible for its welfare will adopt early preventive treatment. If they do not institute such centres then vastly increased sums will eventually be expended upon institutions at which an increasingly large number of patients suffering from the fully developed disorders will have to be treated. Further, great sums will be called for to maintain the army of parasyphilitic patients in asylums, infirmaries, &c. More medical men will be required for the efficient working of curative clinics as apart from preventive ones; this will entail an augmented salary list and deflection of medical energy from other spheres. The loss to the nation in productive working power through patients incapacitated will be as immense as it will be unnecessary.

Doubtless the National Council for Combating Venereal Diseases will not allow the position to remain as it is, and we ask our readers to augment their efforts.

#### *Hostels for Gonorrhœal Patients.*

Medical officers in charge of venereal clinics are now faced with a variety of problems. A very difficult one is represented by the question as to what to do with patients suffering from gonococcal epididymitis who are unable to carry out the required treatment. Take the case of a man living in a single room, without attendance, unable to obtain a supply of hot water, and so on; he is terribly handicapped, both as regards relief from suffering and ultimate recovery. His treatment entails more work and a greater demand on the resources of the venereal clinics. There is also in these cases a prolongation of the period of infectivity and a greater prospect of sterility ensuing. The general hospitals to which clinics are attached can hardly be expected to give up beds for this purpose; but what objection can be advanced to the institution of hostels to which clinics can send those cases which cannot be treated adequately in their own homes? The dictates of humanity, of national health, and of economy (financial and temporal) demand such a step, which we commend to the Ministry of Health. Once the practical necessity is admitted, the question of sites, staff, and salaries is capable of ready solution.

#### *Travelling Consultants for Venereal Clinics.*

Owing to the rapidity with which venereal clinics are now being formed, it follows of necessity that many of the medical officers in charge of them are practitioners who have as yet had but small opportunity of gaining experience in such work. Cases will be brought before them which

call for an opinion, to be acquired only by a large and long experience. We are assured that medical officers who are possessed by the desire to do the best for their patients and to acquire knowledge for themselves would welcome an expert opinion. Might not the Ministry of Health select a certain number of experts from different parts of the country who would be willing when called upon to visit clinics on the request of the medical officer in charge? Such experts would naturally work under the ægis of the advisor or advisors to the Ministry who have been, or may be, appointed. Since these consultants would only visit a clinic on the invitation of its medical officer, any objection to such a scheme on the score of interference or compulsion would be nullified.

#### *Systematic Care in the Sexual Diseases.*

In an article with this title<sup>1</sup> Dr. James Bayard Clark, U.S.M.C., gives a practical account of the organisation, equipment, and treatment routine at the Genito-Urinary Clinique at Camp Logan. Medical officers in charge of venereal treatment centres and those about to assume such command should study this graphic description with care. Hospitals, municipal boards, and other bodies constructively inclined might gain by assimilating the hints contained therein before beginning to build. The description of the department devoted to early or prophylactic treatment possesses a particular topical interest in view of the present tendency to initiate such "early treatment centres" throughout this country in the interests of civilian health.

## TUBERCULOSIS.

#### *Residential Treatment for Discharged Sailors and Soldiers: Report of the Inter-Departmental Committee.*

THE Committee appointed last April by the Minister of Health and the Minister of Pensions "to consider and report upon the immediate practical steps which should be taken for the provision of residential treatment for discharged soldiers and sailors suffering from tuberculosis and for their reintroduction into employment, especially on the land," has issued its report (Cmd. 317, price 6d.). It is calculated that about 35,000 ex-Service men are suffering from tuberculosis traceable to, or aggravated by, the conditions of service. Of these, about 22,000 have received, or are receiving, residential treatment. Though it is conceded that the priority of treatment hitherto afforded the ex-Service man should continue, it is pointed out that the problem of the tuberculous ex-Service man is only one aspect of a national scourge. The present accommodation for institutional treatment is inadequate, for the number of beds for tuberculosis in the United Kingdom amounts only to 19,500, while only 10,000 to 11,000 of these are available for adult men. The report recommends an immediate and considerable increase of accommodation, as well as the most effective use of existing means of treatment. Generally speaking, Army hutments are unsuited for the treatment of tuberculosis, though the best of them, if used in their present position, may prove, at any rate, of temporary use. It is suggested that local authorities ought to secure these huts, without charge, from the Government.

Of the many schemes submitted to it the Committee find the colony system the best. This would provide (1) sanatorium treatment, (2) training, (3) permanent village settlement with employment under medical supervision, the three sections being intimately correlated in the same area. It is suggested that the Government should at once make provision in the Estimates for £1,000,000 for the finance of village settlements, primarily for ex-Service men. These settlements might be provided by local authorities or voluntary bodies. In the former case the capital sum should be provided by the Government. After, say, five years, the local authorities might contribute to the cost by paying not less than one-fifth of the capital expenditure. The Committee insist on the superiority of sanatorium over home treatment for advanced cases, and urge local authorities and large employers of labour to provide special facilities for employment of those ex-Service men for whom the village settlement is not a satisfactory solution of their difficulties.

<sup>1</sup> Journal of the American Medical Association, April 26th, 1919.



*Paris: Post-Graduate Courses in Tuberculosis.*

Three post-graduate courses in tuberculosis will be given in Paris during the coming academic year under the direction of MM. Bernard, Bezançon, Calmette, Kuss, Letulle, Rist, Sergent, and Teissier. The courses will be of six weeks' duration, commencing on Oct. 20th, 1919, and April 15th and June 15th, 1920. They will be essentially practical in nature, and will include pathology, bacteriology, physical diagnosis, X ray, laryngology, social welfare and dispensary administration. Opportunity will be afforded to the students to work each morning in a dispensary or hospital under the guidance of the lecturing physicians. The course will be open to graduates in medicine who are citizens of France or of allied and neutral countries. The Commission for the Prevention of Tuberculosis in France will grant subventions to a limited number of French physicians. Further details of the course may be obtained from Dr. E. Rist, 5 rue de Magdebourg, Paris.

*Tuberculosis in Norway and Sweden.*

*Norway's expenditure on tuberculosis.*—Since the adoption of the tuberculosis law of 1900 Norway has contributed increasingly large sums to the campaign against this disease. In 1901 the State's budget for tuberculosis was Kr.80,000. By 1908 it had risen to about Kr.250,000; by 1914 to Kr.450,000; by 1916 to Kr.900,000; by 1917 to Kr.1,300,000; and by 1918 to Kr.1,800,000. For the year 1919-1920 the State has budgeted for about Kr.3,225,000. It will thus be seen that since 1901 the funds officially provided for tuberculosis have been multiplied by about 40. This enormous rise is partly connected with the general rise of prices, but the chief factor is the State's recognition of the necessity for constantly undertaking new campaigns against the disease. It realises that the money thus spent is a sound financial investment, directly and indirectly. At present it is estimated that Norway loses every year from tuberculosis the equivalent of about 50 million kroner in working capacity, quite apart from the incalculable distress which the disease brings to thousands of homes.

*The Norwegian National Association against Tuberculosis.*

—The following figures are illuminating as showing what large sums a country, with a population of only a little over two million, can collect by private initiative for the campaign against tuberculosis. The balance-sheet of this association for 1918 shows a total figure of Kr.76,617. The income for the year was Kr.66,520, and of the sums expended Kr.11,786 were devoted to salaries and office expenses, Kr.16,834 to educational propaganda, Kr.12,591 to the education and pay of nurses, and Kr.31,741 to miscellaneous expenses. Included under this heading was expenditure on new houses built to replace old infected houses.

*The Swedish National Association against Tuberculosis.*

This association, which recently celebrated its fifteenth anniversary, owes its inception and organisation in large measure to Sweden's chief administrative medical officer, Dr. B. Buhre. The main feature of the association's programme is a vigorous and organised scheme of prevention. Special attention is devoted to the dispensary system, which provides for the supervision of all tuberculous homes and takes every possible measure to prevent spread of the disease to the healthy from the infected in these homes. The association, which has a membership of 17,000, has trained 165 nurses for this dispensary work, and it has provided three homes for healthy children taken from tuberculous surroundings. In various ways the association has taken steps to prevent the infection of 1200 children in their homes. The income of the association is entirely derived from private, independent sources, and by the sale of its various badges about Kr.1,550,000 have been obtained since 1904. In 1918 alone they brought in Kr.181,000. In 1917, in gifts and legacies alone, Kr.236,630 were received, and interest on capital amounted to Kr.54,980. The total income in 1917 was Kr.508,619.

*Mother of the "May Flower."*—On Feb. 11th last Fru Beda Hallberg celebrated the fiftieth anniversary of her birthday, which was the occasion of many greetings sent her from the various countries that have adopted her idea. Since she started the "May Flower" in 1907 this scheme for collecting funds for the tuberculosis campaign has brought in over 2,000,000 kroner in Sweden alone. It was soon adopted in Norway, where about Kr.900,000 have been contributed. The scheme was introduced in America by Fru Hallberg's sister, who founded the association

"Linnéan" on the 200th anniversary of the Swedish naturalist's birthday. Finland adopted the scheme in 1908, Denmark in 1909. In 1910 Germany adopted it in the form of "Die Blume der Barmherzigkeit," large sums being contributed. Austria and Russia followed in 1911. Since then Holland, Belgium, France, Italy, and England have followed suit.

*Tuberculosis in Germany.*

A week after peace was signed two Americans, Miss Jane Addams and Dr. Hamilton, made a tour of inspection in Germany, and according to the report they have issued tuberculosis has not only become far more prevalent than before the war, but it has also in many cases assumed rapidly progressive and malignant forms, previously regarded as rare curiosities. Professor Kayserling stated that the effect of partial starvation in promoting tuberculosis was so striking that German physicians have begun to regard it primarily as a disease of nutrition, to be controlled much more by appropriate feeding than by the prevention of infection. At present he sees as many cases of tuberculosis in children every month as he used to see in the year. In the course of a visit to Professor Czerny's wards at the Charité, the Americans were informed that fully half of all the children there were tuberculous, and they were shown many hitherto rare cases, such as tuberculosis of the bones of the head, including the upper jaw. At the City Orphanage in Berlin, where v. Pirquet's test used to be positive only in 10 per cent., it had become positive in 30 per cent. But while infection has increased threefold, actual illness has increased fivefold, as shown by the number of cases of skin, gland, bone, and pulmonary tuberculosis. In Halle there is ten times as much skin tuberculosis as there was before the war. All these effects of starvation cannot be ganged simply by estimates of the death-rate; most of the children infected with tuberculosis will not die at once or even show signs of the disease for some time. But, it is estimated, for the next 20 years the tuberculous morbidity will be much higher in Germany than it has been for many decades. One of the agencies through which relief work is being done is "Save the Children Fund," 329, High Holborn, W.C. 1.

## URBAN VITAL STATISTICS.

(Week ended August 30th, 1919.)

*English and Welsh Towns.*—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had been 9.7, 10.0, and 10.0 in the three preceding weeks, was again 10.0 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual rate was 9.6, and was 0.8 per 1000 below that in the preceding week, while among the remaining towns the rates ranged from 1.9 in Wimbledon, 2.9 in Oxford, 4.0 in Cambridge, and 4.4 in Hornsey and in Lincoln, to 17.1 in Bournemouth, 18.5 in Wakefield, 19.6 in Barnsley, and 22.2 in Exeter. The principal epidemic diseases caused 317 deaths, which corresponded to a rate of 1.0 per 1000, and included 231 from infantile diarrhoea, 32 from measles, 29 from diphtheria, 14 from whooping-cough, 6 from enteric fever, and 5 from scarlet fever. Measles caused a death-rate of 3.5 in Gateshead. There were 1421 cases of scarlet fever and 1004 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 1464 and 1063 respectively at the end of the previous week. The causes of 21 deaths in the 96 towns were uncertified, of which 7 were registered in Birmingham and 2 in Rotherham.

*Scotch Towns.*—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had been 10.0, 9.9, and 10.7 in the three preceding weeks, further rose to 10.9 per 1000. The 246 deaths in Glasgow corresponded to an annual rate of 11.5 per 1000, and included 25 from infantile diarrhoea, 3 from whooping-cough, 2 from diphtheria, and 1 each from measles and scarlet fever. The 73 deaths in Edinburgh were equal to a rate of 11.3 per 1000, and included 2 each from measles and scarlet fever, and 1 each from whooping-cough and infantile diarrhoea.

*Irish Towns.*—The 142 deaths in Dublin corresponded to an annual rate of 18.3 per 1000, and included 37 from infantile diarrhoea, 2 from scarlet fever, and 1 from diphtheria. The 131 deaths in Belfast were equal to a rate of 17.0 per 1000, and included 30 from infantile diarrhoea and 3 from scarlet fever.

**WAR EMERGENCY FUND OF THE ROYAL MEDICAL BENEVOLENT FUND.**—At the last meeting of the Committee of this Fund, Sir Alfred Pearce Gould, K.C.V.O., in the chair, applications for assistance were received and grants amounting to £1250 were made to seven applicants. The Committee are prepared to receive applications for assistance from demobilised officers of the R.A.M.C.(T.) and Special Reserve. All communications should be addressed to the honorary secretary, 11, Chandos-street, Cavendish-square, W.1.



# The Services.

## INDIAN MEDICAL SERVICE.

THE Secretary of State for India announces that 204 medical men are urgently required to fill vacancies in the Indian Medical Service. Of these two-thirds (136) will be Europeans and the remainder Indians. The appointment of European candidates will be made by nomination on the recommendation of a Selection Committee in England. Applications from Europeans and from Indian candidates resident in this country will be received at the India Office. Applications from all Indian candidates will be considered together. Appointment will be by nomination on the recommendation of a Selection Committee. Candidates must be over 21 and under 32 years of age at date of application. Preference will be given to candidates who are or have been serving with His Majesty's Forces during the war. All service rendered as a medical or combatant officer, or in a position usually filled by an officer, during the war will count both for promotion and pension on appointment to the Service, but not for the gratuity mentioned below. The scale of pay has recently been greatly increased. A Lieutenant on appointment now receives Rs.550 a month (equivalent at the present rate of exchange, the continuance of which cannot be guaranteed, to £605 per annum). Those who have had three years or more previous service will enter in the rank of Captain on Rs. 700 a month (or £770 a year). An officer who is appointed to the Service in 1919 or 1920 may claim to retire on a gratuity of £1200 on completion of eight years' service from date of permanent appointment, provided he has given notice of his intention to retire 18 months before the date of retirement. An officer so retiring will also be eligible for a free return passage to Europe, if claimed within three months of retirement. Application forms and any further particulars desired can be obtained from the Secretary, Military Department, India Office. The correspondence should be clearly marked on the top left-hand side of the envelope "Medical Recruitment."

The scales of pay accompanying the announcement were published in the Students' Number of THE LANCET last week.

## ROYAL NAVAL MEDICAL SERVICE.

Surg. Lieut.-Cmdr. C. F. Willes is placed on the retired list. Temporary Surgeon Lieutenants transferred to the permanent list of Surgeon Lieutenants:—F. H. Vey, H. L. Pridham.

## ARMY MEDICAL SERVICE.

Major-Gen. (temp. Lieut.-Gen.) Sir C. H. Burtchell, K.C.B., C.M.G., relinquishes his temporary rank on re-posting. Col. S. F. Clark and W. L. Gray, C.M.G., retire on retired pay. Col. E. M. Hassard is placed on the half-pay list under the provisions of Article 351, Royal Warrant for Pay and Promotion.

## ROYAL ARMY MEDICAL CORPS.

The undermentioned Lieutenant-Colonels relinquish the temporary rank of Colonel on re-posting: H. B. Fawcett, T. C. MacKenzie.

Lieut.-Col. G. B. W. Brazier-Creagh (retired pay) is granted the rank of Colonel on ceasing to be re-employed.

Lieut.-Col. M. Boyle is placed on retired pay. The undermentioned relinquish their temporary commissions on re-posting: Temp. Col. M. G. Foster, (R.A.M.C., T.F.), Temp. Lieut.-Col. Sir T. C. English (Hon. Colonel in the Army, R.A.M.C., T.F.), Acting Lieut.-Col. D. C. L. Fitzwilliams (Captain, R.A.M.C., T.F.), Temp. Major F. A. Hepworth (Captain, R.A.M.C., T.F.).

The undermentioned relinquish the acting rank of Lieutenant-Colonel: Major E. B. Booth, on ceasing to be specially employed; Major F. L. Bradish and Capt. W. W. MacNaught, on ceasing to command a Medical Unit.

The undermentioned relinquish the acting rank of Lieutenant-Colonel on re-posting: Major and Brevet Lieut.-Col. R. B. Ainsworth; Majors G. de la Cour, R. J. C. Thompson, C. R. M. Morris, E. M. Middleton, C. Scalfie, E. C. Phelan, W. J. Weston, W. E. C. Lunn, N. Low, W. J. B. Bell; Temp. Majors T. M. Carter, H. M. Chasseud; Capt. M. White, R. M. Davies.

Major M. P. Leahy retires, receiving a gratuity. To be acting Lieutenant-Colonels: Major M. C. Beatty, whilst commanding a Medical Unit; Temp. Capt. (acting Major) R. Jamison; Temp. Capt. and Brevet Major (acting Major) W. E. P. Phillips, whilst specially employed.

The undermentioned temporary Captains relinquish the acting rank of Major: S. Brown, A. W. G. Woodforde, A. C. Profeit, P. L. Watkinson-Williams, H. E. Rawlence, C. G. Skinner, A. F. Wright, G. Marshall.

Capt. A. L. Krogh and A. S. Crane relinquish the acting rank of Major on re-posting.

The undermentioned to be acting Majors: Capt. A. L. Krogh. Whilst specially employed: Capt. N. T. Whitehead; Temp. Capt. A. Fletcher, J. A. Mackenzie, A. F. Wright, R. G. Oram, N. L. M. Reader, V. C. Vesselovsky.

To be Captains: Capt. W. O. Tobias, D. S. Martin, and J. J. Molyneux, from the Special Reserve; Temp. Capt. G. O. F. Alley.

To be temporary Captains: S. McNair and W. Fletcher-Barrett, late temporary Captains; R. J. Monahan; Temp. Lieut. F. M. Simmonds.

Officers relinquishing their commissions: Temporary Lieutenant-Colonels retaining the rank of Lieutenant-Colonel: H. A. Kidd, D. G.

Thomson, Temp. Maj. W. E. M. Corbett; Temporary Majors retaining the rank of Major: F. W. Broderick, H. W. Wiltshire, F. H. Welsh; Temporary Captains granted the rank of Major: F. F. Middleweek, R. W. Sutherland, G. E. Neleghan, H. E. Rawlence, J. D. Gilmlett, W. H. Allen, E. W. Willett, P. W. Hampton, P. A. Leighton, C. S. Gideon, J. F. McLay, O. J. Day, H. Corder; Temp. Capt. and Bt. Major Fell retains the rank of Brevet Major. Temporary Captains retaining the rank of Captain: W. T. Buchan, J. B. Mackay, A. G. B. Duncan, G. A. Upcott-Gill, R. P. Garrow, G. M. Veevers, G. P. Armstrong, L. T. Gilles, R. C. L. Batchelor, C. C. Irvine, T. D. Cumberland, P. Lornie, D. M. Moffat, A. E. Goldie, R. W. E. Roe, C. H. Lloyd, G. G. Buchanan, A. S. Richmond, J. S. Kinross, E. H. Edward, G. Stanger, J. H. C. Egan, H. P. Dawson, H. H. Moffat, H. Quigley, R. Puttock, C. K. Cohen, A. W. Mitchell, R. J. M. Love, J. W. Flood, B. Haigh, J. Cruickshank, W. G. Sonthey, S. A. Montgomery, V. C. Pennell, H. E. Griffiths, J. J. Healy, R. L. Barwick, W. M. Stewart, L. T. Wells, J. M. Ross, J. H. Wilson, P. D. Hunter, I. W. Corkey, H. M. Cade, A. M. A. James, H. F. Hutchinson, F. M. Simmonds, L. Makin, S. Jacob, F. P. Grove, H. G. Carlisle, C. H. Newton, A. N. Drury, H. M. C. Green, J. S. Young, M. L. Neylon, S. G. Trail, A. B. R. Sworn, E. Coleman, J. W. Power, L. M. Markham, P. M. Shiels, T. W. Sheldon, G. H. H. Russell, A. P. MacMahon, W. T. Smith, M. T. W. Steedman, G. K. Thompson, W. Miller, G. O'N. Waddington, W. Brown, G. T. Cregan, G. W. Elder, H. M. Roberts, (acting Major) G. W. S. Paterson, H. N. Eccles, F. B. Chavasse; Temp. Hon. Capt. W. S. Rutherford (retains the honorary rank of Captain); Temp. Lieut. J. G. Thomson. Temporary Lieutenants retaining the rank of Lieutenant: F. C. Mann, F. W. P. Sullivan, T. S. Macaulay, H. E. Davison, M. Baranov, S. A. Bontor, S. Bardal, F. H. Boone.

## Canadian Army Medical Corps.

Temporary Majors to be temporary Lieutenant-Colonels: (Acting Col.) C. F. Martin, (Acting Lieut.-Col.) M. H. Allen.

Temp. Capt. E. F. Risdon to be acting Major while employed as Officer in charge of Canadian Section of Plastic and Facial Surgery.

The undermentioned temporary Captains retire in the British Isles: E. Wershof, J. P. Bonfield, A. E. Wood, H. C. Clermont, H. L. Walker, F. A. O'Reilly, J. A. Houston, R. G. Moffat.

Temp. Capt. J. P. S. Cathcart to be temporary Major.

## SPECIAL RESERVE OF OFFICERS.

The undermentioned Captains relinquish the acting rank of Lieutenant-Colonel on re-posting: J. R. R. Trist, C. N. Gover, T. Y. Barkley, S. Miller.

Capt. C. Armstrong and R. O. C. Thomson to be acting Majors whilst specially employed.

The undermentioned relinquish the acting rank of Major: Capt. H. W. H. Holmes, J. Gossip; Lieut. R. J. Patchett.

Lieut. J. Whittingdale relinquishes his commission on account of ill-health and retains the rank of Lieutenant.

## TERRITORIAL FORCE.

Lieut.-Col. (acting Col.) T. F. Dewar relinquishes the acting rank of Colonel on vacating the appointment of Assistant Director of Medical Services.

Majors (acting Lieut.-Cols.) relinquishing the acting rank of Lieutenant-Colonel on ceasing to be specially employed: T. P. Puddicombe, J. W. Mackenzie.

Capt. (acting Lieut.-Col.) J. Strathern relinquishes the acting rank of Lieutenant-Colonel on ceasing to be specially employed.

Capt. (acting Majors) relinquishing the acting rank of Major on ceasing to be specially employed: J. C. Grieve, G. W. C. Hollist, C. H. Crawshaw, W. W. Greer, J. H. Robinson.

Capt. (Bt. Major) (acting Major) W. Brander relinquishes the acting rank of Major on ceasing to be specially employed.

Capt. B. J. Alcock to be acting Major whilst specially employed.

Capt. D. E. S. Davies relinquishes his commission on account of ill-health contracted on active service, and retains the rank of Captain.

Capt. H. W. Spaight to be Deputy Assistant Director of Medical Services, and to be acting Major whilst so employed.

1st London Sanitary Company: Capt. W. N. W. Kennedy relinquishes his commission on account of ill-health contracted on active service, and is granted the rank of Major. Lieut. P. R. Fincher to be Captain.

Sanitary Service: Capt. (Bt. Major) (acting Major) C. M. Fegen relinquishes the acting rank of Major.

4th Scottish General Hospital: Capt. (acting Major) W. A. Campbell relinquishes the acting rank of Major on ceasing to be specially employed. Capt. W. A. Campbell is restored to the establishment.

## ROYAL AIR FORCE.

Medical Branch.—Lieut.-Col. E. O. B. Carbery (Surg.-Cmdr., R.N.) relinquishes his commission on ceasing to be employed.

C. P. V. MacCormack, J. G. Skeet (late Captain A.I.F.), G. M. Mellor are granted temporary commissions as Captains.

Lieut. C. Duggan to be acting Captain whilst employed as Captain, without pay and allowances of that rank.

G. H. H. Maxwell and T. H. K. MacLaughlin are granted temporary commissions as Lieutenants.

The undermentioned are transferred to Unemployed List: Capt. J. W. Brash, G. Sparrow, N. C. Graham, G. Visger, R. H. Robbins, Lieut. N. C. Cooper.

Dental Branch.—W. P. Bole is granted a temporary commission as Lieutenant.

## INDIA AND THE INDIAN MEDICAL SERVICE.

Lieut.-Col. C. Duer, I.M.S., has resigned the Service. Major-Gen. P. Hehr, I.M.S., is retained in the Service until further orders. Lieut.-Col. E. F. G. Tucker, I.M.S., to be Senior Medical Officer, J. J. Hospital, vice Lieut.-Col. A. Street proceeded on leave. Major A. F. Hamilton, I.M.S., to act as Senior Surgeon, J. J. Hospital, and Professor of Surgery, Grant Medical College, Bombay. Lieut.-Col. R. M. Carter, I.M.S., to be Dean, Grant Medical College, Bombay. Dr. Anandri Keshalal to act as Senior Surgeon J. J. Hospital, and Professor of Surgery, Grant Medical College, Bombay, in relief of Major Hamilton, I.M.S. Dr. Gopal V. Deshmukh to act as Second Surgeon, J. J. Hospital, and Professor of Clinical and Operative Surgery, Grant Medical College, Bombay, vice Dr. A. K. Datal. Lieut.-Col.



S. H. Burnett, I.M.S., to act as Surgeon Superintendent, St. George's Hospital, Bombay, vice Lieut.-Col. T. Jackson proceeded on leave. Major W. M. Houston, I.M.S., to act as Presidency Surgeon, First District. Major A. D. Stewart, I.M.S., to act as Surgeon-in-Charge Gokaldas Tejpal Native General Hospital, Bombay. Major R. H. Bott, I.M.S., has been recalled from military duty in Simla and has taken over from Sir James Roberts the Civil Surgeon of Simla, West. Sir James Roberts is at present acting as Surgeon to the Viceroy as Lieut.-Col. Austen Smith is ill. The services of Lieut.-Col. D. W. Sutherland, I.M.S., Principal, King Edward Medical College, Lahore, were placed at the disposal of the Government of India Department from May 26th. Lieut.-Col. J. N. Walker, I.M.S., on return from leave to be Civil Surgeon, Lucknow, vice Lieut.-Col. Birdwood, I.M.S., granted leave. Lieut.-Col. G. T. Birdwood, I.M.S., Civil Surgeon, second class, has been appointed a Civil Surgeon, first class, vice Lieut.-Col. J. M. Crawford, I.M.S. Major C. H. L. Palk, I.M.S., resigns the Service.

Major-General W. H. B. Robinson, C.B., I.M.S., is appointed an Honorary Surgeon to the King, vice Col. Hormasjee Edaljee Banatvala, C.S.I., I.M.S., and Major-General W. E. Jennings, I.M.S., is appointed an Honorary Physician to the King, vice Major-General R. W. S. Lyons, I.M.S.

#### THE HONOURS LIST.

The following awards to naval medical officers are announced:—

##### C.M.G.

Surg.-Cmdr. J. F. HALL.—For valuable services in H.M.A.S. *Australia* and H.M. Hospital Ship *Soudan*, and at the Medical Department, Admiralty.

Surg.-Cmdr. T. T. JEANS.—For valuable services in various theatres of the war.

Surg.-Cmdr. F. BOLSTER.—For valuable services in various theatres of the war.

##### C.B.E. (Military Division).

Surg.-Capt. C. S. WOODWRIGHT.—For valuable services at the R.N. Sick Quarters, Yokohama, in H.M. Hospital Ship *Soudan*, and as Principal Medical Transport Officer.

##### O.B.E. (Military Division).

Surg.-Lt.-Cmdr. F. C. ALTON.—For valuable services in H.M. Ships during the war and at the R.N. Hospital, Gibraltar.

Surg.-Lt. C. H. F. ATKINSON.—For valuable services in H.M. Ships during the war and at the R.N. Sick Quarters, Trevel.

Surg.-Lt. S. S. BARON.—For valuable services in H.M.S. *Dwarf* and at the R.N. Hospital, Haslar.

Surg.-Lt. T. BEATON.—For valuable services in H.M. Ships during the war and at the R.N. Hospital, Chatham.

Surg.-Lt. K. B. BELWOOD.—For valuable services in H.M.S. *Diligence*, H.M. Hospital Ship *Soudan*, and at the R.N. Hospital, Chatham.

Surg.-Lt.-Cmdr. J. C. BRINGAN.—For valuable services in several of H.M. Ships during the war.

Surg.-Lt. O. D. BROWNFIELD.—For valuable services in H.M. Ships during the war, at the R.N. Barracks, Portsmouth, and at the R.N. Hospital, Haslar.

Surg.-Lt. H. BUDDLE.—For valuable services in several of H.M. Ships during the war.

Surg.-Lt.-Cmdr. H. BURNS.—For valuable services in several of H.M. Ships during the war.

Surg.-Lt. P. N. BUTTON.—For valuable services in H.M.S. *Yarmouth* and with the 3rd R.M. Battalion in the Eastern Mediterranean.

Surg.-Cmdr. J. A. L. CAMPBELL.—For valuable services in H.M.S. *Lancaster* and as Senior Medical Officer, R.N. Depot, Crystal Palace.

Surg.-Lt. R. S. CAREY.—For valuable services in H.M. Hospital Ships during the war and at the R.N. Hospital, Plymouth.

Surg.-Cmdr. H. CLIFT.—For valuable services in H.M.S. *Hercules* and at the R.M. Barracks, Chatham.

Surg.-Lt. W. B. DIXON.—For valuable services during the war.

Surg.-Lt. W. A. S. DUCK.—For valuable services in H.M.S. *Biarritz* and H.M. Hospital Ship *Detta*.

Surg.-Lt.-Cmdr. S. F. DUDLEY.—For valuable services in H.M. Hospital Ship *Agadir* and at the R.N. Hospital, Chatham.

Surg.-Lt. (acting Surg.-Lt.-Cmdr.) G. E. D. ELLIS.—For valuable services in several of H.M. Ships during the war and at H.M. Dockyard, Sheerness.

Surg.-Lt. F. B. EYKYN.—For valuable services with the R.N. Division, at the R.N. Infirmary, Eastney, and at the R.N. Barracks, Portsmouth.

Surg.-Lt. J. G. A. FAIRBANK.—For valuable services in H.M.S. *Bacchante* and at the R.N. Barracks, Chatham.

Surg.-Lt. M. FAWKES.—For valuable services in H.M. Ships during the war, at the R.N. Hospital, Haslar, and at the R.N. Air Station, Barrow.

Surg.-Lt. G. W. M. FINDLAY.—For valuable services as Medical Officer of the Royal Naval Depot, Port Said.

Surg.-Lt. E. E. FLETCHER.—For valuable services to the R.N. Barracks, Devonport.

Surg.-Lt. T. E. FRANCIS.—For valuable services in H.M.S. *Britannia*, H.M. Hospital Ship *Soudan*, and at the R.N. Hospitals, Haslar and Plymouth.

Surg.-Lt. W. L. M. GOLDIE.—For valuable services in H.M. Ships during the war, at the R.N. Hospital, Chatham, and at the R.N. Infirmary, Deal.

Surg.-Lt. S. S. GOSS.—For valuable services in H.M. Ships during the war and at the R.N. Seaplane Station, Port Said.

Surg.-Lt.-Cmdr. S. W. GRIMWADE.—For valuable services in H.M.S. *Erebus* and at the R.N. Hospital, Malta.

Surg.-Cmdr. T. D. HALAHAN.—For valuable services in H.M.S. *King George V*, and at the R.N. Sick Quarters, Shotley.

Surg.-Lt.-Cmdr. (acting Surg.-Cmdr.) W. E. HARKER.—For valuable services as Senior Medical Officer, Tyne District.

Surg.-Lt. A. V. HERMAN.—For valuable services in H.M. Hospital Ships during the war and at the R.N. Barracks, Devonport.

Surg.-Lt. E. C. HOLTOM.—For valuable services in several of H.M. Ships during the war and with the R.M. Division, Chatham.

Surg.-Cmdr. C. H. M. HUGHES.—For valuable services at the R.N. Hospitals, Chatham.

Surg.-Lt.-Cmdr. T. W. JEFFERY.—For valuable services in several of H.M. Ships during the war.

Surg.-Lt. J. LAMBERT.—For valuable services in H.M. Hospital Ship *Reva*, at the R.N. Sick Quarters, Shotley, and at the R.N. Barracks, Devonport.

Surg.-Lt. D. LORIMER.—For valuable services in H.M.S. *Bacchante* and at the R.N. Hospital, Granton.

Surg.-Lt. G. R. LYNCH.—For valuable services at the R.N. Hospital, Malta, R.N. College, Greenwich, and R.N. Depot, Crystal Palace.

Surg.-Lt. R. G. LYSTER.—For valuable services in H.M. Ships during the war and at H.M. Dockyard, Rosyth.

Surg.-Lt.-Cmdr. G. R. MCCOWEN.—For valuable services in various theatres of the war.

Surg.-Lt. H. C. MANN.—For valuable services in H.M.S. *Duncan*, at the R.N. Hospitals, Plymouth and Malta, and at the R.N. College, Osborne.

Surg.-Lt. H. P. MARGETTS.—For valuable services in H.M.S. *Barham*, at the R.N. Barracks, Portsmouth, and in the Piræus.

Surg.-Cmdr. W. L. MARTIN.—For valuable services in the Medical Department, Admiralty.

Surg.-Lt. C. F. MAYNE.—For valuable services in H.M.S. *Kildonan Castle*, with the R.N. Division, and at the R.N. Hospital, Chatham.

Surg.-Cmdr. C. W. MORRIS.—For valuable services at the R.N. Hospital, Haslar.

Surg.-Lt. A. C. MORSON.—For valuable services in several of H.M. Ships and Hospital Ships during the war and at the R.N. Hospital, Haslar.

Surg.-Lt.-Cmdr. G. NUNN.—For valuable services in various theatres of the war.

Surg.-Cmdr. W. E. ORMSBY.—For valuable services in several of H.M. Ships during the war.

Surg.-Lt. J. R. PALMER.—For valuable services at the R.N. Barracks, Chatham.

Surg.-Lt. O. PARKES.—For valuable services in H.M. Hospital Ships during the war and at the R.N. Hospitals, Chatham and Plymouth.

Surg.-Lt. H. F. PERCIVAL.—For valuable services in H.M. Ships during the war and at the R.N. Barracks, Portsmouth.

Surg.-Lt.-Cmdr. R. A. RANKINE.—For valuable services in connexion with anti-malarial work at the British Naval Base, Corfu.

Surg.-Lt. A. H. RICHARDSON.—For valuable services in H.M.S. *Humber* and at the R.N. Hospital, Chatham.

Surg.-Cmdr. M. L. B. RODD.—For valuable services in H.M. Hospital Ship *Plassy* and at the R.M. Infirmary, Deal.

Surg.-Lt. E. G. SCHLESINGER.—For valuable services with the R.N. Division and at the R.M. Infirmary, Deal.

Surg.-Cmdr. H. W. B. SHEWELL.—For valuable services in H.M.S. *Euryalus* and at the R.N. Barracks, Portsmouth.

Surg.-Lt. R. E. SMITH.—For valuable services in H.M. Ships during the war, at the R.N. Hospitals, Gibraltar and Plymouth, and at the R.N. Barracks, Devonport.

Surg.-Cmdr. P. H. M. STAR.—For valuable services in H.M.S. *Conqueror* and at the R.N. Hospital, Queensferry.

Surg.-Lt.-Cmdr. (acting Surg.-Cmdr.) E. J. STEEGMANN.—For valuable services during the war.

Surg.-Lt.-Cmdr. H. E. R. STEPHENS.—For valuable services in H.M. Ships during the war and at the R.N. Hospital, Plymouth.

Surg.-Cmdr. R. W. G. STEWART.—For valuable services in the Medical Department, Admiralty.

Surg.-Lt. E. L. STURDEE.—For valuable services with the R.N. Division and at the R.N. Hospital, Plymouth, R.N. Barracks, Devonport, and R.N. Depot, Crystal Palace.

Surg.-Cmdr. P. T. SUTCLIFFE.—For valuable services in H.M. Hospital Ships during the war and at the Medical Department, Admiralty.

Surg.-Cmdr. A. R. THOMAS.—For valuable services in H.M.S. *Talbot* and at the R.N. Hospital, Malta.

Surg.-Lt. F. THOMPSON.—For valuable services at the R.N. Hospital, Haslar.

Surg.-Lt.-Cmdr. G. G. VICKERY.—For valuable services in several of H.M. Ships during the war.

Surg.-Lt. L. R. WARBURTON.—For valuable services in H.M. Ships during the war and with the R.M. Division, Plymouth.

Surg.-Lt.-Cmdr. L. WARREN.—For valuable services in H.M. Hospital Ship *Agadir* and at the R.N. College, Dartmouth.

Surg.-Lt.-Cmdr. D. P. D. WILKIE.—For valuable services in H.M.S. *Glory* and H.M. Hospital Ship *St. Margaret of Scotland*.

Surg.-Lt.-Cmdr. (acting Surg.-Cmdr.) R. J. WILLAN, M.V.O.—For valuable services in H.M. Hospital Ships during the war and at the R.N. Hospital, Haslar.

Surg.-Lt. A. G. WILLIAMS.—For valuable services in H.M.S. *Ebro*, with the R.M. Division, Deal, and in Belgium.

Surg.-Lt.-Cmdr. (acting Surg.-Cmdr.) W. K. WILLS.—For valuable services in H.M. Ships during the war.

Surg.-Lt. G. E. WOOD.—For valuable services at the R.N. Barracks, Portsmouth.

#### Brought to Notice.

The names of the following naval medical officers have been brought to the notice of the Admiralty for valuable services in the prosecution of the war:—

Surg. Lt.-Cmdr. A. D. Cowburn; Surg. Lt.-Cmdr. H. L. Murray; Surg. Lt.-Cmdr. C. F. A. Hereford; Surg.-Lts. R. St. L. Brockman, F. C. Edean, J. C. Walker, T. C. Blackwell, H. Carlill, W. A. McKerrrow, W. W. Rooke, A. L. Sutcliffe, E. G. Fisher, A. J. MacDiarmid, A. E. Sanderson, E. F. Fisher, T. Norman, T. R. G. Melrose, W. G. Robertson, J. C. H. Allan, A. C. Mooney, N. C. Carver, R. H. H. Newton, C. M. Burrell, D. A. Imrie, F. C. Newman, D. McAlpine, F. J. F. Barrington, R. T. Bailey, E. A. Green, G. E. S. Ward, I. H. Beattie, W. O. Sankey, E. A. Cockayne, A. E. W. Hird, W. I. Gerrard, H. Chitty, J. Lorimer, E. P. Punch, B. Cohen, J. R. Kay-Mouat, E. F. Murray, A. C. McVittie, W. S. Ollis, A. Lawrey, E. J. Winstanley, A. H. Crook, M. C.

The names of the following civilian doctors have been brought to the notice of the Secretary of State for War for valuable medical services rendered in the United Kingdom in connexion with the war:—

F. W. Abbott, P. H. Abercrombie, R. C. Acland, W. G. P. Alpin, C. M. Anderson, Sir M. Abbott-Anderson, G. J. M. Atkinson, J. H. Badcock, E. G. Barker, J. M. Barlet, Sir T. Barlow, J. H. Barnard, F. S. Barnett, F. E. Batten, H. Beckett-Overy, Sir W. H. Bennett, G. Blacker, E. J.



Blackett, J. Blomfield, J. S. Boden, C. Bolton, E. C. Bridges, J. M. Bruce, J. M. Brydone, C. H. Bubb, W. Bulloch, H. T. Campkin, C. E. Carmichael, A. A. Carr, J. W. Carr, A. J. Carter, J. W. Caton, E. Cautley, Miss H. Chambers, A. H. Charles, J. Chute, H. N. Coltart, C. T. T. Comber, G. J. Confort, T. A. Coysli, J. W. Cropper, J. Cumming, E. G. C. Daniel, P. L. Daniel, the late Sir J. M. Davidson, G. F. Dickinson, T. V. Dickinson, L. C. T. Dobson, J. A. Drake, M. A. Dutch, A. M. Elliot, Sir T. Crisp English, H. L. Ewens, J. W. H. Eyre, E. H. Eard, G. Faris, W. S. Fenwick, Sir D. Ferrier, A. H. Foster, L. Fuller, E. P. Furber, P. Furnivall, J. Gay, Miss G. Gazdar, G. G. Genge, H. T. George, E. Gillespie, L. G. Glover, Sir K. W. Goadby, Sir R. J. Godlee, A. A. Gordon, H. T. Gray, E. C. Greenwood, A. J. Gregory, H. E. Griffiths, H. B. Grimsdale, C. N. Groves, L. G. Guthrie, C. F. Hadfield, Miss E. Haigh, J. Z. Hanafy, T. E. Harwood, E. D. H. Hawke, K. R. Hay, H. Head, W. Hern, C. Higgins, C. Hodgson, D. W. C. Hood, G. H. J. Hooper, R. J. Howard, R. J. B. Howard, H. Huxley, T. B. Hyslop, Miss C. M. Ironside, W. W. James, T. H. Jamieson, W. H. Jewell, H. J. Johnson, R. G. Johnson, R. D. Kandin, B. S. Kanga, W. N. Kingsbury, M. D. B. Kinsella, A. G. Lacey, F. C. Langford, J. B. Lawford, A. Lawson, K. A. Lees, H. Lett, W. J. Lindsay, T. D. Lister, E. M. Little, Miss A. Lloyd, J. P. Lockhart Mummery, R. M. H. Low, K. F. Lund, E. Lynn, C. R. C. Lyster, Miss E. M. MacGill, C. F. Marshall, A. T. Marston, C. Masser, H. M. McCrea, N. McDonald, W. F. McEwen, L. H. McGavin, R. McKay, W. McLachlan, J. H. Meuzies, J. Metcalfe, R. H. Miller, C. H. Mills, W. T. Mullings, J. F. Nall, J. Needham, E. M. Niall, G. P. Nicolet, F. Norman, G. Northcroft, W. J. C. Nourse, Sir W. Osler, C. D. Outred, A. W. Oxford, J. I. Palmer, J. G. Pardee, Sir T. W. Parkinson, H. J. Paterson, L. J. Paton, J. L. Payne, F. J. Pearce, E. T. Pinhey, W. J. Potts, H. J. Pulling, A. J. Rice-Oxley, Miss M. M. Richards, A. M. Robertson, Mrs. A. L. L. C. Robson, A. R. Roche, A. Roeyn-Jones, W. Roughton, S. H. Rouquette, R. A. Rowlands, N. Rushworth, H. Sainsbury, E. A. Saunders, R. E. Schofield, W. Shears, O. B. Shelswell, Miss A. Sheppard, D. A. Shields, J. Sinclair, G. C. Sneyd, E. L. Sortain, Sir J. P. Stewart, G. Stewart, J. Stirling Hamilton, Miss F. A. Stoney, T. S. P. Strangeways, A. J. Swallow, R. J. Swan, Sir F. Taylor, J. Taylor, E. G. Thomas, G. C. Thomas, T. Thompson, J. D. Thomson, Miss M. Thorne, W. Thornely, R. Thorne, S. A. Tidey, W. Trotter, J. Van den Broeck, J. W. T. Walker, R. M. Walker, A. J. Walton, A. H. Warde, S. J. Wareham, C. J. F. Westman, C. P. White, E. F. White, Miss E. M. White, L. E. Wigam, J. C. Wilkinson, F. W. Wilson, E. C. Young, R. A. Young.

**The Territorial Decoration.**—The King has conferred the Territorial Decoration upon the undermentioned officers:—Royal Army Medical Corps: Col. A. E. L. Wear, C.M.G.; Lt.-Cols. E. B. Dowsett, A. C. Gullan, J. A. Masters, J. H. Stephen, C. It. Browne, A. R. Tweedie; Maj. (Bt. Lt.-Col.) R. Griffith; Maj. (acting Lt.-Col.) H. B. Roderick; Maj. (temp. Lt.-Col.) E. W. St. Vincent-Ryan; Maj. S. W. Plummer; J. Bruce, C. R. White, A. Ehrmann, W. T. Blackledge, F. W. Johnson, F. Gracie, E. J. T. Cory, A. Price, A. Bird, F. W. Kendle (attached to R.F.A.); Capt. (acting Maj.) W. H. Brailey; Capt. W. J. Rice. Territorial Force Reserve: Surg.-Maj. A. W. Cuff, T.F.R., attached to 3rd West Riding Brigade, R.F.A.; Surg.-Maj. A. R. Stoddart, attached to 5th Batn., West Yorkshire Regt.; Maj. R. Starkey-Smith, attached to R.A.M.C.; Maj. J. R. Molson, attached to R.A.M.C.

## Medical News.

**SOCIETY OF APOTHECARIES OF LONDON.**—At examinations held recently the following candidates passed in the subjects indicated:—

**Surgery.**—J. F. E. Burns and D. G. Cossham (Sects. I. and II.), Bristol; W. D. McRae (Sect. II.), London Hosp.; and H. H. Selim (Sects. I. and II.), St. Mary's Hosp.  
**Medicine.**—E. V. Briscoe (Sect. I.), St. Mary's Hosp.; O. H. Brown (Sect. II.), Charing Cross Hosp.; J. F. E. Burns and D. G. Cossham (Sects. I. and II.), Bristol; F. I. G. Edwards (Sects. I. and II.), Royal Free Hosp. and Liverpool; C. W. Lakin (Sects. I. and II.), Guy's Hosp. and Birmingham; and H. M. Partridge, St. Bart's Hosp.  
**Forensic Medicine.**—D. G. Cossham and J. H. C. Eglinton, Bristol; G. ap V. Jones, Glasgow; W. D. McRae, London Hosp.; H. M. Partridge, St. Bart's Hosp.; and G. K. Reeves, Guy's Hosp.  
**Midwifery.**—C. C. Bennett, Guy's Hosp.; E. V. Briscoe, St. Mary's Hosp.; D. G. Cossham, Bristol; F. C. M. Gabites, Edinburgh; and H. M. Partridge, St. Bart's Hosp.  
 The Diploma of the Society was granted to the following candidates, entitling them to practice medicine, surgery, and midwifery: J. F. E. Burns, D. G. Cossham, F. C. M. Gabites, C. W. Lakin, W. D. McRae, and H. H. Selim.

**NATIONAL ASSOCIATION FOR THE PREVENTION OF CONSUMPTION.**—The annual conference of this association will be held at the Central Hall, Westminster, on Oct. 16th, 17th, and 18th, the last previous conference having been held at Leeds in 1914. The following distinguished foreigners are taking part in the conference: from France, Professor Léon Bernard, Professor Calmette, Professor Courmont, and Professor Rist; from the United States, Dr. Hermann Biggs, of New York, and Professor William White, of the American Red Cross (Italy); from Italy, Professor Poli, Dr. Rasponi, and Professor Ronzoni. The full programme of the conference is not yet settled, but the main subject of consideration at the conference is the completion of tuberculosis schemes throughout the country in relation to (1) the Ministry of Health; (2) local authorities and Insurance Committees; (3) Pensions Boards and Committees (Discharged Sailors and Soldiers); (4) general

practitioners; (5) Red Cross and other voluntary activities; (6) training of doctors and nurses. The morning session of the first day will be devoted to the consideration of Sections (1) and (2), the afternoon session being devoted to Sections (3) and (4). The subject for consideration at the morning session of the second day, Oct. 17th, is not yet settled, but in the afternoon Sections (5) and (6) will be discussed. The programme of the third day is as yet unsettled. Among those who will address the conference on the first day are Sir R. W. Philip, President of the Royal College of Physicians, Edinburgh, and Dr. Hermann Biggs. Addresses will be given on the second day by Professor Sir William Osler, Regius professor of medicine in the University of Oxford, and by Professor Sir Sims Woodhead, professor of pathology in the University of Cambridge. There will be addresses given during the third day's session on Tuberculosis Work for Red Cross and other Voluntary Workers, but the speakers are not yet arranged. Among the social functions a conversation will be held on the evening of the 16th by the Association, and on the evening of the 17th Lady Glenconner, the wife of the honorary treasurer of the Association, will be at Home.

Dr. John Robinson Harper, O.B.E., of Barnstaple, has received the decoration of Commander of the Military Order of St. Avis, conferred by the Portuguese Republic.

**ROYAL DEVON AND EXETER HOSPITAL.**—The committee of this hospital has accepted a tender for £29,201 for the proposed extension of the hospital, and the work will be proceeded with in sections. Up to the present over £10,000 have been received for the scheme.

**DORSET COUNTY COUNCIL AND TUBERCULOSIS.**—The Hon. Gertrude Pitt has presented Beckford Lodge, Wilts., to the Dorset County Council for the purposes of a sanatorium for tuberculosis patients. The estate is valued at £7000. The county medical officer of health considers the premises suitable for the scheme.

**A GLOUCESTERSHIRE CENTENARIAN.**—Mrs. Arthur Mosley, who completed her 104th year last January, died at Cheltenham on August 15th. She was the widow of the Rev. A. Mosley, and had nine brothers and sisters; the combined ages of the ten show an aggregate of 907 years.

**PRESENTATIONS TO MEDICAL MEN.**—The members of the Redruth (Cornwall) branch of the St. John Ambulance Nursing Association recently presented Dr. Frank Hichens, the divisional surgeon, with a case of surgical instruments in appreciation of his services as honorary lecturer.—Mr. E. J. Domville, consulting surgeon to the Royal Devon and Exeter Hospital, has been presented by the honorary medical staff with a silver bowl and four silver candlesticks in appreciation of his practical patriotism in filling the post of resident house surgeon at the hospital during three and a half years of the war.

**THE LATE MR. W. C. MENCE.**—William Charles Mence, L.R.C.P., M.R.C.S., Temporary Captain, R.A.M.C., died recently at Axminster in his forty-third year. Mr. Mence was medical officer of health for Chard and was honorary surgeon to the Axminster Cottage Hospital. He had been in practice for some years in Axminster, where he was widely known and respected. He joined the R.A.M.C. shortly after the commencement of the war, and had served in Egypt, Mesopotamia, and France. He had only recently returned from active service. Much sympathy is felt locally for his widow and children.

**DIPLOMA IN PUBLIC HEALTH.**—A course of lectures and demonstrations, extending over three months, will be given at the Western Hospital, Seagrave-road, Fulham, S.W., by Dr. R. M. Bruce, medical superintendent, on Tuesdays and Fridays, at 5 p.m., beginning Tuesday, Sept. 30th. The fee for the course is £3 3s. Medical men desiring to attend the course are required, before attending at the hospital, to pay the above-mentioned fee to the Clerk to the Metropolitan Asylums Board (Sir T. Duncombe Mann), Embankment, E.C. 4, giving their full name and address.

**SOCIETY FOR THE STUDY OF INEBRIETY.**—An autumn session will be held in the rooms of the Medical Society of London on Oct. 14th, preceded by a breakfast at 8.30 A.M. at the Polytechnic. The sessions commence at 10.30 A.M. and 2 p.m., followed at 5.30 p.m. by the eighth Norman Kerr lecture at the house of the Royal Society of Medicine on the Relation of Alcohol and Alcoholism to Maternity and Child Welfare, by Mrs. Mary Scharlieb, C.B.E., M.D. Communications should be made to the honorary secretary, Dr. T. N. Kelyack, 139, Harley-street, London, W. 1.



## Correspondence.

"Andi alteram partem."

## THE CONDUCT OF LABOUR AND PUERPERAL SEPSIS.

To the Editor of THE LANCET.

SIR,—There are just three points in Dr. R. L. Kitching's letter in your issue of August 23rd to which I will briefly reply.

1. The cause of conjunctival inflammation during the first week of life of the newly-born child. For this Dr. Kitching suggests a chemical irritant in the vagina, possibly lactic acid. We know that in strengths of 50 to 75 per cent. solutions lactic acid is a caustic. We shall therefore not be far wrong if we assume a 10 per cent. solution of the acid in the vaginal discharge during labour to be necessary for the production of actual inflammation of the conjunctiva. It is characteristic of all chemical irritants that they produce their effects within a very short time of application. It therefore follows that ophthalmia should declare itself in the eyes of the child at latest within two or three hours of birth. The delay of from four to seven days before it makes its appearance seems strange on this hypothesis. There is also another difficulty in the way, and that is the presence of lactic acid itself in the vaginal discharge in concentration sufficient to produce the required result. The information which Dr. Kitching would like to have as to what numbers become infected after birth was arrived at many years ago, and was apparent, not only to those who attended labour in those days, but also to ophthalmic surgeons who saw the end-results of ophthalmia neonatorum in these eyes. It would be impossible to obtain statistics now because we eradicate and suppress the evidence of maternal infection by immediate attention to the eyes of the newly-born child. There is also one other fact that points to the maternal passage as the source of infection—and that is, that after the first week of life the susceptibility of the child to acute inflammatory infections of the conjunctiva vanishes, although its environment remains the same.

2. While admitting the soiling of the genital passages in the various ways that I pointed out, Dr. Kitching believes that the vagina is able to deal with these organisms and sterilise itself. The vagina, so far as one can see from its structure, possesses no means of defence against intruding organisms. It has no adenoid tissue, no glands, and it is lined with squamous epithelium. It has, however, a great many folds and recesses, within which organisms would find a convenient resting place. Nor has the uterus any particular power, so far as we know, of destroying organisms. The spread of venereal disease shows the vagina is powerless to deal with invading organisms, and the occurrence of gonorrhœal ophthalmia in the newly-born child is proof positive that the vagina of the pregnant woman is equally defenceless. The argument from analogy furnishes just as conclusive proof that cavities and canals far more highly endowed by Nature than the vagina to deal with organisms are often powerless to rid themselves of their invaders. I need only point out the persistence of Klebs-Löffler bacilli, meningococci, and pneumococci in the naso-pharynx for months; of *Bacillus typhosus*, *B. paratyphosus*, bacillus of Shiga, and streptococci in the bowel; of *Bacillus coli* and streptococci in the urinary passages.

3. The operation area in a confinement extends from uterus to perineum, and the management of a normal labour is primarily the care of a wound. In an ordinary operation the surgeon inflicts the wound and is careful to interfere with it as little as possible. In labour Nature inflicts the wounds, and in doing so pours out a serous exudate with intent to sterilise and wash out the passage along which the fetus will pass. I tried to point out the various ways in which sepsis might be introduced into the maternal passage before labour began, and instanced conjunctival infection of the newly-born child in proof of my contention of vaginal sepsis. Until ophthalmia neonatorum has been explained away and the maternal passage exonerated it is a legitimate assumption that the operation area of the medical attendant at a confinement may contain septic organisms before labour begins, and that great caution should be exercised in the making of internal examinations. To Dr. Kitching this is only worth a ponderous joke.

I am, Sir, yours faithfully,

Steele's road, N.W., August 24th. 1919.

J. H. E. BROCK.

## THE VERNON-HARCOURT INHALER.

To the Editor of THE LANCET.

SIR,—In your obituary notice of the late Mr. A. Vernon-Harcourt, F.R.S., you animadvert upon the chloroform inhaler associated with his name. I am sure the writer has no wish to prejudice the use of the inhaler by a rather disparaging criticism upon it. It is suggested that "clinical authorities" maintain: (1) "that chloroform accidents cannot be entirely prevented by regulating chloroform percentages"; (2) the inhaler proves useful for cases "in which a light anaesthesia" is required; (3) the risk of using a dosimetric inhaler is that while it suggests security it may divert the anaesthetist's attention from his patient's condition. Some confusion is caused by mixing the findings of the Chloroform Committee with the use of the inhaler. The Committee never stated that any inhaler or method could wholly avert chloroform fatalities. It, however, contended that such deaths were commonly the result of employing concentrations of vapours the strength of which could only be guessed at by the anaesthetist. This applies alike to excessive or too tenuous strengths of vapour. The Committee, not Mr. Harcourt, adopted the 2 per cent. value as the usual maximum, following the findings of Paul Bert and others. This was done after a great deal of careful experimentation, the protocols of which are to be found in the report. Mr. Harcourt's inhaler can be graded for any strength vapour, it is a question of physics, but he was requested to adopt the 2 per cent. maximum. This was done, although during experiments 2.5 per cent. and 3 per cent. vapours were used from the inhaler. A simple device secured this.

Of course I do not know what clinical authorities are referred to, but I doubt whether those who criticised in the way indicated had enjoyed a wide experience of the use of the inhaler, say a thousand or so cases. As to the third point, having had a rather wide experience in the use of the Vernon-Harcourt inhaler, I may, perhaps, be allowed to quote from my article dealing with the matter,<sup>1</sup> which received the approval of the Committee. I wrote:—

"It cannot be too strongly insisted upon that the Vernon Harcourt regulator is only a means to an end. It supplies a fairly accurate method of regulating the percentage of chloroform presented to the patient, but it does not, nor can any inhaler, abrogate the necessity for a competent knowledge of the action of chloroform on the human subject and experience in administering that anaesthetic. The apparatus need not, and must not, detach the chloroformist's attention from his patient's condition; it merely enables him to increase or decrease the dose of chloroform as may be necessary. Observation of the patient's condition will indicate when the necessity arises."

Finally, I should like to suggest that the implication that the Vernon-Harcourt inhaler is only useful when a light anaesthesia—i.e., a narcosis below Snow's third degree—is required is inaccurate. It can induce full anaesthesia and even a deeper narcosis in cases of prolonged administration. This assuming that the person using it does so efficiently.

I am, Sir, yours faithfully,

August 29th, 1919.

DUDLEY W. BUXTON.

\* \* We had Dr. Buxton's book before us, and noted the passage which he quotes. Other authorities disagree with Dr. Buxton as to the range of utility of the ingenious Vernon-Harcourt inhaler.—ED. L.

## THE INCIDENCE OF TUBERCULOSIS AMONGST ASYLUM PATIENTS.

To the Editor of THE LANCET.

SIR,—The paper on this subject by Dr. F. A. Elkins and Dr. Hyslop Thomson in your issue of August 9th and the subsequent letters from Dr. F. E. Tylecote and Dr. H. K. Abbott have been read by me with great interest, for I was chairman of the Tuberculosis Committee of the Medico-Psychological Association appointed in 1901, and have taken always a keen and active interest in tuberculosis, not only among the insane, but also among the poorer classes in this country. The Tuberculosis Committee of the Medico-Psychological Association was elected as a result of an excellent essay by Dr. F. G. Crookshank, which gained for him the medal of the association, and which was published in the *Journal of Mental Science* in October, 1899. Dr. Crookshank's clear and concise conclusions were endorsed in the Report of the Tuberculosis Committee, who received from medical superintendents of the asylums for the insane in Great Britain invaluable answers to specific questions.

<sup>1</sup> *Anæsthetics*, p. 249.



This Report was, unfortunately, shelved by reason of minor errors in the statistical figures, though it was admitted by the Association that these errors in no way altered the real value of the document. The Report was published, and can no doubt be obtained from the secretary of the Medico-Psychological Association.

Practically very little has been done, and the death-rate of tuberculosis in asylums is still increasing. The Board of Control recognise this fact, but simply make recommendations and insist on nothing. If they have no power under the Lunacy Act of 1890 to enforce their recommendations, why do not they obtain that power or urge the Ministry of Health to obtain it for them? I have pointed all this out in a recent book of mine. Something more must be done. A Ministry of Health is about to open a campaign for the physical improvement of the nation. To my mind the whole question of the death-rate of tuberculosis in our large asylums is a standing disgrace to our country, and I earnestly hope something will soon be done to mitigate this crying evil.

I am, Sir, yours faithfully,

Bournemouth, Sept. 1st, 1919. L. A. WEATHERLY, M.D.

### INJECTIONS OF TARTAR EMETIC IN BILHARZIASIS.

To the Editor of THE LANCET.

SIR,—In a paper on this subject published in your issue of August 9th Dr. Frank E. Taylor draws attention to the risk of antimony poisoning as the results of intravenous injections. He goes on to say that the toxicity of arsenic has been greatly reduced by introducing it in organic combination, and that it would appear highly probable that similar organic compounds of antimony could be produced combining equal therapeutic effects with diminished toxicity. As no further allusion to any such substance was made either by Dr. Taylor or by Dr. J. B. Christopherson in his letter on the same subject in the following issue, it may interest your readers to know that Dr. G. Caronia, editor of *La Pediatria*, has experimented as far back as 1916 with preparations of antimony as injections in external kala-azar and leishmaniasis. He gave the preference to acetyl-p-aminophenyl, stibiater of sodium, on account of its greater efficacy, easy absorption, and less toxicity. It is freely soluble in distilled water and contains 38.5 per cent. of antimony, and may be given in doses up to 20 cg.

I am, Sir, yours faithfully,

T. VINCENT DICKINSON.

Cadogan Mansions, S.W., Sept. 2nd, 1919.

### EARLY MENTAL HOMES.

To the Editor of THE LANCET.

SIR,—It was recently stated, in answer to a question in the House of Commons, that the provision of convalescent homes for early uncertifiable mental cases (without detention and on a purely hospital basis) would come under the province of the new health authority. It is admitted that such homes would be a great boon in intercepting cases (especially those occurring among ex-soldiers) who would otherwise be relegated to asylums. The Lunacy Board, according to its annual reports, has long desired the institution of "reception houses" under its wing where early cases could be detained, say for six months, without certification—i.e., without any judicial investigation or appeal. A Bill with this object, entitled the "Mental Treatment Bill" was introduced by the Home Office in 1915, but had to be withdrawn, the House of Commons regarding it as an annulling of the safeguards of the Lunacy Act and an infringement of the rights of the individual. From recent indications it appears that a similar Bill is now again in contemplation. The Lunacy Board has, however, no jurisdiction over uncertified and uncertifiable persons; and in order that cases in the very early and most curable stages should be induced to enter these homes voluntarily (as they would enter a hospital), it is essential that the homes should have no connexion with lunacy, else they will be regarded as "half-way-houses" to asylums, and shunned by the very people for whom they are intended. Public money, if sunk in such homes, will be for the most part entirely wasted.

It is a mistake to think that legislation is needed for the provision of sanatoria which do not involve detention. The Public Health Act, 1875, has already conferred on borough

councils the power to run hospitals, and similar powers could be readily extended to the London County Council and county councils generally. The cheering and hopeful atmosphere produced by the fact that the terms, both of admission and of stay, are *voluntary*, is in itself a most important factor in recovery. It is not the existence of legal safeguards which creates "stigma," but the fact of being subjected to detention. It is in the interest of the public that every case in which restraint is applied should be carefully investigated under judicial procedure, and the salutary provision contained in Section 315 of the Lunacy Act ought to be strengthened and not annulled. On the other hand, every case proved to be "dangerous and unfit to be at large," ought to be certified, and no trivial and uncertifiable case ought to be subjected by any underhand method to detention.

I am, Sir, yours faithfully,

S. E. WHITE, M.B., B.Sc.

Upper Montagu-street, W., August 21st, 1919.

### THE ETIOLOGY OF INFLUENZA.

To the Editor of THE LANCET.

SIR,—Captain G. E. Beaumont in his paper on this subject in THE LANCET of August 9th records that examination of material from influenza patients has shown the presence of a "mycotic organism." I do not wish to comment on his results beyond saying that there must be rigid proof before one can accept "hyphae, large spores, coccal clusters, small spores, tetrads, mulberry masses, chains of cocci, bacilli" as pleomorphs of the same organism. My object in writing is to point out how inadequate from the point of view of a systematist are the figures of fungi usually appearing in medical literature. In the present instance it is impossible from the diagram to hazard a guess as to the fungal genus in which the hyphal stage of the organism would normally be placed. The manner in which the spores are borne is the important point in classification, and this should be clearly shown in any figures. This can rarely be made out in film preparations, but is best studied by mounting the fungus in absolute alcohol; the preparation may be made more permanent by running in dilute glycerine and "ringing" after a week or so.

I am, Sir, yours faithfully,

J. RAMSBOTTOM.

British Museum (Natural History), August 26th, 1919.

### THE RESULTS OF COMPLETE COLECTOMY.

To the Editor of THE LANCET.

SIR,—In your issue of August 9th there is a letter from Mr. J. F. Dobson, of Leeds, in reference to a paper of mine on colectomy, in which he says that the operation of complete colectomy will remain under a cloud as long as those surgeons who perform it are content to support their views by the publication of their cases in an imperfect manner. Mr. Dobson's criticism is, up to a certain point, merited, in that very few details of the after-histories of my cases were appended, but the implication that discredit must, as a consequence, fall upon the operation because such histories were unknown or unfavourable, cannot pass without comment. At the time of writing I was perfectly well aware that the condition of the patients to whom I referred was satisfactory, but I had not sufficient recent detail to make it worth while to do more than indicate in a general way that the results of the operation were good. Perhaps I took for granted in my realisation of this fact that critics would accept it as a matter of course. Since Mr. Dobson's letter appeared I have communicated with my patients again, and I hope that he will agree that the details supplied now bear out the general statement made in the paper.

Mr. Dobson mentions specially the after-progress of Cases 1 and 2. In a letter I have just received from Case 1 are these remarks: "I am in good general health; I get no pain after eating, as before the operation. I believe the operation to be a great success." He goes on to say that he is employed in one of the shipping lines in Liverpool. Nearly two years have elapsed since I operated on him. Case 2 writes that he was playing football ten weeks after the operation, and that he has had no trouble with his bowels, although they move three times a day. This colectomy was done six months ago. Mr. Dobson finally deprecates the absence of "a full description of the diseased condition of



the rectum held responsible for the imperfect recovery of Case 3." But surely if a patient has ulcerative colitis of such severity as to endanger his life—as stated in my paper—and, if, after removal of the colon, he still for a time continues to pass mucus and blood in his stools, it is fair to conclude (without submitting the patient to another anæsthetic for sigmoidoscopy) that the persistence of some of the symptoms is explained by the presence of ulcers in the only remaining portion of the large bowel. This inference is supported by the statement made in the description of the case that the symptoms improved under rectal lavage and vaccine treatment. This patient has just written that he has improved very much since leaving hospital six months ago.

It is only fair to add that since my paper was written I have been asked to see Case 4 again, and have found that after 18 months of perfect health she had been taken ill with headache and vomiting. I discovered a nodular enlargement of her liver, and evidence of a metastatic growth at the base of her skull. Still, I think it is surprising that she remained well so long after the removal of such an advanced cancer of the bowel, and I do not think that anyone could regard her present condition as in any way attributable to the removal of her colon.

I am fully cognisant of the severity of the operation, and agree that it should be undertaken only to relieve a very serious condition. But I feel quite certain that there are many people whose suffering can be relieved in no other way, and I wrote the paper with the object of showing that it was possible for the operation to be performed with a moderate degree of safety even by such a tyro as myself.

I am, Sir, yours faithfully,

JAMES TAYLOR,

Aldershot, August 26th, 1919.

Major, R.A.M.C.

## THE ORIGIN OF LIFE: THE WORK OF THE LATE CHARLTON BASTIAN.

To the Editor of THE LANCET.

SIR,—In your issue of August 16th Commander W. Bastian, R.N., now objects to the tubes used in my experiments. I have stated that "the tubes employed were the same as those used by Dr. Bastian,"<sup>1</sup> but as this seems insufficient I have written to the makers, hence the delay. They reply: "The tubes were made no doubt from soft German glass tubing, in every way the same as those supplied to Dr. Bastian." (August 20th, 1919.) Evidently Commander Bastian was misled by the word "hard," which was only used relatively, not as equivalent to Jena glass.

Commander Bastian seems still doubtful whether the experiments are not invalidated because some of the tubes were kept three years. I have explained that samples were opened about every three months, but that Professor Hopkins considered it unnecessary to give details about the whole 100 tubes. As a matter of fact, I fail to see why all the organisms must be dead in three years. Because if the conditions were ever such as to produce life, there is no reason for the conditions to change; and "organisms" would be continually coming into being and dying. Since the mass of the "organisms" is infinitely small compared with that of the salts, "live organisms" should be found after any length of time, however short-lived they might be, because the process of formation would continue until the salts were exhausted, or until some harmful end-product had been elaborated. Dr. Bastian himself uses this form of argument to prove that abiogenesis is still taking place. "Relying on the uniformity of natural phenomena, we have a right to believe ..... that the processes which originally led to the growth of living matter would constantly tend to be reproduced."<sup>2</sup> I should like to add, the object of my experiments was to test whether I could repeat Dr. Bastian's results. Therefore all possible precautions were taken to reproduce his conditions, by the use of the same samples, the same tubes, and the same laborious method of sterilisation. I am fully aware of the difficulty of proving a negative, therefore, though others as well as myself have had negative results, I agree with Commander Bastian in hoping he may have the satisfaction of seeing the work repeated. The positive results of one man can only be disproved by the

general consensus of opinion derived from a number of negative results—as in the case of the well-known N-rays, which have been relegated to the category of fancy observation.

I am, Sir, yours faithfully,

The Biochemical Laboratory, Cambridge,  
August 22nd, 1919.

H. ONSLOW.

## LIFE INSURANCE AND WAR DISABILITIES.

To the Editor of THE LANCET.

SIR,—There are many questions in life insurance connected with injuries and ailments incurred during active service on which data are required. As far as mechanical injuries go there is probably nothing very novel. Limbs have been lost and injuries by bullets sustained by so many in previous centuries that a fairly clear actuarial estimate can be made of their bearing on longevity. More pressing questions are, among others, these:—

1. *Gassing*.—So far as I have seen at present a man who has been badly gassed exhibits objective signs in his lungs. Is he going to be more liable to bronchitis, pneumonia, &c.?

2. *Trench nephritis*.—Is this permanent in a majority or minority of cases? and what is the ultimate condition when the albuminuria does not clear up?

3. *Shell shock*.—Admitting the vagueness of the term, one would wish to know how far the nervous stability of the individual is likely to be affected and whether there is any connexion between the severity of the original condition and the probable sequelæ.

4. *V.D.H. and D.A.H.*—Of all the unfortunate legacies left us by the war I fear that few will lead, or have led, to more pitiable distress in the uneducated or even the educated soldier. Thousands of men are leading valetudinarian lives and causing untold anxiety to their dependants and friends because at some time their hearts responded naturally to an unaccustomed call upon their reserves. Once a man has been told, "There is something wrong with your heart," it makes him in nine cases out of ten a derelict member of society. In ninety-nine cases out of a hundred there is nothing wrong, and in the other case usually nothing that matters. An examination of all these cases by competent cardiologists would probably save tens of thousands of pounds and give back to thousands peace of mind and desire to work. It might do the latter and it might not. Personally, I have seen few cases in which the individual labelled with one of the two tags could not lead a normal life, and none that believed me. What is the best empirical test for gauging cardiac muscle condition?

Other ailments will suggest themselves, but those I have mentioned are perhaps the commonest. On the three first any data would be most welcome to those engaged in trying to foretell the future of the individual.

I am, Sir, yours faithfully,

Birchin-lane, E.C., August 26th, 1919.

C. WYNN WIRGMAN.

## CRYPTOPODIA.

To the Editor of THE LANCET.

SIR,—The condition described by Dr. E. C. Bousfield under the name "cryptopodia" in THE LANCET of August 23rd is of some interest, but I doubt if it should be described as a new disease, or even as a disease. An œdematous swelling of the feet, and sometimes of the legs, is not very unusual in the infective type of rheumatoid arthritis; in patients who sit for long hours with their legs in a dependent position this œdema may become marked and resemble that seen in elephantiasis. This swelling usually subsides gradually if the limbs are kept in a horizontal position, and more quickly if massage is ordered.

Dr. Bousfield's patient seems to show this œdema in an exceptionally severe form; it is, of course, possible that in his case the condition is due to some other cause, but as he states the patient suffers from rheumatoid arthritis and does not discuss the above type of œdema in his differential diagnosis, may I point out the possibility of this being a simple explanation of the change.

I am, Sir, yours faithfully,

T. S. P. STRANGEWAYS.

Research Hospital, Cambridge, August 27th, 1919.

To the Editor of THE LANCET.

SIR,—When Dr. E. C. Bousfield demonstrated the above-named remarkable case at the recent meeting in London (July, 1919) of the Association of Physicians of Great Britain and Ireland, I had the good fortune to be present,

<sup>1</sup> Proc. Roy. Soc., vol. xc., p. 286.

<sup>2</sup> "Origin of Life" p. 7.



though his illustrated description in THE LANCET of August 23rd gives one an almost equally exact idea of the condition. I venture to suggest that it represents an *extreme* form of the class of cases which I have referred to under the heading, "Baggy Subcutaneous Fat Simulating Symmetrical Oedema of the Legs; Disorder of Internal Secretions." An outline drawing by Mr. Shiells illustrates the account of the case, which I showed at the Clinical Section of the Royal Society of Medicine on March 14th, 1913 (Proceedings, 1912-1913, vol. vi., p. 167). I should have spoken of "baggy subcutaneous tissue" rather than of "baggy subcutaneous fat." In my description I said: "There is chronic swelling of the subcutaneous tissue of the legs below the knees of one or two years' duration. This is symmetrical, and in both legs tends to *bag above the ankles*. It either does not pit at all, or it (sometimes) pits slightly on pressure." The patient in question was a woman, aged 40 years, in whom menstruation had ceased six years previously. The thyroid gland could not be distinctly seen or felt. Unfortunately an only very imperfect trial of thyroid treatment was made. There can be no doubt that in similar cases obvious symptoms of thyroidal disorder are sometimes present.

I am, Sir, yours faithfully,  
F. PARKES WEBER, M.D., F.R.C.P.

London, W., August 23rd, 1919.

### THE TREATMENT OF "BORDER-LINE" PENSIONERS.

To the Editor of THE LANCET.

SIR,—The question and answer reported in your Parliamentary page<sup>1</sup> regarding the treatment and accommodation of neurasthenic and "shell shock" pensioners on the borderline of lunacy call attention to a defect in the present administration which many of us engaged in this work have constantly brought before us. A serving soldier in a neurological hospital can, if necessity arises, be transferred quietly and without publicity to an asylum, where he is not certified until ample time has elapsed to make it evident that there is no alternative. What happens to the unfortunate discharged soldier who is similarly situated? Before he can be admitted to an asylum he must be certified and be removed by the Poor-law authorities—i.e., as a pauper. It is true that once admitted he is transferred to the "Service patient" side, but why should he not be treated similarly to the serving soldier, thus avoiding the stigma of certification and pauperism.

Medical officers of neurological hospitals are often reluctantly compelled to refuse cases such as these, which might benefit considerably by treatment, owing to the unavoidable delay, publicity, and detrimental effect on the other patients which ensue if it should become necessary to send them to an asylum through the present Poor-law channels. Moreover, a man may require closer control than the average neurological hospital can provide without being certifiable.

I am, Sir, yours faithfully,  
X.

August 23rd, 1919.

### THE POSITION AND PAYMENT OF THE PENSIONS BOARDS.

To the Editor of THE LANCET.

SIR,—I have noticed several letters in THE LANCET complaining about the insufficiency of the rate of pay given to the members of Pension Boards. I agree that the pay is quite insufficient to attract capable men, but there is a worse grievance than the pay, and that is the conditions of work. I am speaking of the boards at Westminster, in Clock Tower Gardens. Until a few days ago we had a

long form, either 179 A or A <sup>36</sup>/<sub>C</sub> to fill in *in duplicate*, when the second copy could well have been made by a clerk; and the chairman had to sign his name an average of eight times in each case examined, the members not quite so often. This was bad enough, but within the last few days the card index system has been introduced, and two cards and one long form are now used in each case. These cards contain a résumé of the pensioner's medical history, and précis of all previous medical boards. No doubt they will be very useful, but they should be filled up in a quiet room by a capable medical man some time *after* the

board. While the chairman is making out this card one of the members is either making out a duplicate, or is filling up the long form, thus leaving the third member free to do the examination of the pensioner. He is hampered greatly in this work because the chairman, in order to fill up his card correctly, must keep the documents—M.H.S., &c.—under his eye, so that the examining doctor has nothing to guide him in the search for a disability. Later on, the card having been filled, the documents are released, and may be consulted, but much valuable time has been lost, and the examination is necessarily not so complete as if engaged in by two or by all of the members of the board.

Before this card system was introduced each board examined about 9 cases; now under the card system only 5 or 6 can be examined during a session, and even then not examined so carefully as before. The expense is great and the waste of public money is to be deplored when one considers that there are three members of each board, with supervising officers and clerks, orderlies, &c., to be paid for.

I am, Sir, yours faithfully,  
August 20th, 1919. MEMBER OF PENSION BOARD.

To the Editor of THE LANCET.

SIR,—I read "Medico's" letter in your issue of August 16th on the status of members of pensions boards with great interest. Our fees are certainly inadequate, but he has omitted to state that these are always several weeks in arrears. We were kept waiting till July 23rd for our June fees. Thus we were seven weeks without any pay. We have not yet received any pay for the month of July, although it is, when I write, approaching the close of the month. We feel strongly on this point. Payment should be made when it is due.

I am, Sir, yours faithfully,  
August 20th, 1919. DEMOBILISED MEDICO.

### THE MARRIAGE OF ASSISTANT MEDICAL OFFICERS AT ASYLUMS.

To the Editor of THE LANCET.

SIR,—I hope that the letter of "Dismissed" in your issue of August 9th will not pass without proper notice. Such injustice cannot be too strongly condemned. At a time when we have just concluded a war for freedom and justice to think of this instance of man's inhumanity to man and to his rights as a citizen makes one rise in anger and protest. What possible harm could be done by retaining a married man, especially as this officer was actually willing to allow his wife to live away from his professional residence, so that his position might not be lost? Surely the Commissioners of the Board of Control should take action in this matter and see who is to blame—the committee or medical superintendent.

A spirit of antagonism against one's employers is to be deprecated, but it is not to be wondered that organisations are made to defend the victims of such lack of consideration and unjust treatment. The Association of Assistant Medical Officers might now be revived seeing that A.M.O.'s are back at their old work. The advantages of being married in the case of medical officers of asylums, who have to live among special environments and temptations, are so apparent that no further observations on the matter are necessary.

I am, Sir, yours faithfully,  
August 20th, 1919. A MARRIED A.M.O.

### BOOKS, ETC., RECEIVED.

- ADLARD AND SON, London.  
Hunterian Oration on British Military Surgery in the Time of Hunter and in the Great War. By Sir Anthony Bowlby, Temporary Major-General, A.M.S. Pp. 43.  
ALEANY PRESS, Bromley-place, Fitzroy-square, W.  
Lectures on Venereal Diseases. By L. Myer, F.R.C.S. Pp. 83. 6s. post free.  
MACMILLAN (THE) CO., New York.  
Elements of Pediatrics for Medical Students. By R. G. Freeman, M.D. Pp. 290. 10s. 6d.  
MURRAY, JOHN, London.  
Through a Tent Door. By R. W. Mackenna, M.D., R.A.M.C. Pp. 310. 3s.  
UNWIN, T. FISHER, London.  
The Religion of a Doctor. By T. Bodley Scott. Pp. 98. 5s.  
Boy-Work: Exploitation or Training. By Rev. S. J. Gibb. Pp. 223. 8s. 6d.  
WRIGHT, JOHN, Bristol.  
National Health. By F. Rees, M.D. Pp. 63. 1s. 6d.

<sup>1</sup> THE LANCET, August 23rd, p. 353.



## Obituary.

CHARLES ARTHUR MERCIER, M.D., F.R.C.P. LOND.,  
F.R.C.S. ENG.,

CONSULTING PHYSICIAN FOR MENTAL DISEASES, CHARING CROSS  
HOSPITAL; LATE PRESIDENT OF THE MEDICO-PSYCHOLOGICAL  
ASSOCIATION.

WITH the death of Charles Mercier at Bournemouth, in his sixty-seventh year, medicine has lost one of its ablest dialecticians, whose erudition, wisdom, and humour enabled him to make valuable contributions in that dim borderland where psychology and insanity meet.

Charles Arthur Mercier was born in 1852, the son of the Rev. L. P. Mercier, and was educated at Merchant Taylors School. His family was left in poor circumstances on the death of his father, and he became a cabin boy, in which capacity he sailed to Mogador, and later a clerk in a warehouseman's office in the City of London. At this time, fortunately, he became in a position to follow his natural bent and study medicine. He joined the London Hospital Medical School, and from that school took the M.R.C.S. in 1874, the L.S.A. in 1877, and the M.B. Lond. in 1878. To these primary diplomas he subsequently added the higher medical and surgical distinctions, taking the F.R.C.S. Eng. in 1878, being elected F.R.C.P. Lond. in 1904, and being awarded the M.D. Lond., with gold medal in mental science, in 1905. At the London Hospital he fell under the influence of that master of scientific medicine, Hughlings Jackson, whose keen and intensive studies in neurology formed the starting point of his pupil's interest in the subject of psychology in a wide sense. At first a close student of Herbert Spencer, Mercier subsequently struck out a direction of his own, based on his personal work. He held posts of medical officer in two large public asylums, the Buckinghamshire County Asylum at Stone and the City of London Asylum, and after relinquishing these appointments he became for the greater part of his life resident physician at a private asylum. He made full use of his opportunities for a close study of lunacy, and from his personal daily work he evolved a philosophy of life, which he exposed with frankness and defended with tenacity. What proportion of the world Mercier considered to be a little mad it would be hard to say, but he was a very genuine friend to the insane. It was largely owing to his unceasing zeal that a Bill was introduced several times in Parliament to legalise the treatment of insanity in its early stages, and it is regrettable that he did not live to see what can hardly fail to be the full fruition of his and others' labours in the near future. The legal standing of the lunatic was his particular care, and he was a valuable member of the Medico-Legal Society, where his early contributions were of a highly interesting nature. Some of our readers may recall the discussion of a problem arising out of a paper by Mercier, and illustrated by a case tried at Stafford. It came out in that debate that the law had overlooked the possibility that a sane person might be prevented, by deafness and inability to read, from understanding the proceedings in a court of law. Mercier's equal facility on the medical and legal side of mental disease long served the Medico-Legal Society in good stead, while he himself thoroughly enjoyed his forensic excursions.

As a writer Mercier's genius found its particular expression. From his first contribution on a Classification of Feelings in *Mind* (1884) to his last work on "Crime and Criminals" (1918) he never wrote a slovenly sentence and never spared himself the most assiduous effort to make his meaning clear and precise to his readers. His "Text-book on Insanity," appearing in 1902, was the first comprehensive view of insanity in its practical aspects. Within a moderate compass, available to the student and practitioner of medicine, his logical mind delineated forms and varieties of insanity as types, with illustrative examples culled from his own abundant clinical experience. It speaks much for his mental fertility that this text-book appeared almost at the same time as his work on "Psychology, Normal and Morbid," which was largely responsible for making his name known as a writer in wider circles of philosophy. In this book he approached psychology from the subjective side, treating morbid conditions in the light of normal conditions working inharmoniously, and making no attempt to connect the manifestations of mental alienation with definite morbid lesions of the brain. The close and

accurate reasoning and the facility in the statement of abstract propositions which characterised all his later work were present here. In his last book Mercier turned again, as was his wont, to first principles. He proposed to discover the foundations upon which criminal law rests, so as to determine in what directions improvement was possible. His chapters on the prevention, detection, and punishment of crime are of great general interest, and his definition of crime as "due to temptation or opportunity, the environmental factor of stress, acting upon the predisposition of the offender, the inherent or constitutional factor," is a convincing example of Mercier's clearness of thought and absence of acquired prejudice. This able, useful, and original hook earned for him for the second time in succession the Swiney prize. He also wrote a book on logic, which failed to find acceptance.

Mercier revelled in argument, and for a time he may be better remembered as a dialectician than as a fine writer and a constructive sociologist. But the fame of dialectics is transitory, and, good controversialist as Mercier was, he certainly sacrificed points to a desire to score, and he allowed his wit to run away with his judgment. Often his nimbleness of brain led him beyond the position which could be taken up by strict logic. He had for many years been a serious invalid, and at no time lately would his death have caused any surprise. We have lost in Mercier one of the most sheerly clever men who ever adorned the ranks of medicine. And behind the cleverness lay a mass of solid learning.

WILLIAM ANGUS, M.D. ABERD., D.P.H.,

MEDICAL OFFICER OF HEALTH FOR THE CITY OF LEEDS.

THE untimely death of Dr. William Angus, M.O.H. for the City of Leeds and professor of public health in the University, cuts short a career of great promise.

William Angus was born in Aberdeen in 1884, and was a student there as well as at University College, London. He qualified in 1909 after obtaining many academic honours, including the Mather scholarship in medicine. For 18 months he held the position of senior assistant medical superintendent at St. Pancras Infirmary, London, and in January, 1911, began his public health work proper, being in succession assistant medical officer of health for Hertfordshire, for Ipswich, and for Leeds. In February, 1917, he became chief health officer for the city, and in June of the same year he volunteered for active service with the R.A.M.C., becoming A.D.M.S. (Sanitation), with charge of the sanitary arrangements in connexion with the 1st Echelon in Egypt. On returning to this country in February last he threw himself into the work of the organisations of which, apart from his official duties, he had been a moving spirit. Foremost among these was the Maternity and Child Welfare Scheme, for the organisation and development of which he was largely responsible. His efforts won a competitive shield for the best organised "Baby Week" throughout the country. He also took a keen interest in the organisation of tuberculosis relief measures.

One of his colleagues (J. J. J.) writes thus of him:—

"When Angus came to Leeds in 1913 he came full of freshness and vigour. He had been an athlete in his student days at Aberdeen University, and his carriage and bearing bore testimony to the excellence of his training. The uprightness of his body was an index of the uprightness of his mind. He was a true Scot—straight, clean, and honest, conscientious to a fault, firm to his convictions, and loyal to his friends. He said little, but what he did say he said with a directness and precision which carried conviction; he had no time for superfluity of speech. One reason for his success was the easy way in which he could grasp things and, when once within his grasp, retain them. He could snuff up a situation in a trice, and his conclusions were invariably correct. Like the sons of the North, he was something of a mystic, a dreamer, only in his case his dreams were not nebulous but very real things. He was a man of ideals, and his life and work in Leeds furnished him with scope enough for their development. In his public life Dr. Angus was imbued with the one idea of serving his fellow men faithfully and leaving the world and the city of his adoption the better for his life's endeavours. For himself he desired nothing, only to fill the niche allotted to him in the world and complete his appointed task in such a manner as to win the approbation of his generation."

And another (M. J. S.) adds:—

"A man of sterling and transparent honesty and high purpose, Angus combined in a remarkable degree the



qualities of the idealist and the man of action. The possessor of great executive ability and sound common sense, he impressed all with whom he came in contact by his breadth of vision and power of grasping the essentials of a situation. He was a man of few words, but those well chosen, cogent, and to the point. His clarity of expression is well exemplified in his admirable report, just published, on malaria in the Egyptian Expeditionary Force during 1918, a document of high scientific and historical importance. Of the quality of Angus's professional work it is impossible to speak too highly. All of it was done with energy and enthusiasm, and he would tackle the biggest and most difficult problems with the keenest possible zest and determination. In the academic sphere, as professor of public health in the University of Leeds, he was equally successful. He enjoyed to the full the confidence of his colleagues, and one felt that in these days of change and reconstruction Angus, the steady, wise, and clear visioned, was the right man in the right place."

Personally, William Angus was a most lovable man and a delightful companion, and his death leaves a gap in the circle of his friends which it will be impossible to fill. To his wife and two little daughters goes out at this time the heartfelt sympathy of all their friends.

#### SKENE KEITH, M.B., F.R.C.S. EDIN.

THE death of Mr. Skene Keith, which occurred on August 19th after a week's illness from pneumonia, follows closely on that of his brother, Dr. George Keith, who died last December from the same cause. With little outward show, Mr. Skene Keith achieved no small success as an operating gynaecologist, and his death will be felt as a loss over a wide circle. Both brothers inherited something of the diagnostic acumen and manual dexterity of their father, Dr. Thomas Keith, well known in his time as a pioneer of ovariectomy. Many years ago Mr. Skene Keith published his first hundred cases of ovariectomy, with a mortality of rather under 3 per cent., and his results improved still further as time went on. He came to London while still a young man and was appointed to the staff of the Samaritan Hospital, but returned shortly after to Edinburgh to assist his father, until both came to London at a later time. Mr. Keith's "Text-book of Abdominal Surgery" (1894) and his "Gynaecological Operations" (1900), the former in collaboration with his brother, Dr. George Keith, were his principal published works.

#### THOMAS TORKINGTON BLEASE, M.R.C.S. ENG., L.S.A. LOND.

Thomas Torkington Blease was born in Altrincham, Cheshire, on Oct. 4th, 1835. He was the son of Thomas Blease, L.S.A., who was born at Altrincham in 1804, and after qualifying practised there until his death in 1883. Father and son were together in practice for 27 years, then Mr. Thomas Torkington Blease carried on the practice for 21 years, when he in his turn was joined by his only son, who survives him. Mr. Blease qualified in 1856, after studying at the Manchester Royal Infirmary and the Pine Street School of Medicine, and also in London. He at once commenced practice in Altrincham and in 1858 founded the Altrincham Provident Dispensary, which later became, and still continues as, the Altrincham Provident Dispensary and Hospital. To this institution, of the success of which he was justly proud, he gave devoted service for more than 40 years. In May, 1869, he was appointed medical officer for the Altrincham district of the Bucklow union and held this post until August, 1912. For 45 years he was medical officer to the Great Central Railway Mutual Provident Society, and on his retirement in 1908 he was the recipient of an illuminated address from the members. He also held numerous appointments with other friendly societies. He most thoroughly approved of the principle of these efforts of the working classes to help themselves, and won the unbounded esteem of their members by the way in which he never spared himself in connexion with such work.

Until comparatively recently he enjoyed remarkably good health; when over 70 years of age no amount of night work seemed to make any difference to his ability to carry on as usual during the day, and by this infinite capacity for work he was able, while holding all the above appointments, to have for over 60 years, first in association with his father, then single-handed, and later in association with his son, an extensive private practice which alone was as much as most men could have done even for a much shorter period.

## Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

BARNES, H. W., M.B., B.C. Cantab., D.P.H., has been appointed Medical Officer of Health and School Medical Officer for Yeovil (Somerset).  
GUNN, W., M.B., Medical Officer for the Wadebridge (Cornwall) District of the Bodmin Union.  
HAYCRAFT, GUY F., M.R.C.S., L.R.C.P., Honorary Ophthalmic Surgeon to the Walsall General Hospital.  
LANGLEY, GEORGE JOHNSON, B.S., M.D. Lond., Honorary Assistant Physician to Salford Royal Hospital.  
SMITH, R. WAYLAND, M.B., Ch.B. Edin., Senior Resident House Surgeon at the Royal Devon and Exeter Hospital.  
STURROCK, ALEXANDER CORRAR, M.A., M.D. Edin., M.R.C.P. Lond., Honorary Physician to Salford Royal Hospital.  
SUTHERLAND, R., M.B., Ch.B. Vtct., Temporary Medical Officer of Health for Chard (Somerset).  
Leicester Royal Infirmary: CROSEY, T. V., M.D. Lond., Honorary Physician; SLIGHT, J. D., M.D. Edin., and FOSTER, A., M.D. Edin., Assistant Physicians; LAWSON, R. S., M.B., Ch.B. Edin., F.R.C.S. Eng., Assistant Surgeon.  
Queen Charlotte's Lying-in Hospital: DAVIES, TREVOR B., M.D., M.R.C.P., F.R.C.S., Obstetric Surgeon to Out-patients; DEARNLEY, GRACE, M.D., Medical Officer to the Antenatal Department; WILLMORE, J. GRAHAM, M.R.C.S., L.R.C.P., Pathologist and Registrar.  
Certifying Surgeons under the Factory and Workshop Acts: DUNCAN, J. M., M.B., Ch.B. Aberd. (Ascot); DEVINE, J. A., M.D. Dub. (Newhaven); BAKER, J. R., M.D., B.Hy. Durh. (Tyne-mouth); BABST, E., M.B., B.S. Durh. (Wallsend-on-Tyne); LIBBEY, E. O., L.S.A., L.M.S.S.A. (Scarborough); PAYNE, R. W. (Lavenham).

## Vacancies.

For further information refer to the advertisement columns.

Aylesbury, Royal Buckinghamshire Hospital.—H.S.  
Barbados General Hospital.—Sen. Res. S. £300.  
Battersea General Hospital, Battersea Park, S.W.—Res. M.O.  
Birkenhead Borough Hospital.—Jun. H.S. £170.  
Birkenhead Union Infirmary.—Res. Asst. M.O. £300.  
Bridgend Urban District Council, Penybont Rural District Council.—Joint M.O. H. £600.  
Brighton, Royal Sussex County Hospital.—H.P. £100.  
Bristol Eye Hospital.—H.S. £150.  
Bristol General Hospital.—H.S., Obstet. O., and H.S. Also Two H.P.'s. £175.  
Burnley Union Workhouse.—Res. M.O. £400.  
Cambridge, Addenbrooke's Hospital.—Hon. Asst. P. and Hon. Asst. S. Cancer Hospital (Free), Fulham-road, S.W.—Two H.S.'s. £150.  
Cardiff, King Edward VII's Hospital.—Hon. S. and Hon. Asst. S.  
Central London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.—H.S. £50.  
Chartham, near Canterbury, Kent County Mental Hospital.—Jun. Third Asst. M.O. £300.  
Chester Royal Infirmary.—H.P. £150.  
Chichester, Royal West Sussex Hospital.—H.S. £200.  
Derbyshire Royal Infirmary.—H.P. £200.  
Devonport, Royal Albert Hospital.—Res. H.S. £200.  
Dumfries, Crichton Royal.—Asst. P. £300.  
Durban, Government Hospital.—Asst. M.O. £400.  
East Riding Education Authority.—Female Asst. Sch. M.O. £350.  
Finchley Urban District.—M.O. H. and Sch. M.O. £600.  
Glamorgan County Asylum, Bridgend.—Fourth Asst. M.O. £400.  
Glasgow, Hawkhead Asylum, Cardonald.—Jun. Asst. M.O. £275.  
Glasgow, Scottish Western Asylum Research Institute.—Director. £600.  
Hackney and Stoke Newington, Metropolitan Boroughs of.—Tuberc. O. £500.  
Halifax Royal Infirmary.—H.S. £200.  
High Wood, Brentwood, Essex.—Med. Supt. £600.  
Huddersfield Royal Infirmary.—Asst. H.S. £100.  
Hyde Borough.—M.O. H. and Female Asst. M.O. £700 and £400 respectively.  
Italian Hospital, Queen-square, W.C.—Hon. Oph. S.  
Leeds Neurasthenic Hospital for Pensioners.—M.O. £400.  
Leeds Public Dispensary, North-street.—Res. M.O. £200.  
Leicester Royal Infirmary.—H.S.'s. £250. Also Ear and Throat Surg.  
Liverpool Royal Infirmary.—Hon. Asst. Gynaecol. S.  
Liverpool, Royal Southern Hospital.—Two H.P.'s and Three H.S.'s. £100.  
London County Mental Hospital, Bezzley, Kent.—Temp. Asst. M.O. 7 gns. a wk.  
Maidstone, Kent County Ophthalmic Hospital.—Hon. Oph. S.  
Maidstone, West Kent General Hospital.—Jun. H.S. £150.  
Manchester Northern Hospital for Women and Children, Park-place, Cheetham Hill-road.—H.S. £150.  
Manchester, St. Mary's Hospitals for Women and Children.—Two H.S.'s. £100.  
Melbourne University.—Lecturer in Pathology. £600.  
Metropolitan Hospital, Kingsland-road, E.—H.S., Asst. H.P., and Asst. H.S. £100.  
Newcastle-upon-Tyne, University of Durham College of Medicine and Royal Victoria Infirmary.—Jun. Demons. in Path. and Asst. to Pathologist. £300.  
Northampton County Mental Hospital, Berrywood.—Jun. Asst. M.O. £300.  
Northampton General Hospital.—Pathologist. £750.  
Nottingham Children's Hospital.—Female Res. H.S. £250. Female Res. H.P. and Anæsth. £200.



Nottingham General Hospital.—Two H.P.'s. Also Two H.S.'s. £150.  
 Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—Dist.  
 Res. M.O. £80.  
 Richmond, Surrey, Royal Hospital.—H.S. £150.  
 Rotherham Hospital.—Jun. H.S. £150.  
 Royal National Orthopaedic Hospital, 234, Great Portland-street, W.—H.S.  
 £200.  
 St. Mary's Hospital for Women and Children, Plaistow, E.—Res. M.O.  
 £200. Also Hon. Gynaecologist.  
 St. Peter's Hospital for Stone, &c., Henrietta-street, Covent-garden, W.C.  
 Jun. H.S. £75.  
 Salford Royal Hospital.—Hon. Dent. S. Also Res. Surg. O., H.P.,  
 H.S., and Jun. H.S. £250, £200, £150, and £125 respectively.  
 Scarborough Hospital and Dispensary.—Two H.S.'s. £150.  
 Sheffield City Education Committee.—Sch. Dental S.'s. £400.  
 Sheffield Royal Infirmary.—H.S. for Ear, Nose, and Throat. £150.  
 South Africa, Mental Hospital Service.—Asst. P.'s. £380.  
 Southampton, Free Eye Hospital.—H.S. £150 to £200.  
 Southwark Borough.—Female Asst. M.O.H. £400.  
 Swansea General and Eye Hospital.—H.S. £250.  
 Uxterston, High Carley Sanatorium.—Asst. Taherc. M.O. £350.  
 University College Hospital, Gower-street, W.C.—Asst. S.  
 Wallasey, Victoria Central Hospital.—Hon. Ophth. S.  
 Wallasey General Hospital.—Female H.S. and Anæsth. £175.  
 Wills County Council.—Sch. Dentist. £350.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Inspectors under the Factory and Workshop Acts at Kilgough and Luddenden, Brigg (Lincoln), Darford (Kent).

THE Secretary of State for the Home Department gives notice that in consequence of the death of Mr. F. Wilson, one of the Medical Referees under the Workmen's Compensation Act, 1906, for County Court Circuit No. 28, the appointment held by him is vacant. Mr. Wilson was attached more particularly to the Aberystwyth, Dolgelly, Llanidloes, Machynlleth, and Newtown County Courts. Applications for the post should be addressed to the Private Secretary, Home Office, and should reach him not later than Sept. 11th, 1919. Notice is also given that in consequence of the resignation of Mr. J. L. Russell, one of the Medical Referees under the Workmen's Compensation Act, 1906, for County Court Circuit No. 12, the appointment held by him is vacant. Mr. Russell was attached more particularly to the Todmorden County Court. Applications for the post should be addressed to the Private Secretary, Home Office, and should reach him not later than Sept. 25th, 1919.

## Births, Marriages, and Deaths.

### BIRTHS.

BROOKS.—On August 31st, at Beaufort House, Grange Park, Ealing, the wife of Captain Ralph St. John Brooks, R.A.M.C., of a son.  
 HENRY.—On August 19th, at The Croft, Sandon-road, Edghaston, the wife of A. R. Henry, B.Sc., L.D.S., of a son (Richard Montagu).  
 LESLIE.—On August 27th, at a nursing home, the wife of Captain W. Leslie, M.C., R.A.M.C., of a son.  
 OSBORN.—On August 21st, at Sheet-street, Windsor, the wife of Dr. A. G. Osborn, of a son.  
 PORTEOUS.—On August 26th, at Drumsheugh-gardens, Edinburgh, the wife of W. J. Porteous, M.B., Ch.B. Edin., of a son.  
 STEPHENS.—On August 26th, at Fair Elms, Sandown, the wife of J. B. Stephens, M.B., B.S. Lond., of a daughter.  
 WHITEHEAD.—On August 24th, at Rougemont, Salisbury, the wife of Brian Whitehead, M.R.C.S. Eng., L.R.C.P. Lond., of a daughter.

### MARRIAGES.

DEBENHAM—ARCHER-SHEE.—On Sept. 2nd, Leonard Snowden Debenham, M.B., B.S., B.Sc., to Anna, daughter of the late Martin Archer-Shee, of Bristol and Nailsworth, Gloucestershire.  
 ELLIOT—HAMILTON.—On August 27th, at St. Margaret's, Westminster, Captain W. E. Elliot, M.P., M.C., R.A.M.C., to Helen A. Hamilton, eldest daughter of Lieutenant-Colonel D. L. Hamilton, R.A.M.C. (T.).  
 EWENS—KELLEHER.—On Sept. 1st, Bernard C. Ewens, M.B. (late Captain, R.A.M.C.), to Mary, daughter of the late James Kelleher, D.L., Bengal Civil Service (retired), and of Mrs. Kelleher, Goderich, Ontario.  
 GARDNER—PONTON.—On August 21st, at All Souls Church, Langham-place, W., Humphrey D. Gardner, Captain, R.A.M.C., to Phyllis Ponton.  
 HUNTER—KEMPSON.—On August 21st, at the Chapel Royal, Savoy, Captain (acting Major) John Henderson Hunter, M.C., R.A.M.C. (T.F.), to Dorothy Kenelm, only daughter of the late Frank Kenelm and Mrs. Kempson, Kingsbrook House, Bedford.

### DEATHS.

ANGUS.—On August 23rd, at St. Cyrus, Scotland (very suddenly), aged 36, William Angus, M.D., D.P.H., Medical Officer of Health for Leeds. Interred at Aberdeen, August 25th.  
 CHEVERS.—On August 10th, at Southmead Military Surgical Hospital, Bristol, Major Herbert L. G. Chevers, R.A.M.C. (retired), aged 59.  
 FOX.—On August 16th, at Panyam, Nigeria, John Crofton, M.R.C.S., L.R.C.P.  
 HEWLETT.—On August 26th, at Andover, the result of a cycle accident, George Hewlett, Surgeon-Commander, R.N., retired.  
 HUMPHRY.—On August 29th, Reginald Humphry, M.R.C.S., L.R.C.P., of Nelson-road, Southsea, aged 67.  
 KAZANJIAN.—On August 10th, at Boston, Mass., following the birth of a daughter, Sophie, wife of Major V. Kazanjian, C.M.G.  
 KEITH.—On August 19th, at Bryanston-street, W., after a brief illness, Skene Keith, M.B., C.M., F.R.C.S.E., aged 61.  
 STEVENS.—On August 25th, at Gordon House, Bocking, Essex, Percy Richard Stevens, L.R.C.P. Lond., M.R.C.S. Eng., aged 61.  
 WRIGHT.—On August 28th, at Blakesley, Northants, Cyril Haworth Wright, M.B., Ch.B. Edin., D.P.H., R.C.P.S., aged 43.  
 N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

## Notes, Short Comments, and Answers to Correspondents.

### THE PERTSHIRE UNIT.

THE following interesting letter from Nish has reached us through the kindness of "J. G. F.," who has forwarded it to us "in the belief that it will prove of interest to readers who have served lately in Macedonia, particularly with the Serbian Units."

The Perthshire Unit, Serbian Relief Fund.

Nish, Serbia, July 25th, 1919.

It's hard to realise that it's almost 6 months since I left England, yet it will be on August 14th. Although my address says "Nish" I'm really 40 kilometres (25 miles) from that town, out at Prokuplje, which is slightly north-west from Nish. We are right off the railway line, which at first made us awfully cut off when the weather was bad. Now of course the road is dry, so cars come out to us oftener; so far I've not one of my own.

I've made a hospital: well it has been a job, but there is much satisfaction now in looking over an extremely good garden on to four large marquees each holding 14 beds, another of 12 beds and a long one-storied building which holds 22 beds. We have a funny little cottage not half bad now it's really clean and for the rest of the staff I've rooms outside. Although I've only 60 beds, there is much work here, as there is a very large out-patient department. This hospital supplies accommodation for, or rather I should say, meets the urgent needs of a good many villages, as well as this town with its 7000 inhabitants. When first we got here in the early days of March we at once commenced a soup kitchen from which 1600 were fed daily, also we distributed clothing. But this town itself has not suffered as much as the villages. In these the picture of misery is too awful. In view of the facts that I'm soon to begin a distribution of clothes in villages within a radius of 30 kilometres I've been by degrees visiting a good many to see for myself how things were and what the most pressing needs were. In one village, only 13 kilos from here, I found only 5 houses standing, where originally 65 stood; all the rest are in ruins.

The people there now live just in what was once the cowhouse below the level of the ground or else in shelters built against the steep mountain side with neither light nor ventilation. In one small room I was told 13 slept, all on a hard mud floor. In one corner there was some wood ash, so I knew they had had a fire, in fact I saw the small black opening in the roof, the only ventilation, and I wondered what chance there was for these poor people should one fall a victim to the all too prevalent disease—tuberculosis.

I asked why there was such crowding in view of the fact that the weather was so pleasant for sleeping out, but was told that wolves came into the village every night which made it impossible to sleep outside, in fact the few animals that the people possess are taken inside as well for fear of being lost.

Almost all the houses had had the furniture removed. The village I mention was one quite near the forest, right up towards a high mountain range. The people told me what an awful time they had had. Their men were mostly with the Comitadj, living for three years in the forests. The Bulgars occupied all the villages during the day and took everything they could find, but retired for the night, as they were too frightened to remain on account of the Comitadj. As soon as night came, down came the Comitadj, and the women gave them as much food as they had been able to conceal from the Bulgars. Here in Prokuplje the houses bear little evidence of war, except in one place where a bomb fell; also the Public Buildings are riddled with shot holes—here the Bulgars in occupation of the town had to take refuge when the Comitadj from the forests on the town came down and stormed the town. This they did just after the fall of Monastir (December, 1916) as they were under the impression that an advance was then to be made. They kept storming the Town Hall for two days and then the Bulgars, 480 of them, gave in; the Comitadj held the town for 15 days and then were driven out once more by German heavy guns which had been brought up. Then the persecution of the women began; they were clad with knives, handed with hot irons and tortured in every possible way: the Bulgars demanding to be told where the Comitadj had gone. I have seen many of these women at our Dispensary with great sores all round their sides and down their backs, and in one case a woman came with an awful chest just one mass of holes, from which pus was pouring; the remaining evidence of when she had been prodded by a bayonet! These things must be seen to be believed. Beyond this lovely garden of mine, which we just made out of a rough field, I look across open country for a little way and then a glorious range of mountains rises: on the slope of a nearer one, just where now a cornfield ripens, 30 or 40 people of all ages and both sexes were done to death every night for trumped up trivial offences! Such is war!

Many men have found their families and many of the older soldiers have been demobilised and come home; but then I've met others who say they have been to their villages and have found just a heap of stones to show where once a comfortable home stood and that no trace of the family or word of their fate can be found.

I'm most tremendously interested in it all and only wish one could do more and work more rapidly, but I suppose every little helps. Just now in this place we've a typhoid epidemic, but during two weeks we have only had 14 cases. I've had to see to the disinfecting of the houses where cases have developed and have distributed soap and urged cleanliness. I work here entirely with a Czech Doctor and his partner, also a Czech. The senior is quite a capable man, he speaks only French, the other German; however, we jog along; no English doctor of course. We get many cases of malaria, but I've never once seen a mosquito. We all have nets up, but have so far not slept under them. I'm afraid this is a very long letter, but my pen runs away with me, because I'm so interested in my subject. ....

This interesting account provides ample evidence of the terrible sufferings which the poor country folk of stricken but victorious Serbia are undergoing. Clearly there is at



the moment a great demand for help, and the demand will last for some time, and it should not fail to appeal to all of us at home. The devotion to the Serbian cause which our women have shown should stimulate a material response.

#### THE CHILDREN'S COUNTRY HOLIDAYS FUND.

Sir Horace B. Marshall, the Lord Mayor of London, has issued an appeal on behalf of this Fund, through the agency of which it is hoped that over 20,000 London children will be given a fortnight's holiday in the country. A large number of poor children have already been sent away for a holiday, but there are hundreds more on the list, and the Fund is spending more rapidly than it receives. Additional donations are urgently required to prevent undue depletion of the reserve fund. Cheques made payable to the Fund should be sent to the Secretary, C.C.H.F., 18, Buckingham-street, Strand, W.C.2.

#### THE FOOD EDUCATION SOCIETY.

THE activities of the Food Education Society (honorary secretary, Mr. C. E. Hecht, M.A., M.C.A., Danes Inn House, 265, Strand, W.C. 2) are to be extended and the co-operation of allied societies has been successfully invited. It has been decided by the society to hold a conference in Manchester in 1920 on the lines of the Guildhall School conferences of 1912 and 1913, in which problems connected with the teeth figured prominently. (See "Our Children's Health at Home and at School" and "Rearing an Imperial Race.") A strong and representative committee is in course of formation. Steps are also being taken to constitute committees in Birmingham and other places, so as to arouse interest in, and secure adequate representation at, the conference and to arrange for a local campaign. Invitations will be issued on a large scale throughout the United Kingdom. A draft programme of the conference, with tentative suggestions for a local campaign, which include a travelling exhibition, and further particulars will be sent on receipt of a stamped addressed envelope, if application be made to Mr. Chas. E. Hecht at the offices of the society.

#### LEFT- AND RIGHT-HANDED COUCHES.

To the Editor of THE LANCET.

SIR,—The modern couch sold as part of a "suite" has the head at the left end when the back rail is against the wall. The effect of this is that the occupant naturally reposes on his right side. Couches many years ago used to be made also with the head at the right end, so that the occupant would lie on his left side. This kind of couch, I find, is seldom made now, and I have a faint recollection that it was condemned because lying on the left side after a heavy meal brought on, or was supposed to bring on, indigestion or palpitation, or something worse. I am rather curious to know whether that was the real reason for the abandonment of such couches, which, I think, are called "right-handed" couches. Perhaps some of your readers know and could inform me. I am, Sir, yours faithfully,

August 25th, 1919.

LAYMAN.

#### PHYSICAL PROGRESS AND MENTAL RETROGRESSION.

THE testimony of all military medical officers is clear upon one point—namely, that although the physique of the last lot of recruits for the fighting line, called up about 1915-1916, was poor, yet the physique of those who had attained the age of 17 to 18 in 1917, and were then called up for training, was extraordinarily good. This fact was due in great measure to their having been well fed from the age of 14 or 15, i.e., from the beginning of the war. Their parents had had more money owing to increased wages, and had spent it wisely in giving the children better food. The same improved development due to the same factors may be noted in the children who are to-day between 11 and 13. Physical development, however, is not everything, as two paragraphs in the same issue of the *Times* showed one day last week. One of these deals with the case of a boy, aged 13, who showed a friend a small jar, saying, "It is rat poison. I am going to take it for the sake of a girl because she does not like me." He took it and eventually died from phosphorus poisoning. Evidence was given that "he was a boy for girls," and the father said that his son was strong willed and well developed physically. He had thought about telling his son concerning matters of sex, but had not done so. The other paragraph relates the familiar story of a window in a train being broken by a stone, the passengers in the carriage being covered with glass. It was presumably thrown by a boy, the fusion of the sexes has not yet got to the point of producing a girl who can throw a stone. Throwing seems to be a natural impulse in boys, or rather, we should say, the desire to hit a moving body with a missile is universal among them, but the impulse should be guided in the direction of wickets rather than trains. The suicidal youth seems to have been impelled by sexual impulses, which are normally strong and also

unbalanced at the time of puberty. Moreover, the conditions of the last four years have undoubtedly tended to laxity in sexual matters and also to opportunity. It is to be feared that physical development has not gone hand-in-hand with instruction as to the necessity for keeping the bodily functions under control.

#### CURRENT SEXUAL DECORUM.

*Qui s'excuse s'accuse.* The number of pens at work lately (when there have surely been plenty of other things to put in the journals) defending phenomena like new styles of dancing, like mixed bathing followed immediately by much "jazzing," like the present fashion of scanty feminine dress both by land and sea, sufficiently demonstrates a change in public conduct in the matter of sexual decorum. Whether that change arises from a spirit of mere licence and rebellion, or from a new moral evaluation, is uncertain. Probably—ætiology being ever complex—both motives operate, with many others in addition. What is invariably mentioned as a cause when this subject is discussed is reaction from the strain of war; but since the change spoken of has been noticeable, though not quite so prominent as now, any time this last two or three years, if not for longer, it cannot play a great part. What lies far deeper is the lowering of moral tone brought about by war itself, for great dangers, as Bacon remarks, demand great delights, and the spirit of the soldier is in essence the spirit of the adventurer. War brings excitement, too, and excitement, especially in women, easily runs over into sexual manifestations. Again, women, upon whom society, as well as Nature, imposes a stricter code of morality, have been almost from the beginning of the war in a position of greater social and economic independence than formerly. It would be incorrect to lay exclusive stress upon factors like these, which a conventional moralist would call unfavourable. For the progress of human culture is perhaps showing that the indispensable barriers which Freud has called "shame, loathing, and morality" are not in their proper positions. They may, even now, be too narrowly set, may make libertines of too many.

#### TENACIOUS ADVERSARIES.

Mr. Aylmer Maude, a well-known authority on Russian affairs and literature, and the author of a life of Tolstoy, is responsible in the columns of the *Westminster Gazette* for the following story:—

"A curious instance of extreme tenacity of life among the lower races was mentioned to me by Major R. Black, R.A.M.C., now surgeon to the Divina Force, and before the war a well-known practitioner in the Midlands. The case occurred at Bakaritsa. Two friends of Mongolian origin, in a labour battalion, played cards, and A won more than B liked to lose. Thereupon B got a sharp axe and drove it through A's skull and about 1½ in. into his brain. A was taken to hospital, where Major Black trephined him and repaired his brain. Next day A demanded his usual rations, and wanted to get up and go home to settle accounts with his friend. This was not allowed, but meanwhile B had been arrested, and, not wishing to submit to the Courts of the Western Barbarian, he hanged himself, and, after a period variously estimated at from five to ten minutes of suspension, was cut down. The surgeon was again sent for, and found the Russian attendants administering artificial respiration to the man at the rate of about 300 per minute, and nearly played out by their labours. This he slowed down to about 20, and after half an hour the man revived and was taken to the hospital ward his friend was in, as no bed was available elsewhere. On seeing him A became extremely violent, and it required six men to hold him down and prevent his exacting summary vengeance on B, who was still only semi-conscious. However, B, too, made a remarkable recovery, and half an hour later it took 12 men, six to each of the combatants, to prevent the two patients from fighting. Huge and repeated doses of morphia had no effect on either of them, but by arranging a bed in a separate ward for one of them murder was avoided, or at least deferred."

Mr. Maude, who is working on the Divina front, gives a satisfactory account of the health of the troops.

#### "STAMMERING AND VOICE DEFECTS."

To the Editor of THE LANCET.

SIR,—Will you grant me sufficient of your valuable space to make a comment on Miss Mabel Oswald's paper on the above subject in your issue of August 23rd? Miss Oswald is mistaken in saying that "stammering and functional voice defects have until recently been looked upon as unfortunate disabilities, and no real scientific attempt was made thoroughly to deal with such cases, and hence there was no recognised cure." In 1892 my father, the late Emil Behnke, was invited to address the British Laryngological Association on this subject, to demonstrate cases, and to explain his method. This body of experts accepted his system for the treatment of stammering and speech defects as being thoroughly scientific and sound, and their opinion has been endorsed and maintained by the medical profession in general in the years that have elapsed. His works on the subject, together with those of my mother, the late Mrs. K. Behnke, are recognised text-books.

I am, Sir, yours faithfully,

KATE EMIL BEHNKE.

Earl's Court-square, S.W., August 26th, 1919.



## THE VALUE OF MEDICAL SERVICE.

THE City Life Assurance Company, Limited, 6, Paulstreet, Finchbury, London, E.C., possess the Medical Examiners' Nomination Form reproduced below, and have endorsed it for the inspection of one of our readers who applied for the medical fee of £2 2s. :—

## SCALE OF FEES.

For Assurances up to and including £50, 2s. 6d.	These Fees refer to Industrial Proposals only.
For Assurances exceeding £50, 5s. 0d.	
For Assurances up to and including £50, 5s. 0d.	These Fees refer to Ordinary Branch Proposals only.
For Assurances up to and including £200, 10s. 6d.	
For Assurances exceeding £200, £1 1s.	

MEDICAL EXAMINERS' NOMINATION FORM: QUESTIONS TO BE ANSWERED BY THE MEDICAL EXAMINER.

Questions.	Answers.
1. Should the Directors decide to appoint you as Local Medical Examiner, will you undertake the usual duties connected therewith and accept the Fees above enumerated.	
NOTE.—In order to save the remittance of individual sums from time to time the Medical Fees will be paid by the Company Quarterly.	
2. What area is covered by you in connexion with your present practice?	
3. Please name the principal town and villages so covered. If occasion arises are you prepared to visit the proposers at their residences?	
4. Are you at present acting as Medical Examiner for any other Life Assurance Company. If so, please mention the Office or Offices represented.	
5. Are you in any way interested in the Company, either as a Policyholder or Shareholder? If not, is it your intention to become so interested?	

NOTE.—The Directors desire it to be distinctly understood that this nomination carries no guarantee as to the number of cases to be submitted for examination or remuneration to be received, and the Directors do not hold themselves responsible for any promise, verbal or otherwise, made by the Company's representative. Any application for shares, policies, &c., made by any Medical Officer must be made in the ordinary course of business, as the shares or policies applied for will be dealt with on this understanding.

Name .....

Address in full .....

Qualifications .....

Date..... 191 .....

Signature of Inspector or District Superintendent }

## THE COOLIDGE DENTAL RADIATOR TUBE.

THIS dental radiator tube has been designed for the purpose of making radiographs of the teeth and jaw, and is not intended for general radiographic work. An important feature of the radiator tube is that it is self-rectifying and can be used directly across the terminals of either an induction coil or a high-tension transformer without the necessity for any auxiliary rectifying device, whereas the universal Coolidge tube must be used on rectified current. The disposal of the cathode and anode gives the following advantages, it is stated, for dental work: (1) the rays are emitted from the tube in a line with the axis of the anode, rendering manipulation and adjustment easy; (2) the cathode circuit is grounded, so that there is only one high tension wire connected to that part of the tube farthest from the subject; and (3) it is possible to reduce to a minimum the distance between the film and focal spot by which satisfactory radiographs of the teeth and jaws are obtained with comparatively short

exposure. Further details in regard to the advantages and conveniences of this special dental radiator X ray tube are furnished by the British Thomson-Houston Co., Ltd., of Rugby and 77, Upper Thames-street, E.C.4, who are the patentees.

## THE RANYARD NURSES.

THE annual report of the Nursing Branch of the Ranyard Mission for the year ending Dec. 31st, 1918, shows that their work among the sick poor has been carried on steadily under difficult conditions. The society is one of the oldest of the Voluntary Nursing Associations, having been founded in 1868 as an off-shoot of a mission to supply Biblewomen to the poorest and most neglected quarters of London. The Ranyard nurse attends patients of any denomination and those only who are under a doctor's care. She must be fully trained, and then undergoes a further period of six months' work under an experienced sister at the Central Hostel, 25, Russell-square, W., before she is allocated to the London district, where she will eventually reside and work. The staff, when complete, comprises 84 sisters and nurses, whose zeal and energy may be estimated by the fact that 11,853 cases were nursed during the year 1918. We are glad to note that the nurse's working day averages eight hours only and that night work is discouraged, also that the holiday conditions are good—five weeks a year and a day a month. The estimate of £130 a year for the equipment and maintenance of each nurse hardly suggests a lavish scale of remuneration under present conditions, but it must be remembered that the main source of income is voluntary contributions, and the balance-sheet already shows a deficit of £1584 for the nurses' fund. We trust that public support of this excellent society will be generous enough to warrant an increase of payment to its staff as well as an extension in its sphere of work.

J. F. T.—A coroner has great latitude in holding an inquiry as to the cause of death, and, where a suicide is seen to have been precipitated by the act of another, most coroners would take serious cognisance of the fact.

## Medical Diary for the ensuing Week.

## LECTURES, ADDRESSES, DEMONSTRATIONS, &amp;c.

LONDON HOSPITAL MEDICAL COLLEGE, in the Clinical Theatre of the Hospital.

A Special Course of Instruction in the Surgical Dyspepsias will be given by Mr. A. J. Walton and others:—

MONDAY, Sept 8th.—4.30 P.M., Lecture XI.—Conditions Simulating Dyspepsia. (Dr. Hutchison.)

FRIDAY.—4.30 P.M., Lecture XII.—The Differential Diagnosis of Medical from Surgical Dyspepsias. (Dr. Hutchison.)

## Communications, Letters, &amp;c., to the Editor have been received from—

- A.—Assurance Medical Society, Lond.  
 B.—Miss K. E. Behnke, Lond.; Dr. D. W. Buxton, Lond.; Dr. A. T. Biese, Altrincham; Dr. G. Blacker, Lond.; Dr. W. A. Bullough, Chelmsford; Dr. G. E. Beaumont, Lond.  
 C.—Continental Surgical Supplies Co., Lond.; Messrs. A. H. Cox and Co., Brighton; Dr. G. Cobb, Lond.; Dr. D. Campos, Porto Alegre; Mr. J. Conqueror, South Shields; Chicago School of Sanitary Instruction; Commission for the Prevention of Tuberculosis in France, Paris, Director of.  
 D.—Mr. R. Dawson, Lond.; Dr. T. V. Dickinson, Lond.  
 E.—Maj. Gen. Sir G. Evatt; Dr. T. W. Eden, Lond.; Lieut.-Col. W. McAdam Eccles, R.A.M.C.  
 F.—Dr. E. R. Fothergill, Hove; Factories, Chief Inspector of, Lond.  
 G.—Mr. T. H. Graham, Edinburgh; Major H. D. Gillies, R.A.M.C.; Dr. P. C. Gibson, Lond.  
 H.—Capt. H. A. Haig, R.A.M.C.; Dr. J. Haddon, Denholm; Dr. R. C. Holt, Didsbury; Mr. J. J. Hemming, Margate.  
 I.—India Office, Lond.; Dr. E. C. B. Ibbotson, Corris.  
 J.—Dr. J. J. Jervis, Leeds.  
 K.—King Edward VII. Welsh National Memorial Association, Cardiff; Miss G. Keith, Lond.  
 L.—Mrs. D. C. Lea, Lond.; London School of Dental Mechanics for Ladies, Messrs. Lawson and Co., Bristol; Dr. S. C. Lawrence, Lond.; Dr. O. Langmead, Lond.; London Hospital Medical College, Sec. of.  
 M.—Mr. R. Mealing, Badminton; Dr. H. A. Macewen, Glasgow; Dr. B. Moore, Paignton; Mr. J. H. McEwan, Harrogate; Dr. W. O. Meek, Frimley; Ministry of Health, Lond.; Medicus; Dr. S. R. Meaker, Esher; Mr. F. H. Moore, Thaxted.  
 N.—National Alliance of Employers and Employed, Lond.  
 O.—Miss M. V. O. Oswald, Lond.  
 R.—Dr. J. Riviere, Paris; Dr. K. Rogers, Bromley; Dr. W. C. Rivers, Worsbore Dale; Dr. J. D. Rolleston, Lond.; Ranyard Nurses, Lond.  
 S.—Mr. T. S. P. Strangeways, Cambridge; Prof. M. J. Stewart, Leeds; Prof. E. G. Slesinger, Lond.; Dr. W. D. D. Small, Edinburgh; Scientific and Industrial Research Department, Lond., Sec. of.  
 T.—Mr. G. H. Thring, Lond.; Dr. W. J. Turrell, Oxford.  
 V.—Dr. P. C. Varrier-Jones, Cambridge.  
 W.—Sir G. S. Sims Woodhead, Cambridge; Sir G. Watson, Lond.; Dr. J. W. White, Glasgow; Dr. L. A. Weatherly, Bournemouth.

Communications relating to editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C. 2.



THE  
Chadwick Lectures

ON

THE PROBLEM OF HYGIENE IN EGYPT.

*Being Three Lectures delivered at the Summer Session, 1919,*

BY ANDREW BALFOUR, C.B., C.M.G., M.D.,

DIRECTOR-IN-CHIEF, WELLCOME BUREAU OF SCIENTIFIC RESEARCH;

LATE PRESIDENT, EGYPTIAN PUBLIC HEALTH COMMISSION.

LECTURE II.—THE SOLUTION OF THE PROBLEM:  
PAST AND PRESENT.

In our last lecture we considered a number of the more obvious causes which go to make up the problem of hygiene in Egypt. There are, however, others equally important though less apparent to the mere onlooker, which are best discussed along with the schemes that have been evolved for dealing with as difficult a proposition as a sanitarian was ever called upon to face.

THE SHARE OF THE CENTRAL GOVERNMENT.

For the benefit of those not familiar with the Orient it may be well, in the first place, to furnish some explanation of the predominant share which the Central Government has always had to play in these schemes and which, as you will find, has been allotted to it in these lectures, so far as the perfecting of its machinery is concerned.

In England health reform is pressed upon the Government by the public; the movement originates amongst the more intelligent and more active members of the community; it is explained in the scientific journals, discussed in reviews and the public press; books are published, societies formed, lectures and public speeches delivered, deputations to Ministers arranged. By all these means the public is aroused to the necessity of action and, through Parliament, pressure is put upon the Government to introduce legislation. When at last legislation is obtained it is largely the public, through local bodies, societies, the medical profession, and public-spirited individuals, which sees to its enforcement; and it is again public opinion which demands its extension and amendment. The rôle of the Government lies chiefly in its sympathetic assistance and in helping to obtain uniformity in administration.

How very different in Egypt! There the position is entirely reversed. Public opinion initiates nothing, demands nothing, enforces nothing. If, therefore, any advance is to be made in public health it is the Government which must call attention to the necessity of reform, the Government which must initiate and press through proposals, the Government which must try by education to overcome the inevitable opposition caused by the natural conservatism of the population. From the public little more can be expected than passive acquiescence in the proposals of the Government. A Central Government, therefore, strong enough on its health side to influence and arouse public opinion, to stimulate lethargic local bodies, and to demonstrate the usefulness of health measures by successful experiment, is the prime necessity of health reform in Egypt.

PIONEERS IN SANITARY REFORM.

The courageous person who first undertook the work of reform was Clot Bey, a Frenchman, who in 1825, under the enlightened rule of the great Mehemet Ali, established a Board of Health, which was chiefly concerned with providing means of treatment for sick and wounded civilians. This speedily led to the founding of a School of Medicine and Pharmacy and also of a Maternity Hospital, but it was not until 1845 that a Civil Sanitary Service was inaugurated in addition to the existing Military Sanitary Service, which dated back to 1820.

About this time it would appear that considerable activity was displayed in abating nuisances. Vaccination was largely practised and the registration of deaths was efficient. Indeed, a European Commission reported favourably on the manner in which the sanitary department was conducted, a fact well worth remembering by those pessimists who are inclined to say Egypt was always backward and

No. 5011.

will ever remain so. It is significant that in those days, for a period of more than 12 months, no case of plague or cholera occurred in the country.

Unfortunately, this satisfactory state of affairs did not continue, and at the time when Great Britain undertook to rectify and control the administration of the country sanitary matters were in a lamentable condition. The causes are not far to seek, and as some of them are operative in the problem of to-day they may be briefly noted.

The lethargy of the East played an important part; corruption, with the inevitable cry for backsheesh, was rampant; ignorance, indifference, and lack of recognition of all that a sound and energetic sanitary policy stands for exerted a baleful influence. In addition, the finances of Egypt were in a most parlous condition, and there was actually very little money available for health measures. In those days, also, fanaticism was more powerful than is now the case and it was difficult to remedy the state of the mosques, which was often deplorable and afforded every facility for the spread of disease.

THE DEPARTMENT OF PUBLIC HEALTH.

In 1883 Mr. Clifford Lloyd created a Department of Public Health, and its first director was one who, in later days, delivered the Chadwick lectures with much acceptance, Dr. F. M. Sandwith, a man who ever placed duty before self and who, as Lord Milner says, "was got rid of by a rather ignoble intrigue due to the excessive zeal which he had shown in the dismissal of corrupt subordinates." Sandwith, however, set the sanitary ball rolling, and though its pace slackened a fresh impetus was imparted to it when Rogers Pasha, now Sir John Rogers, assumed control. He did a great deal for sanitation in Egypt, and his successor, Sir Horace Pinching, carried on the good work. It is unnecessary to enter into particulars as regards the various schemes put forward and completed during the period when these two able administrators fought disease and death in Egypt. Our theme is the problem at the present time for, despite all they accomplished, they were very far from attaining anything like perfection, and those who followed them found plenty to do and left plenty to be done. At the same time, it is necessary to note that the cause of hygiene was helped indirectly, but very effectually, by the manifold reforms carried through in other departments of the Government service. The fact that Egypt was rescued from bankruptcy and became financially prosperous aided sanitation, the spread of education helped it in large measure, the great development of public works, and especially of road-making, water-supply, and drainage schemes, assisted enormously; in other words, sanitation shared in the benefits attending the general quickening, as must ever be the case. It is essential that the hygienist should possess a spirit of sweet reasonableness and recognise that money expended on other services than his own may often be regarded as chinking in the sanitary coffers, though I admit it is not always easy to cultivate so philosophic a spirit, and that too much complacency in this direction is strongly to be deprecated.

*Shortcomings of the Administrative Scheme.*

Bearing all these points in mind, and remembering that lethargy, corruption, ignorance, indifference, and intrigue are always likely to hinder sanitary progress in Egypt, as indeed they do in other countries, let us see in what directions the lately existing scheme of health administration—a scheme, be it noted, admirable in many respects and the outcome of years of experience and labour—fell short of the ideal and thereby contributed its quota to the causes which we are considering.

In order to do so it is necessary to discuss the scheme itself, and I direct your attention to the graph. (Graph 1.) As I have indicated, this scheme, or rather its execution, has gone a long way towards solving health problems in Egypt, and in its discussion attention will be drawn not only to its shortcomings, such as they are, but to its virtues, while points which may be obscure to those unfamiliar with the land of the Pharaohs will be elucidated so far as this is possible in the time at our disposal.

It will be seen that the Department of Public Health is merely a section of the Ministry of the Interior. It does not, so to speak, stand on its own legs. In "Modern Egypt" Lord Cromer devotes a chapter to the Interior and a subsidiary chapter to its three sub-departments. These are;



(1) prisons; (2) slavery; (3) medical and sanitary administration. There in a nut-shell you have one of the chief causes of the problem of hygiene in Egypt—lack of adequate and fitting status for the organisation that controls the factors governing the health of the nation.

#### *Subordinate Position of Sanitary Administration.*

One need not feel surprised that so notable an administrator as the late Lord Cromer was content with such a situation, was satisfied, or apparently satisfied, to class a great sanitary administration along with the sections of Government which look after prisoners and slaves. Lord Cromer belonged to a school which was not greatly concerned with health problems, save when waves of epidemic disease disturbed their peace of mind and the well-being of the community. Though by no means indifferent to medicine and hygiene and a good friend to the scientist, he perhaps scarcely realised the full significance of sanitary work in such a country as Egypt. I am quite certain he was infinitely more interested in Greek odes than in the pathogenic protozoa. Small blame to him. The day he represented is only now passing and it is passing slowly and with some reluctance. The medical profession itself is largely the cause of a conservatism which has hindered progress in hygiene, which has obscured the truth enshrined in Emerson's famous dictum, "The first wealth is health." The Faculty from time immemorial has been much more interested in the cure than in the prevention of disease, though, to its honour be it said, medicine is the profession above all others which cuts its own throat, which has always endeavoured to efface itself by following an unselfish tradition. But it is not only the clinician who, by indifference and lack of interest, has put his spoke in the sanitary wheel. The hygienist himself has too often been to blame, for how often has he asked for impossible things in an impossible way! His outlook has frequently been narrow, and it is no wonder that men like Cromer, who were accustomed to take a wide survey of life and of affairs, who had to weigh the claims of many applicants for money, and who, in addition, could scarcely be expected to appreciate fully how the increase of scientific knowledge had placed new and effective weapons in the hands of the sanitarian—it is not surprising, I say, that such men were a little apt to be suspicious of the enthusiastic reformer whose constant cry was that if he only got the funds he would achieve hygienic miracles.

The difficulties of the administrator in this respect are well set forth in the concluding chapter of that very interesting book by Dr. Malcolm Watson "Rural Sanitation in the Tropics." Therein he quotes the very words of the famous Egyptian Pro-Consul to good effect. It is, however, at last being understood that the welfare of a nation is closely bound up with the health of its people. Nowhere is this more true than in Egypt and nowhere is there a greater necessity for establishing a Ministry of Health. In this connexion let me read you a portion of a valuable memorandum on the subject by Dr. Cyril Goodman, late Assistant Director-General of the Egyptian Public Health Department, and one, truth to tell, who is much better qualified to deliver these lectures than I am, for he knows Egypt intimately and has done much to guide her health policy along sound and practical lines. He says:—

"As there is no public opinion in the country demanding health reform the whole of the driving force in favour of health measures must come from within the Government itself, or rather that part of the administration charged with public health duties. The progress attained is directly proportional to the influence which can be brought to bear upon the Government.

"As at present constituted the Department of Public Health has no direct influence upon the policy of the Government; it is represented neither upon the Council of Ministers nor upon the unofficial Council of British Advisers which with the High Commissioner go to make up the somewhat informal system of government in Egypt. The High Commissioner, except in so far as he is controlled by the Foreign Office, is possessed of supreme authority in so far as he cares to exercise it, but the representative of the Public Health Department has no right of access to him to press forward public health measures or to oppose measures detrimental to the health of the country.

"The Public Health is a subordinate Department classed with and often below the Customs, the coastguards, the Public Lands and the Survey Departments, which, however important in themselves, have very little concern with the public policy of the country. The result of this system,

or lack of system, is, as might be expected, a reign of disorganisation and misunderstanding. No opportunity is ever offered for the consideration of the health problem as a whole; lack of co-ordination between the various departments has led to conditions injurious to health which might have been easily remedied at the outset; individual public health measures are presented and pressed forward second- and very often third- or fourth-hand or not presented at all—killed or mutilated for some unknown reason by some unknown official of the superior hierarchy; measures with a strong public health bearing are discussed and agreed to without consultation of the department, which is left with the choice between silence and a belated and irritating protest. In short, the position of the department is very much that of an indignant subscriber whose only resource if he disagrees with the policy of his paper is to write a letter of protest which his editor may or may not insert."

#### *The Burden of Petty Detail.*

This is a serious indictment of the Government machinery, but I believe it to be fully justified, and I should say that this cardinal fault of lack of status is the chief of those more obscure causes which to-day render the question of health in Egypt as paradoxical as is the country itself.

In the past the Director-General has been burdened with petty details, a state of things which has tended to prevent him devoting sufficient attention to larger questions of policy and to the bearing of scientific discovery and progress on the affairs of his department. No separate section of medical intelligence has been available, and though, as will be seen, the Director of the Public Health Laboratories has ably filled the post of technical adviser in addition to his other duties, it is essential in these days of rapid change and widespread activities to have a properly organised bureau of information attached to every large department of hygiene. Egypt has suffered from the want of such an institution, and there has also been an absence of means for enlightening both Government officials and the public generally as to the nature and prevalence of preventable disease and the measures which have been and should be taken to combat it.

#### GROUPING OF SANITARY ADMINISTRATION.

Turning again to the graph and the Central Administration, we see that there are four chief sections of work, each controlled by a director. These are the sections dealing respectively with general sanitation, with hospitals, with ophthalmic hospitals, and with epidemics. It is necessary to consider them briefly in detail.

##### *I. Section of General Sanitation.*

Probably nobody but the director of Section I. has any real conception of the multifarious duties which fall to his share and the difficulties with which he is constantly beset. These difficulties, though largely due to the presence of the Capitulations, the state of sanitary law in Egypt, and in some instances to the flatness of the land, its water-logged condition, and the comparative scarcity of fuel, are also caused by an overloading of the section with matters which should be dealt with elsewhere. As a result the ill-effects arising from a chronic paucity of staff are intensified. For example, a great deal of the work concerned with cemeteries is, strictly speaking, not sanitary work at all, and should be relegated to the State Domain Administration or at the present time to the Survey Department. Later on, when local self-government has become a power in the land, as must needs be the case, the municipalities and village councils will doubtless assume control of the cemeteries in their respective districts. Anyone versed in public health administration will wonder why the words "medico-legal work" appear on the list of subjects classed under general sanitation, and no one not conversant with Egypt could read the riddle. It is no use saying more about the matter here, for the question is intimately bound up with the duties of the Markaz doctor, and will be considered when we discuss the rôle which that indispensable person plays in the provincial organisation.

Prostitution figures in the list, possibly with more reason, for at last, at long last, the nations are beginning to understand all that the results of prostitution cost them in the way of expense, inefficiency, wrecked homes, disease, degradation, and death. Still, prostitution is so intimately bound up with venereal clinics and hospital treatment that its sanitary control is undoubtedly better exercised elsewhere than in the company of offensive trades, insanitary buildings, drains,



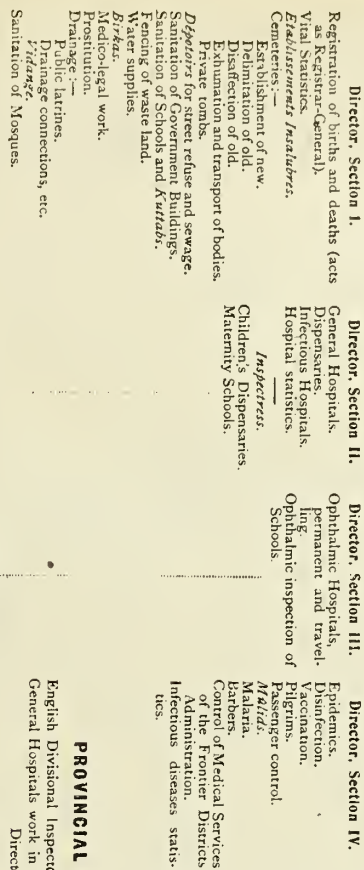
**PRESENT ORGANIZATION OF  
THE DEPARTMENT OF PUBLIC HEALTH.**

**CENTRAL ADMINISTRATION.**

GRAPH No. 1.

MINISTER OF THE INTERIOR.  
UNDER-SECRETARY OF STATE.  
DIRECTOR-GENERAL.  
ASSISTANT DIRECTOR-GENERAL.

Discussion with Director-General of matters of general policy of Department. Legal questions, drafts of laws, regulations. Departmental Orders, instructions, circulars, personnel questions, control of Departmental correspondence, Health Offices, prints and publications, stationery, permits to practise the medical and allied professions, Budget, Stores questions, Pharmacy questions and law, Cairo Scavenging and Watering Service, Cairo and Alexandria water questions.



**PROVINCIAL ORGANIZATION.**

English Divisional Inspectors who inspect all sanitary and General Hospitals work in the Provinces and report to the Director-General.

Inspector of Ophthalmic Hospitals.

Hospital Medical Officers and *Hakimas.*

Medical Officers of Health (of Cairo and Port Said) or Health Inspector (Suez and Damietta) of Governorates.

Quam Medical Officers in Cairo.

Barbers and *Diyari* in Villages attached to Governorates.

Mudirya Health Inspectors.

Special Epidemic Staff, disinfectors and rat-catchers.

Markaz and Outpost Medical Officers.

**WORK OF MARKAZ DOCTOR**

1. Infectious diseases.
2. Medico-legal examinations and reports.
3. General Sanitation.
4. (a) Inspection of Schools and *Kutabs.*
5. (b) Mosques' water system inspection.
6. (c) Sanitary reports on Government Buildings.
7. (d) Inspection of regulation of water intakes.
8. (e) Street cleaning.
9. (f) Slaughtering sites.
10. (g) Enclosure of waste lands.
11. (h) Inspection of *Wadys* for town refuse and loose contents.
12. (i) *Establishments Insalubres.*
13. (j) Disinfection.
14. (k) Vaccination.
15. (l) Control of registration of births and deaths.
16. (m) Prostitutes' examination where no hospital exists.
17. Cemeteries:—
18. Disinfection of old.
19. Exhumation of bodies.
20. Private tombs.
21. Public Health Inspectors on Local Commission.
22. Contraventions against the law regarding the practice of medicine, etc.
23. Pilgrims.
24. *Passenger control.*
25. *Examination of sick Government employees.*
26. Examination of *Chaghyrs.*
27. Inspection of deaths (uncertified).

Barbers and *Diyari* in Villages.  
Burial permits.  
Vaccination.  
Inspection of Deaths.  
Registration of births and deaths is done by *Umdahs* and *Sarrafs*.



water-supplies, conservancy arrangements, and all the various matters which are sometimes for the sake of convenience, and not too inaptly, classed as nuisances. A possible objection to the use of this term may, however, be found in the fact that the harassed director of this section would often gladly extend it to include officials of the Ministries of Finance and Justice, who, possibly through no fault of their own, are brought sharply into conflict with him.

It is undoubtedly along the lines mentioned in this section that there has been the least progress in the past, and it is probable that general sanitation presents the most difficult of all the problems which have to be solved. The hygiene of the village, of the native quarters in the cities and large towns, the destruction of flies and mosquitoes, the control of food, the sanitary regulation of buildings are all included in this part of the health campaign and, as has been hinted before, it is no easy matter to hustle the East.

### II. Section of General Hospitals.

Hospitals, except those for infectious diseases, do not usually come under a public health administration, but you will see that Section II. embraces general hospitals, dispensaries, and maternity schools. The department whose work we are considering would probably in other countries than Egypt be termed the Department of Medical Services, for it is concerned with all matters affecting health. It is, I think, to the credit of those who christened it that they gave it a comprehensive title and one which brings prominently into notice the hygienic side of the work. It is not, however, the best name. That, let us hope, will soon be applied and will entail a radical change converting the department into a ministry—a Ministry of Health.

Most of the general hospitals under the Public Health Department are satisfactory, but there are not enough of them. This is specially true in the case of the larger provincial towns. The hospital is no longer looked upon with dread and suspicion. Not so long ago most of the lower class Egyptians certainly believed that a suitable hospital motto was: "All hope abandon ye who enter here," but happily that day is past and now the cry is for more beds and yet more beds. Hospitals, however, cost money and there's the rub! The Central Treasury has not a chest of bullion like the widow's cruse, and yet money must be found. Here, then, is another problem, the only solution of which lies in the establishment of local self-government and local taxation; measures still in their infancy in Egypt but capable of great development.

When this occurs it will be possible to provide more permanent hospitals for infectious disease. These are badly needed, for whatever the future may have in store, it will be long before communicable disorders cease to be one of the plagues of Egypt, and though certain of them are, perhaps, best treated in emergency hospitals others require the comfort and hygienic surroundings associated with a permanent building. Both classes of hospital suffer to some extent from a lack of sufficiently frequent and skilled inspection. Dispensaries, and more particularly children's dispensaries, are amongst the most useful health institutions in Egypt, but there are far too few of them, especially considering that the provision for children's beds in the general hospitals is inadequate. There is also a lack of beds for gynaecological cases, and a great need for women's outpatient clinics throughout the country. You will see that maternity schools figure in the list. There are six of these, but that number is not sufficient. Owing to the harem system in Egypt, the proportion of maternity cases attended solely by midwives is very high, amounting almost certainly to over 90 per cent., and at present the training of the dayas or midwives is most defective, while the mumarridas, though well trained in nursing and midwifery at the Kasr-el-Aini Hospital in Cairo, have, partly as the result of having long been called hakimas, been in the habit of practising medicine as well as midwifery, and certainly require to have their duties defined and their activities controlled. There is good reason to believe that they often pass from a case of infectious disease to a childbirth without taking any precautions whatsoever. The result of such a state of things can readily be imagined.

One cannot leave the question of children's dispensaries and maternity schools without paying a tribute of admiration to the excellent work performed by the inspectress of the

Public Health Department in connexion with these institutions. Taking this hospital section as a whole, it may be said that, while a great deal has been accomplished, it yet furnishes a good many of the causes which help to make the health problem so pressing and so difficult to solve. There are errors of omission, there are errors of commission, and at a later date we will consider how these may perhaps be rectified or at least in some measure minimised.

### III. Section of Ophthalmic Hospitals.

Turning to Section III. we find we are again concerned with hospitals, but with hospitals of a special class. We are at once in touch with a great and beneficent charity, excellently organised, admirably conducted, which has brought relief and cure to thousands, which many have good reason to bless, and which no Britisher can study without a feeling of pride and satisfaction. If the British occupation of Egypt had resulted in nothing beyond the establishment of the ophthalmic hospital system, it might still have been claimed for it that it had conferred a great boon upon the inhabitants.

*Prevalence of trachoma.*—This campaign, however, owed its inception to private philanthropy, for at first the expenses were defrayed out of a fund provided by Sir Ernest Cassel. This was in 1903, and prior to that date practically nothing was done for eye diseases in Egypt, although no less than 4½ per cent. of the total population was blind in one or both eyes. At first there was only one travelling hospital, but the zeal, energy, and skill of the director soon led to a much larger organisation, and at the present time there are 13 permanent eye hospitals and five travelling hospitals, with a staff of 29 doctors, carrying on a most beneficent prophylactic and curative work. These hospitals also serve as training centres in ophthalmic surgery, and many medical men have passed through the post-graduate courses held in them. A visit either to a permanent or temporary ophthalmic hospital is, as I can testify, full of interest. Women and children form the greater number of the patients who suffer from trachoma, trichiasis, corneal opacities, cataracts, and indeed every form of eye affection. Let us hope that those who have still their sight or whose vision—praise be to Allah!—is restored benefit from what they see of the cleanliness, smartness, and order of these model hospitals. The people flock to them, 81,000 patients being now treated in them annually, and, best sign of all, for imitation is the sincerest flattery, various provincial councils have established ophthalmic hospitals of their own, while the medical service of the Ministry of Waqfs, a Ministry which controls large funds from Moslem sources earmarked for charitable purposes, possesses a special eye hospital at Kalaoun in Cairo. As the sectional director reports, "the provision of means of ophthalmic relief is one of the few things besides education in which the Egyptian has taken a keen interest, and it is frequently stated in native circles that the provision of ophthalmic hospitals reflects more credit on an individual or group of individuals than the building of a mosque." All this is very gratifying, but there is still need of expansion. The provinces of Qena, Assuan, and Qaliubia have been left out in the cold, and there the poorer classes suffer, and have, so far, little chance of remedy. But the section is not only concerned with hospital work. Its activities have extended to the Government primary schools, for it has been recognised how important it is to obtain trachoma cases at an early stage and cure them before irremediable damage has been done. Actually 90 per cent. of the pupils show signs of the disease either in an active or passive form. The pressing question now is to apply the same methods of inspection and treatment to the kuttabs, or infant schools. It will cost £E.40,000 per annum to do so, but it is well worth the money, which should be obtainable from local sources.

*Campaign against ankylostomiasis.*—Yet another duty devolved on the ophthalmic section when at the instance of the late Lord Kitchener it undertook a campaign against ankylostomiasis not very long before the outbreak of war. As the Egyptian Government did contribute something towards the expenses of this campaign the Britisher may perhaps view it with feelings less mingled than those with which he regards other campaigns against the hookworm in various British Colonies and Protectorates, or, indeed, that waged under the auspices of the Church Missionary Society in Egypt itself. In this case, as elsewhere



throughout the world, Great Britain has been in large measure content to allow its American cousins, or as one now might almost say, brethren—brothers in arms at least—to assume its responsibilities and to do work which, rightly speaking, it should have done. Whatever may be our views as regards the utility of the methods employed (and I may say that not a few believe that it would be better to concentrate attention on ankylostome breeding places and not on the victims of the disease)—whatever our views, all honour must be ascribed to the Rockefeller Institute for what it has achieved, not only in the States and in countries under the Stars and Stripes, but in British Colonies and Protectorates. We owe it a debt of gratitude, but surely it is strange that the British Empire, which is not lacking in millionaires and which stands *in loco parentis* to hundreds of thousands of sufferers from the hook-worm, should complacently accept this gift of money and of workers from America, and do little more than afford facilities for treatment and research. I confess it has always seemed to me an attitude unworthy of a world-wide Empire which, thanks to Sir Patrick Manson and the presence of our far-flung possessions, was the pioneer nation in the study and treatment of tropical diseases. Let us hope that once we all settle down this reproach will be removed, and that we will take up such part of the white man's medical burden as rightly falls to our share.

#### IV. Section of Epidemic Diseases.

We have already paid a well-merited tribute to the efficiency of Section IV., which controls epidemic disease, and from the list you will see the various branches of the work with which it is concerned. Outbreaks of typhus and relapsing fever are seasonal in Egypt, and during the epidemic season you will find scattered about the country the temporary hospitals or cordons run by this section. They are simple structures, but are well designed to cope with emergencies and they combine efficiency with economy. There can be no higher praise. Similar hospitals deal with plague patients, while this section has a special epidemic staff in the provinces, where it also possesses disinfectors and rat-catchers.

Vaccination, a most important duty, falls to its share, and it is ever bustling and busy, as indeed it must be, for the motto when dealing with epidemic disease, especially in a country like Egypt, must ever be, "Strike early, strike quickly, and strike hard."

You will notice that pilgrims and passenger control figure in the list, and let me say at once that this has nothing to do with international quarantine. The control is exercised over all passengers arriving from cholera-infected countries once they are safely ashore. It supplements the work of the International Quarantine Board, of which it is convenient to speak here, though very briefly. It will be remembered in our first lecture that we began by considering the part which Egypt plays as a filter for communicable disease. This filtering action has in the past been conducted, and very well conducted, under the ægis of a somewhat heterogeneous body, over which presided for many years a man of brilliant parts, with the pentecostal gift, with many of the qualities of genius and an abundance of tact and discretion, a man whom, alas! the sea which he loved so well and with which he had so many dealings claimed for its victim, as it has claimed so many in the late war. I refer to Sir Armand Ruffer, under whose guidance the Board guarded Egypt faithfully and well. His monument is El Tor, the great quarantine station which he established in the Sinai Peninsula, and where he encouraged and promoted research work upon cholera, plague, and dysentery. In addition, the Board carried out much port work at Abu Saad near Jeddah, at Suez, at Port Said, and at Alexandria. It may be said that it did not control the Hedjaz railway, which had its land lazaret at Tebuk, nor did it look after Indian pilgrims, for whom the Indian Government provided a quarantine station at Camaran, a station wiped out by the Turks.

As it acted under the terms of the Paris Convention the Board could only apply quarantine against cholera-infected ports and not countries, and yet a port might be free and part of the country to which it belonged infected. Hence the Epidemic Section could furnish most useful help by inspecting and registering passengers on arrival from cholera-infected countries. Pilgrims also returning after quarantine

at El Tor were dealt with, and medical officers of the places to which they were returning were notified so that surveillance could be instituted, and, if necessary, specimens taken for bacteriological examination.

Mulids are fairs, and great nuisances as centres of infection. The other items do not call for special notice here. We will meet with the barbers in due course, while the Frontier District Control has to do with new conditions arising out of the war.

On the whole it may be said that this section rather solves than creates problems. It saves lives and it saves money, many lives and much money, and few English folk in Egypt outside the Public Health Department know much about it or its work. The village Omdehs and Sheikhs, however, know all about it, and, I believe, usually appreciate these mushroom hospitals of wood and matting.

#### OTHER SERVICES: PUBLIC HEALTH LABORATORIES.

So much for the four sections. Of the other services which you observe also form part of the central administration, I propose to consider only two, the Public Health Laboratories and the Inspectorate of Pharmacies.

The laboratories, which are under a most capable director, and which have rendered great service to the cause of health in Egypt, were started in 1896 by Sir John Rogers, and from modest beginnings have attained respectable proportions. There is, however, a very pressing need for an extension in the accommodation provided, especially as regards the chemical and bacteriological laboratories. At present there is no protozoologist, and yet the pathogenic protozoa play no unimportant part in Egyptian pathology, as witness *Entamoeba histolytica* and *Leishmania tropica*, the causes respectively of amoebic dysentery and oriental sore.

You will note that small-pox vaccine is manufactured at an institute attached to the laboratories, while there is also an Antirabic Institute—a very necessary establishment in a land where rabies is common and where the bites received from rabid dogs, wolves, and jackals are often fatal and severe. It is a very interesting place, this institute, with its crowd of patients, mostly blue- or black-garbed fellahs or ragged slum-dwellers, but with a sprinkling of all classes of the community. The dexterity with which the inoculations are given is remarkable, and many patients must yearly be saved from the horrors of hydrophobia.

The Vaccine Institute, though small and somewhat archaic in the matter of special apparatus, is well run and fulfils a very useful function. Buffalo calves furnish the supply of lymph which, from the results obtained, evidently possesses good immunising powers. In a country like Egypt, where small-pox is rife, such an institution is essential and it should be kept up to date in every particular.

Allowing for the value of the vaccine lymph produced, deducting the fees paid for treatment at the Antirabic Institute and those received for analyses, the annual upkeep of these excellent laboratories only amounts to about £E.5000. As their director has modestly stated:—

"For this sum the Government obtains a reasonably efficient bacteriological and chemical service, including the following regular services: 1. Bacteriological diagnosis for the whole of Egypt except Alexandria. 2. The diagnosis work of the city of Cairo. 3. A regular bacteriological and chemical control of the Cairo water-supplies. 4. The analytical work of the Inspectorate of Pharmacies. 5. All bacteriological and chemical examinations required for the General Sanitation, Epidemic, and Hospital Sections of the Department and for the Cairo Inspectorate, the work for the latter including a regular milk control and a bacteriological control of the Cairo aerated water and ice supplies."

Here indeed is a worthy record of work, and, in addition, research is conducted as opportunity offers, while the director acts as scientific adviser to the department which he serves.

The Water-Control Service, which comes under the Laboratories, is yet in its infancy, but it is an important development, for if water plays a paramount part in the well-being of Egypt, it is one of the chief sources of trouble from a hygienic and economic standpoint, and water-supplies everywhere require to be regularly inspected and adequately controlled. Moreover, a careful study is required of the manifold problems connected with drinking-water in Egypt.



*Inspectorate of Pharmacies.*

It is, perhaps, a little surprising to see an inspectorate of pharmacies figuring as an important branch of public health administration, but pharmacies play quite a peculiar part in Egyptian life, and many of them require close supervision. Some day someone may write a romance of Egypt with pharmacies well in the foreground. It is doubtful if permission could be obtained for the publication of such a work, but if it ever saw the light of day what tales would be forthcoming about the smuggling of forbidden drugs, about opium and cocaine, about the sale of aphrodisiacs, abortifacients, and patent medicines, about the trade in spices and perfumes, about poisons, and especially those grown in Egypt, such as hyoscyamus and datura. All kinds of abuses exist, for pharmacists, ignorant of medicine, usurp the duties of the medical man, and drugs are adulterated or tampered with to the detriment of purchasers. The Inspector of Pharmacies has his own problems to face, and he will be greatly helped when the Capitulations are abolished, when new legislation is introduced, when private laboratories are better controlled, when facilities for the inspection of pharmacies are increased, and when an official pharmacopœia is duly recognised in Egypt.

*SEVERANCE OF PROVINCIAL ORGANISATION.*

The graph (No. 1) would seem to indicate that our proper course would now be to discuss the provincial organisation, but before doing so it is necessary to point out that of late years the Public Health Department has suffered some loss in efficiency through a tendency towards the severance of certain of its services from the Central Administration. In addition, some government medical services in Egypt have never been within the fold. As examples of these statements I may cite the medical services of the railways, police, prisons, and coastguards, and what is known as the Central Medical Commission, which is concerned with the medical examination of candidates for Government posts.

As the special Public Health Commission reported last July:—

"A department like that of Public Health may be likened to one of the Great Powers with many possessions. So long as the central grip is firm and the responsibilities fully recognised the component parts will remain united, but the first sign of decadence and weakness is often a tendency towards disruption."

The proposals submitted for checking this tendency and remedying the existence of this state of affairs will be dealt with in due course. Meanwhile, it seems advisable to say a few words about the municipalities and local commissions which, with the provincial councils to which passing reference has been made and which are like county councils in England, form the hope of local self-government and town development in Egypt. On this account it is upon them also that the responsibility of grappling with many sanitary problems will assuredly fall.

*Functions of Municipalities.*

Time will not permit an historical survey of the foundation and progress of the municipalities and local commissions; they come under the Ministry of the Interior, but are quite distinct and separate from the Public Health Department. Yet they are largely concerned with sanitary engineering and with public works which have a distinct bearing on the health of the people—such works, for instance, as the care and maintenance of roads and cemeteries, water-supply, scavenging, and the superintendence of slaughter-houses. They are also concerned with lighting, and let it always be remembered that a dark town is a dirty town in more ways than one. The municipalities exercise their functions in some of the larger provincial towns, the local commissions in 35 of the smaller towns of Egypt. They are in some ways analogous to municipal councils and town councils in this country, and are administered in an able manner by a British director, who happens, fortunately, to be a medical man. Already they have accomplished much good work, some of which we shall look at in a moment, and, considering the ever-increasing burden of expense in public health matters, a load which no Central Treasury can possibly shoulder, it is clear that the municipalities and local commissions must remain apart and form the nucleus of a future scheme whereby the municipalities will manage their own health affairs under the guidance and advice of the Ministry of Health.

**OBSERVATIONS ON AORTIC DISEASE IN SOLDIERS.**

BY THOMAS F. COTTON, M.D. MCGILL.

(A Report to the Medical Research Committee.)

DURING the past winter an unusually large number of soldiers presenting signs of aortic disease were admitted to the Sobraon Military Hospital, Colchester. The majority of these were young men who had been passed fit for general service, and all but a few had seen active service abroad. The opportunity seemed a favourable one for making a careful study of the symptoms associated with this form of cardiac affection, and their significance; and of the signs used to recognise this valvular defect, and their value in estimating the stage of development of the disease.

*Analysis of 50 Case Histories.*

In dealing with the symptoms I have analysed the case histories of 50 soldiers with signs of aortic insufficiency. All of them were submitted to a complete physical examination, and the description of the signs is based on this examination. The exercise tolerance was determined in these 50, and 17 others, by observing their reaction to a simple exercise test; in 8, graded exercises as employed in the treatment and sorting of the D.A.H. cases, were used as a test of physical fitness. The histories which these men have given throw considerable light upon the causation of the symptoms which they complain of. If they can be interpreted as symptoms arising not from loss of cardiac reserve, and can be explained by some other cause than the valvular defect, then the difficult task of forecasting the future welfare of the patient suffering from this heart malady becomes an easier one.

I am not concerned here with the causation of the symptoms in patients with advanced aortic disease. These observations refer to a group of soldiers with an average age of 31 years; men who have been in the Army for an average period of 2 years and 7 months, including 1 year and 7 months' military service overseas. These men presented no signs of venous engorgement, and the pain which they complained of was not anginal in character or distribution.

In 30 the average duration of symptoms was 1 year and 7 months; in 12 the symptoms extended over a longer period, and were present before enlistment. Half of these had been in the firing line, 4 had not been abroad, and with the remainder only light duty at the base had been performed. Before enlistment the occupation had been a heavy one in 36 per cent., moderately heavy in 41 per cent.; and light work only in 23 per cent.; 62 per cent. played games such as football, cricket, and tennis before enlistment. Only 12, or 27 per cent., gave a history of rheumatic fever, a very low incidence. One gave a history of syphilis. In 35 the complement-fixation test was done, and of these the reaction was positive in 8, or 23 per cent.; all of these 8 were over the age of 40 but one, who was 22.

*Determination of Exercise Tolerance.*

In 27 of those with slight incompetence and 16 with free regurgitation the exercise tolerance was determined by observing the response after a brisk walk up and down 20 steps twice. Distress after the effort accompanied by a rapid pulse-rate with a slow return to the pre-exercise rate were considered signs of poor exercise tolerance. If there were no complaints, and no obvious signs of distress, with a moderate increase of pulse-rate, and a quick return to the pre-exercise rate—i.e., less than two minutes—the reaction was looked upon as good. In 24, 12 with slight incompetence and 12 with free regurgitation, the symptoms alone, after the same exercise test, were used in estimating the physical fitness; the pulse-rates were recorded in these with a Mackenzie polygraph for five minutes before the exercise with the patient sitting, and the average was taken as the pre-exercise rate immediately after the effort, and at the end of two minutes. In those of the first group, where the tolerance was determined by the symptoms and the pulse-rate, 14 with slight incompetence of the aortic valve had good exercise tolerance, and the average pulse-rates were 77 before the test, 123 immediately after, and 73 at the end of two minutes; 13 had poor exercise tolerance, and the average pulse-rates were 93, 157, 109; 10 with free regurgitation had good exercise tolerance, and the pulse-rates 72, 123, 81; 6 had poor tolerance, and the rates were 84, 166, 113. Of the second group, with the tolerance determined by the symptoms alone, 3 with slight incompetence had good exercise tolerance, with average pulse-rates of 82, 132, 85; 4 had poor tolerance, and the rates were



97, 139, 105; 5 with free regurgitation had good exercise tolerance, with average pulse-rates of 89, 137, 94; 7 had poor tolerance, and the rates were 99, 153, 120. If these two groups are combined, it will be seen that of the 39 early cases the reaction is good in 22, and the average pulse-rates are 79, 130, 81; the reaction is poor in 17, and the pulse-rates are 94, 153, 108; 28 had free regurgitation, with good tolerance in 15, and pulse-rates of 77, 127, 86; 13 poor tolerance, and pulse-rates of 92, 159, 116.

#### Diagrammatic Representation of Results.

In the diagrams I have plotted these average pulse-rates. In *Diagram I.* the broken line and the line with the circles represent the average pulse-rates of the 27 early cases, with the tolerance determined by the symptoms and the pulse-rate; the unbroken line and the line with the black dots represent the pulse-rates of the 16 with free regurgitation and the tolerance determined in the same way. The figures at the side are the pulse-rates. Where the tolerance is good the summits of the curves are at approximately the same height, and at a much lower level than those with poor tolerance; the actual increase in rate after effort is the same.

tolerance is good in 56 per cent. of the former and 54 per cent. of the latter. When a comparison is made of the exercise tolerance in all with aortic disease 55 per cent. are found to have good tolerance and 45 per cent. poor tolerance. When the tolerance of the 67 with aortic disease is compared with that of 25 unselected D.A.H. cases, 55 per cent. of those with valvular disease are found to have good tolerance, as against 56 per cent. of those with D.A.H.

The points which I desire to make, and which I think these observations on exercise tolerance clearly show, are these: aortic disease is compatible with good exercise tolerance; when there is an equal degree of distress after effort the increase in pulse-rate is the same in patients with slight aortic incompetence, in aortic disease with free regurgitation where there is no venous congestion, and in D.A.H. cases in whom there are no signs of structural disease.

#### Three Types of Aortic Disease.

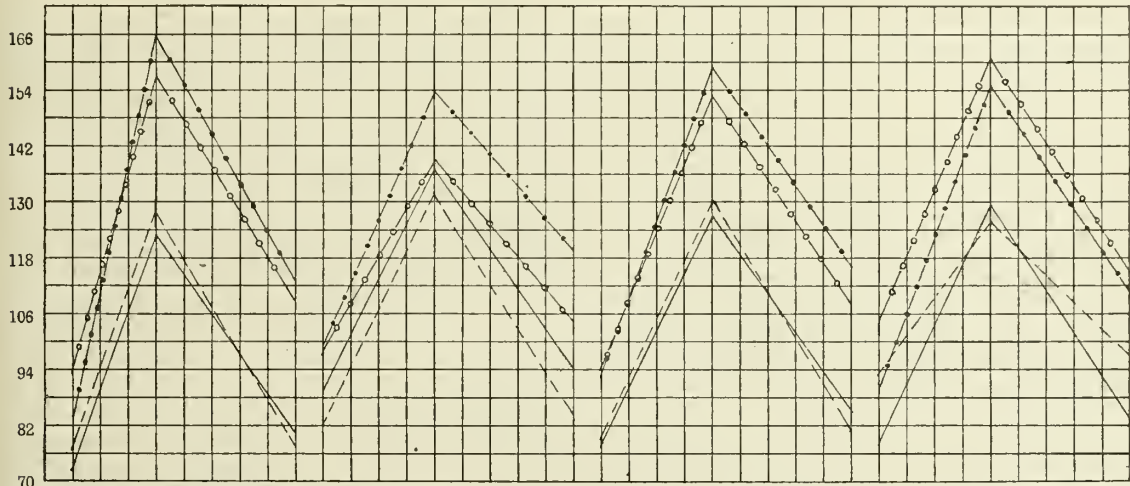
By the symptoms alone aortic disease may be divided into three types: (1) aortic disease without symptoms; (2) aortic

I.

II.

III.

IV.



Composite diagram showing average pulse-rates before exercise, immediately after, and at the end of two minutes. The broken line (— — —) indicates slight regurgitation and good tolerance; the line with circles (—○—) indicates slight regurgitation and poor tolerance; the continuous line (—) indicates free regurgitation and good tolerance; the line with black dots (—●—) indicates free regurgitation and poor tolerance. I. Tolerance determined by symptoms and pulse-rate. II. Tolerance determined by symptoms alone. III. Curves I. and II. combined. IV. Aortic disease, including those with slight regurgitation and free regurgitation, with tolerance determined as in I. and II. and D.A.H. (the broken line and the line with circles indicate the D.A.H. cases; the continuous line and the line with black dots indicate those with aortic disease).

When the tolerance is poor the increase in rate is considerably greater than in those with good tolerance, and the rate is at a higher level in those with free regurgitation than in the early cases.

In *Diagram II.* the pulse-rates are those of the 24 with the tolerance determined by the symptoms alone. The summits of the curves are slightly higher than in *Diagram I.* when the tolerance is good, and at a lower level when the tolerance is poor. The high points are not so far apart, and the peaks are lower in those with poor tolerance than in *Diagram I.*

In *Diagram III.* I have combined *Diagrams I.* and *II.* In those with good tolerance the peaks are low and the rise is the same. In those with poor tolerance the peaks are considerably higher, with a greater rise after effort in those with free regurgitation, and a fall after two minutes which does not reach the pre-exercise rate.

In *Diagram IV.* I have plotted the pulse-rates before and after exercise of 67 patients with aortic incompetence—37 with slight regurgitation and 30 with free regurgitation; and also the pulse-rates after the same exercise of 25 unselected D.A.H. cases, with the exercise tolerance determined by the symptoms alone, and the pulse-rates recorded with a Mackenzie polygraph. In those with good tolerance the pulse-rate rises to approximately the same height, both in the D.A.H. case and in the patient with aortic disease, and at a much lower level than in those with poor tolerance. When the tolerance is poor the level is slightly higher in those with D.A.H., and the fall about the same after two minutes.

In those with slight incompetence of the aortic valve, as compared with those with free regurgitation, the exercise

disease with a group of symptoms which we term "the effort syndrome"; (3) aortic disease with venous engorgement or angina pectoris.

With aortic disease of the *first type* there are no symptoms, and the condition is recognised by the signs alone. Fully developed incompetence of the aortic valves is compatible with good exercise tolerance; the severest form of exercise can be performed without greater distress than that observed in a healthy untrained subject. The extra load put upon the heart by the reflux of blood through the defective valve is cared for by the large reserve power which a healthy or slightly damaged myocardium possesses. Not until the cardiac muscle has been sufficiently impaired—for example, through coronary or myocardial disease—does the heart fail to bear the extra work put upon it, and with the exhaustion of its reserve give rise to the symptoms of heart failure. The uncomplicated valvular defect, the simple crumpling of the aortic cusps, is not in itself of great consequence. The reason that in so many aortic disease leads to heart failure is that the coronary arteries, or the myocardium, or both, have been damaged by the same agent that has caused the valve defect.

The *second type* presents the effort syndrome group of symptoms. Breathlessness on exertion is always present; this respiratory distress is provoked by an effort which, in a healthy person, would not be complained of. It is absent at rest save in rare instances. Occasionally it is noticed at night in bed, and is described as a choking sensation, a feeling of suffocation; it is sudden in onset and of short duration. This is not to be confused with the nocturnal breathlessness due to deficient aeration of the lungs, nor



the paroxysmal dyspnoea of relative acidosis in cardio-renal disease. It is as frequently met with in the effort syndrome case where there are no signs of structural disease. Palpitation is a common complaint. When provoked by exercise it is felt after the effort; it is associated with an overacting heart and persists as long as the excessive heart-rate is maintained. Emotional stimuli—excitement, fear, pain, joy, &c.—give rise to the same symptom. Palpitation is complained of by many in bed at night; often, but not always, it is noticed when the patient lies on the left side, and disappears with a change of position. In some way it is related to the breathlessness at night for the two symptoms often occur together. Giddiness is present in many. Sometimes it is felt after exercise, as often with change of position, as in bending or suddenly assuming the erect posture. In a few there is experienced in bed at night a peculiar sinking feeling, a sensation of falling through the bed or floor, or actual loss of sense of position, quite like the giddiness produced by effort. Observations upon the blood pressure and pulse-rate have been made to explain this condition. This symptom is caused in some way by an altered cerebral circulation; the mechanism by which it is produced has not been determined. Pain is an important feature of the disease. It may occur after effort, but it is often felt at rest; occasionally it is complained of at night. Some describe it as a stitch in the left chest, or a sharp cutting pain in the region of the left costal border, over the heart, or in the back, while others have a dull boring pain, or soreness over the precordium. Exhaustion after effort is much greater than that experienced by a healthy individual, and lassitude in the morning is a common complaint. Headaches are frequent; they occur in the morning, and are usually frontal in situation. Sweating, flushing, mental irritability or depression, are less constant symptoms. The hands are cold, clammy, cyanosed, and often tremulous, and drops of sweat run down from the axillæ. These are the symptoms observed in soldiers with aortic disease before venous engorgement has made its appearance. Briefly, the symptoms in D.A.H. so-called and in the aortic cases are identical, indistinguishable the one from the other. How are they produced in the aortic cases? If the symptoms in aortic disease of this type arise from cardiac weakness, and are caused by cardiac inefficiency; if they are to be explained by the inability of the heart to carry on its work from myocardial weakness, and the added load put upon it by the reflux of blood from a defect in the aortic valve; if that is the true explanation it is difficult to account for the symptoms in the D.A.H. case where we find no signs of structural heart disease. It might be thought that the two groups differ in their onset of symptoms. Now the symptoms in aortic disease arise from a variety of causes. They appear in a large number after an acute infection—after rheumatic fever, pneumonia, bronchitis, trench fever, malaria, and dysentery. In some gas poisoning is the agent, in others shell shock; some date their symptoms from a severe effort; in others the symptoms are gradual in their onset and cannot be associated with any particular cause. But with the D.A.H. case the onset of symptoms are as I have described for aortic disease; acute infections, gassing, shell shock, effort, and conditions of active service or civil life, all have the same ætiological significance; this, we all agree, has been established. It seems fair, then, to ascribe the symptoms in the group of aortic cases to the same causes, when there is an equally clear history. Do not misunderstand me. I do not speak of the causes of aortic disease; I am dealing now only with the ascribed causes of the symptoms. In both the provocative agents are the same, and in both the symptoms are identical. Here let me add one word about the ætiology of the two conditions; the incidence of rheumatic fever is much higher in aortic disease in those under the age of 40 than in D.A.H., and the incidence of syphilis is higher in disease of the aorta over the age of 40. I have referred at some length to the similarity of the symptoms in the two groups. I do so because I wish to give you the view which we who have worked at Colchester hold; that the symptoms of early aortic disease in soldiers are not produced by the extra work put upon the heart by the valvular defect, but are due to the same causes as are the symptoms in D.A.H. In other words, that disease of the aortic valve in itself gives rise to no symptoms.

Now of aortic disease of the *third type*, where there is venous engorgement or angina pectoris, I shall be very brief. They are not the symptoms of aortic regurgitation but those of heart failure. With venous engorgement we have the symptoms of venous stasis in the pulmonary circulation on the one hand—cyanosis, orthopnoea, and pulmonary congestion; and on the other, the symptoms arising from the failure of the heart to maintain the general circulation—œdema of the extremities, general anasarca with disturbance of the renal and other abdominal visceral functions, cerebral manifestations, and the final moribund state of the human organism. Of the characteristic picture of angina pectoris in advanced aortic disease, I shall only say that it is rarely seen in the presence of venous engorgement, with enlargement of the liver, and with the onset of dropsy the pain disappears.

#### *The Value of Physical Signs.*

I have dealt only with symptoms and their significance in aortic disease. The signs are equally important, for they are the guide to diagnosis, and assist us in prognosing the future life of the patient. By the signs alone are we able to diagnose incompetence of the aortic valve. They may be classified as signs of slight insufficiency of the aortic valve, and signs of aortic incompetence with free regurgitation. When the disease has sufficiently advanced, and heart failure has set in, then new signs are added. The most constant sign by which we can recognise early aortic disease is a diastolic murmur. This murmur is best heard at the left border of the sternum at the level of the third rib or third intercostal space. When heard over the aortic cartilage it is more distant; the diagnosis may have to be made when no murmur is heard over this area. During this stage of the disease the heart may be slightly enlarged; frequently, however, there is no increase in the area of relative cardiac dullness. The pulse is not collapsing; there is no conspicuous pulsation of the carotids or the brachial arteries; and the blood pressure range is within normal limits. With the development of free regurgitation chief reliance should be placed upon the character of the pulse: the collapsing, water-hammer, or corrigan pulse. There is throbbing of the carotids and brachials, capillary pulsation is always present, the pistol shot phenomenon is commonly present, the systolic blood pressure is higher and the diastolic is relatively low, and there is material enlargement of the heart. When venous engorgement occurs the signs of venous stasis are added. With the progress of the disease the heart increases in size, its area of relative cardiac dullness may extend to the anterior, mid-axillary line, or further. It is generally held that the dilatation and hypertrophy is mainly that of the left ventricle, and is produced by the extra work put upon this chamber by the reflux of blood through the incompetent aortic valve. Now the signs by which we recognise cardiac enlargement are an uncertain indication of the preponderating hypertrophy in one or other ventricle. Increase in cardiac dullness to the left does not necessarily mean left ventricular hypertrophy, and epigastric pulsation is a very unreliable sign of hypertrophy of the right ventricle. The electro-cardiograph offers means of accurately determining the comparative degree of hypertrophy in one or the other chamber. One frequently observes in electro-cardiographing patients with aortic disease that hypertrophy is equally borne by the two ventricles, so that the normal relationship of the two is maintained, and in some the predominating hypertrophy is in the right ventricle. By weighing separately the ventricles of patients whom Lewis and I had observed during life with signs of aortic disease we were able to confirm the electro-cardiographic records.<sup>1</sup> Such observations do not support the hypothesis that hypertrophy in aortic disease is produced solely by the regurgitation of blood through the defective aortic valve. Some other theory must be sought to explain the causation of hypertrophy in aortic disease. Such observations favour the view that myocardial disease is the chief factor in the production of cardiac hypertrophy, and in the causation of the symptoms of heart failure.

#### *Prognosis in Aortic Disease.*

A difficult task awaits those who attempt to forecast the duration of life in aortic disease during the early stages of its

<sup>1</sup> Cotton: Observations on Hypertrophy, Heart, vi., 217.



development. Prognosis becomes easier as the disease progresses and signs of cardiac failure make their appearance. There are certain symptoms, and of these pain is one of the most important, which guide us in estimating the number of years remaining before the final stage of total disability has been reached. Dyspnoea at rest with cyanosis and pulmonary congestion, and pain that is anginal in character and distribution and felt after slight effort, are symptoms that we all recognise as indicating a grave heart affection. The disability here is a total one, and our chief concern is the relief of distress of the patient. The ultimate prognosis is easily made; the immediate one depends upon the manner in which the patient responds to treatment. A large heart means myocardial mischief. By its size one may be helped in estimating the amount of damage which the myocardium has suffered. The final breakdown is likely to occur earlier where there is great increase in the heart's size than in those without much cardiac enlargement. With no signs of heart failure, and only a moderate extension of the left border beyond the nipple line, the outlook is more favourable. The auscultatory signs are not of much help, if any, in prognosing aortic disease in its early stages. We recognise free regurgitation of the aortic valve by the character of the pulse; the quality of the murmur tells us little. It is probable that the damage to the valve is greater where there is free regurgitation, as it is certain that more work is put upon the heart. It may be that the myocardium and the coronary arteries have been injured to the same degree. With the heart not much enlarged the prognosis is less favourable when the pulse is collapsing. It is difficult to prognose with any certainty when the heart is not enlarged and there are no signs of failure. Some have no symptoms with good tolerance; others have symptoms as I have described them, with the physical capacity so reduced that only the slightest effort can be performed without distress. If we are to determine the course of the disease in these two groups then we must rely upon the symptoms alone, for the signs may be identical. The immediate prognosis—i.e., the present disability—is easily determined by submitting the patient to a simple exercise test. Other factors must be considered in arriving at the ultimate prognosis, and of these the most important is the cause of the symptoms. If symptoms in one arise primarily from myocardial disease, and in another can be ascribed to other causes not primarily cardiac in origin, then we have obtained information of great prognostic value. In the absence of a known cause such as a focal or general infection—chronic appendicitis, dysentery, or pulmonary tuberculosis—it seems to me, with our present knowledge, impossible in early aortic disease to distinguish between symptoms primarily cardiac and symptoms due to other causes. A test of our knowledge of prognosis in early aortic disease will be one based on the after-histories obtained from a large number over a long period. It may then be possible to state definitely that certain symptoms arise primarily from myocardial disease, and indicate the early onset of heart failure; and other symptoms arise from other causes and are of less consequence in prognosing the course of the disease.

#### RED CROSS AUXILIARY HOSPITALS: ANNUAL REPORT.

—The report, which deals primarily with the accounts of the Red Cross War Hospitals at home for the year ended Dec. 31st, 1918, contains also a summary of their operations during the whole period of the war. This summary shows that, excluding private hospitals—i.e., those not in receipt of capitation grants from the War Office—1,260,523 patients were admitted to the auxiliary hospitals, and were treated at an average cost of 3s. 8-78d. per patient per day for maintenance and 0-83d. for administration, a total average cost per day throughout the war of 3s. 9-61d. Of the total expenditure, £7,760,727 was met by Army and Ministry of Pensions allowances, leaving over £2,500,000 to be found by voluntary public giving. The six leading counties in the matter of patients admitted were: Kent, 114,316; Lancashire (East), 83,619; Hampshire, 63,113; Surrey, 60,324; Cheshire, 58,117; Sussex, 49,344. The soundness of the policy, from a financial standpoint, of running large hospitals is demonstrated by the fact that whereas in hospitals with 50 beds or more the average daily cost of a patient was 3s. 11-85d., in those with 25 beds or less it was 4s. 3-41d. The report has been prepared by Mr. Basil E. Mayhew, F.C.A., secretary of the Joint Finance Committee of the Red Cross, and may be obtained from Room 70, 83, Pall Mall, London, S.W. 1, for 3s.

## THE INCREASE OF ALKALINITY OF THE BLOOD IN SHOCK.

By BENJAMIN MOORE, D.Sc., F.R.S.

THE report of the Arris and Gale lecture on the Initiation of Wound Shock and its Relation to Surgical Shock, by Dr. E. M. Cowall, D.S.O., in THE LANCET of July 26th, is of high scientific value, but in addition one cannot read it without admiring the calm courage with which these observations were made in the firing line and en route to the casualty clearing stations.

#### Results of Recent Physiological Work.

It is in no criticising spirit therefore, but because this report will be widely read by surgeons and clinicians who have to undertake the treatment of cases of shock, that I venture to draw attention to quite recent physiological work which demonstrates that there is no enhanced acidity of the blood in shock such as would warrant the use of the term "acidosis," but rather a greatly increased alkalinity which by damage to heart and nerve centres leads to that secondary shock which produces the fatal event. In this aspect of the subject Dr. Cowall is quoting the observations of others, and quotes them quite in an orthodox way, but recent work shows that they are entirely erroneous and misleading, and have warped the treatment of shock into wrong channels.

It is quite true that what has been called the "alkaline reserve" of the blood is reduced in shock often enormously, that the titration value of the alkali of the blood to acids by any of the methods, such as those of Galleotti, Wright, Moore and Wilson, van Slyke, &c., is decreased, so that the condition is described as "acidosis" or "acidemia." But this same blood is much more alkaline than the normal, and the animal is shocked and dying because its blood and tissue cells are loaded up with alkali.

It is entirely a wrong treatment to administer alkalies. What the organism requires is oxygen, carbon dioxide, and warmth, until oxidation in the tissues begins to approach its normal level. The organism has breathed off in excess its balancing carbonic acid in its attempts to get enough oxygen; it has thereby alkalinised all its cells, and this alkalinity, by its action on the state of aggregation of the molecules of the bioplasm, has disturbed the functions of heart and nerve centres. It will be one of the most remarkable records in medical science that for a generation scores of workers in Britain, the continent of Europe, and America went on calmly working on the assumption that pumping off carbonic acid left the blood more acid.

#### The Cause of Mountain Shock.

One of the pioneers in the subject was Angelo Mosso, professor of physiology in the University of Turin, who carried out many of his researches near the summit of Mont Rosa in the high Alps, nearly 16,000 feet above sea-level, in the Capanna Regina Margherita, provided for him by the Queen of Italy of that time. Mosso and his colleagues showed most clearly that mountain shock and sickness were caused by the denudation of carbon dioxide in the blood, due to excessive breathing to get in enough oxygen. The same factor appears in the shock of aviators at high level, and has recently given rise to investigations by Haldane, Priestley, and others, showing conclusively that alkalinity of the blood is a predominant factor. It has also been shown by Moore and Whitley that a slight increase in alkalinity of a saline perfused through an isolated heart leads to a typical shock, with output reduced to one-fifth of the normal, and stoppage in a few minutes.

#### Erroneous Conclusions.

But Mosso and Galleotti had not this knowledge, which has only dawned out in the last few months. Galleotti, at Mosso's request, attempted to estimate the alkalinity of the blood where shock was tending to appear at Mont Rosa, 16,000 feet above sea-level; he did it by titrating to phenolphthalein, and found the blood was much more acid. His titrations were correct, but his conclusion profoundly wrong. Similar conclusions have been drawn everywhere, for nearly 20 years since then, but they are all erroneous. They have led to patients being dosed with sodium bicarbonate to relieve shock, and to intravenous injections of acid in animals in the attempt to study shock. In practically every



variety of shock these reduced determinations of the alkali of the blood show that the animal is fighting a stern fight against alkalinity.

*"Acidosis" and "Alkalosis."*

What is the explanation of this paradox of *alkali diminished, alkalinity increased*? To the physical chemist there is no great difficulty in the proposition; the difficulty comes in explaining it to the biologist, surgeon, and physician. The outlook upon the chemical conditions in shock is all wrong, and this is why the invariably underlying presence of "acidosis," to which at first much attention was given, became later neglected. All cases of serious secondary shock show so-called "acidosis," but this acidosis is not "acidosis"; it is "alkalosis." So all the attempts of physiologists to mimic it have been abortive. What, then, is acidosis? As defined by the American physiologists, it must be admitted that in shock there is "acidosis" or reduction of the "alkali reserve." The definition of van Slyke and Cullen is that the serum must be obtained, and then in an atmosphere containing carbon dioxide to the extent of about 5 per cent. of an atmosphere be set in equilibrium. Next, the volume of carbon dioxide in c.cm. per 100 c.cm. of serum which can be evolved from this by addition of strong acid is determined; this gives the "alkali reserve." If the alkali reserve is reduced there is "acidosis"; if the "alkali reserve" is increased there is "alkalosis." The point of difference is that in individuals suffering from shock the blood is not in equilibrium with 5 per cent. of carbon dioxide, but with 2 or 3 per cent. of carbon dioxide. The blood of a shocked person while within the body breathes itself into a high state of alkalinity, and the above method of defining "acidosis" and "alkalosis" is not much better than defining "black" as "white."

When the pressure of free carbonic acid in the blood is decreased then alkalinity rises and kidneys and tissue cells remove alkali from circulation. It is for this reason that the circulating bicarbonate decreases, and so lowered titration figures are obtained, but the blood is more alkaline. A fall in bicarbonate reserve to one-third of normal can be caused by a small fall in pressure of carbon dioxide and accompanying increase in alkalinity.

*Primary Shock.*

When primary shock occurs from sudden heart failure, from emotional causes, hæmorrhage, pain, or some such stimulus, there is cerebral anæmia and unconsciousness. There may be recovery from this in a few minutes, as in an ordinary faint, but if the condition continues for a longer time, such as 20 to 30 minutes, it is interesting to consider the series of events. The primary factor is that there is a general cessation of metabolic activity at first and a shut-down later to about one-third of the normal rate. Now, if there be a closure down in the tissues to one-third, what must happen if the lungs go on working at their normal rate or even at one-half their normal rate? The answer is that an excess of carbon dioxide over that produced must be removed in the lungs and the blood go alkaline, and this is what occurs in secondary shock.

During the period of fainting both heart and respiration are held in abeyance, the heart perhaps more than the respiration, and there is a venous condition which favours recovery, but later there is a condition in which respiration exceeds circulation and the blood becomes more alkaline and carries shock to the nerve centres and heart.

*Excessive Respiration and Shock.*

It has been much disputed whether excessive respiration is a necessary antecedent to shock, some have described it, others failed to find it, in wounded soldiers suffering from shock. It is an instance of how long it takes for the obvious to strike us, the balance depends on the relative rate of working of the circulatory and respiratory systems. If as a result of a primary shock the circulation is only working at one-third of its usual speed, and the respiration is going on at usual rate, the amount of carbon dioxide produced will only be one-third of the normal, while elimination proceeds at normal rate. The result must be that the alkalinity of the blood increases, and any such increase leads to heart failure. It is thus seen that hyperpnœa need not necessarily be an antecedent factor to surgical shock, and that in the main the condition depends upon relative rates of circulation and respiration, although other conditions, such as toxic products from wounds and muscle injury and fatigue of nerve centres, undoubtedly play a part.

## THE HOT SEASON IN MESOPOTAMIA.<sup>1</sup>

By F. E. FREMANTLE, F.R.C.P. LOND.,

LIEUTENANT-COLONEL, R.A.M.C. (T.), D.A.D.M.S. (SAN.), MESOPOTAMIA EXPEDITIONARY FORCE.

THERE is evidently much uncertainty at home as regards the climatic conditions of Mesopotamia. An account, therefore, of the hot season of 1917 at Amara on the Tigris and of the cases diagnosed as suffering from "effects of heat" may be of interest. The military population during the period under review may be taken as 25,000, one-fourth being British, and one-fifth being hospital patients, mostly from other areas.

There were seven general hospitals, three British with 2000 beds, four "Indian" with 3000 beds, and an isolation hospital with 200 beds, besides British and Indian convalescent depôts for 2000 men.

*Climatic Data.*

As a preface the following facts are given as to the climatic records at the same station in June, September, and December, 1917, and in March, 1918.

	June.	Sept.	Dec.	March.
Temperature (dry bulb).				
Max. average ... ..	103°	105°	62°	70°
Highest ... ..	110°	117°	76°	80°
Min. average ... ..	78°	71°	41°	52°
Lowest ... ..	73°	60°	26°	44°
Wet bulb at 4 P.M.				
Average ... ..	72°	73°	52°	57°
Highest ... ..	79°	82°	59°	64°
Lowest ... ..	67°	67°	44°	52°
Humidity at 4 P.M.				
Average ... ..	—	—	54	50
Highest ... ..	—	—	99	87
Lowest ... ..	—	—	22	26
Daily wind movement.				
Average (miles) ... ..	442	188	135	171
Highest " ... ..	730	480	389	406
Rainfall in inches.				
Total ... ..	Nil.	Nil.	1.43	1.65
No. of rainy days ... ..	"	"	7	8
Greatest in one day ... ..	"	"	0.71	0.90

In fact, the first quarter of the year is the only rainy quarter and is about as rainy as in England; the third quarter is the unpleasantly hot season; the second is cooking up for it; the fourth, like the first—with the exception of only a few rainy days—is delicious.

The freshness of the spring depends partly on the prevailing northerly winds, blowing down from the mountains of Kurdistan or occasionally from the neighbouring Pushti-Kuh to the north-east; partly on the floods, which must, by evaporation, help to keep down the temperature in early summer.

The floods depend more on the height of the Tigris than on the local rainfall; and the height of the Tigris depends firstly on rainfall in its upper reaches, and then on the melting of the snows in the mountains.

The river is at its lowest here, from 22 to 23 feet above mean sea-level at Fao, from September to November; and after a temporary rise of a foot in December, rises suddenly in January to 27 or 28 feet, and falls in February to 24 to 25 feet. In mid-March it again rises to its maximum of 27 to 28 feet, and, with or without a remission of a foot, remains constant till the beginning of May. It then begins its slow, steady fall from 27 to 22 feet, spread over four months.

Below the DIALA there are no tributaries to the river; but the Hai at Kut, the Chahala and Masharrah at Amara, the several canals and frequent irrigation channels serve as outlets which spread the rising waters over the face of the land, mostly to be absorbed or evaporated, while the remainder enters the Tigris again below the Narrows or, through the Euphrates, joins the Tigris at Qurnah to form the Shatt-al-Arab, running out into the Persian Gulf at Fao. The whole country to windward is therefore moist till harvest-time in April and May. It then dries and the dry heat increases pitilessly day after day.

<sup>1</sup> A paper read before the Amara Clinical Society in May, 1918, and revised in 1919.



*Relation of Temperature to Incidence of Cases.*

The figures in the temperature chart prepared for this paper were those recorded daily at the Meteorological Station at 8 A.M. each morning for the previous 24 hours and were shown for the day previous to that on which they were reported, so as to correspond in general to the day on which the effects of heat occurred.<sup>2</sup>

This station is in the open, fully exposed to the prevailing N.W. wind blowing right down the upper reach of the Tigris. The air here is noticeably cooler and probably moister than elsewhere; and the figures are probably the lowest in the place. Almost equally trustworthy figures taken in verandahs of hospitals and elsewhere often showed dry-bulb temperatures from 6°–10° higher, even up to 130°, and a trustworthy assistant surgeon at a marching post recorded 140° one day in a 160 lb. tent.

The chart showed dry-bulb maximum varying in these three months from 92° to 121°, with two intense spells, one between 110° and 121° from July 7th to 25th, the other between 108° and 121° from August 16th to Sept. 13th.

The curve showing cases of effects of heat presented two corresponding rises, but more sharply marked and of far shorter duration. In the first spell no more than three cases occurred each day until July 14th, no case occurring on the hottest day—the 10th. In the second spell over three cases a day occurred only between August 19th and Sept. 4th, 14 cases occurring on the day of greatest heat, and 18 on the following day, when the maximum temperature was 11° lower at 110°. Nor did the other two temperature curves correspond to that of the cases of effects of heat, for the minimum dry-bulb temperature reached its highest (88°) on July 17th and 20th, after the case curve had made its chief rise; and the wet bulb at 4 P.M. was highest (83° and 82°) on days when there were 1, 10, and no cases respectively, fewer even in the second instance than on the previous day, when the wet bulb read only 73° and there were 18 cases.

There was, however, a certain correspondence on several occasions between a high minimum—i.e., a hot night—and the number of cases next day; and there was a general correspondence between the heat waves at their height and the number of cases.

The number of cases in June was too rare to attract special notice; and it would appear that it took several days or weeks of heat before the susceptible individuals succumbed to it; and those remaining were more liable to be immediately affected by the second spell of extreme heat towards the end of August.

The failure of the wet bulb to give any useful indication of the danger suggests, as Professor Leonard Hill has pointed out, that the most important preventive factor is the rapidity of cooling, dependent on movement and negative humidity of air and its free play over the surface of the body under the clothes. It was to meet this suggestion that the kata-thermometer has been devised to show rapidity of cooling; and the readings on this instrument should be most carefully recorded and studied in every future hot weather.

*Effects of Heat.*

The clinical facts, as complete as possible, were taken from the hospital returns received on the special notification form<sup>3</sup> and from a special return of deaths due to effects of heat. Cases were shown under the day on which they first suffered. All cases diagnosed in hospital as "effects of heat" were included, whether otherwise diseased or not. The cases occurred between July 8th and Sept. 11th, with the addition of one case marching up with an echelon and admitted on Sept. 21st.

No. of cases recorded, 353; deaths, 49.

Second attack recorded in 4 cases, of which death occurred in 1.

Third attacks, 0.

Officers, 5; Indians, 16; Arabs and others, 0.

<sup>2</sup> A full chart of daily temperatures and cases of effects of heat, admitted to hospital, was exhibited with this paper but was lost in transmission home. It showed the dry bulb maximum and minimum and, in the absence of a wet bulb maximum thermometer, the wet bulb temperature at 4 P.M. daily throughout July, August, and September, as well as the number of cases each day.

<sup>3</sup> The notification form set out the following heads:—No., rank, and name; regiment; unit to which now attached; camp, billet, aid-post, &c.; from which case admitted; if already a patient, previous diagnosis; date and hour of attack; occupation at the time; whether constipated; malarial history—parasites; max. temp. of case; progress since admission; remarks.

*Predisposing Causes.*

(a) Disease:—Malaria: History, 64; B.W. fever, 1; smears B.T., 11; attack, 3.

Other cases actually in hospital at the time had been admitted with—

Sandfly fever ... .. 7	Amoebic dysentery ... .. 2
Anæmia and debility ... .. 7	Enteric group ... .. 2
Gastric or intestinal ... .. 6	Cardiac ... .. 2
Various and N.Y.D. ... .. 6	Bronchitis ... .. 1
Septic conditions ... .. 5	Neuroses ... .. 1

(b) Constipation: Yes, 122; no, 196.

*Time of Commencement of Attack.*

00.00–06.00	...	...	13	cases, including	4	on	16/7/17
06.00–09.00	...	...	21	"	"	4	" 23/8/17
09.00–12.00	...	...	56	"	"	{ 8	" 16/7/17
12.00–15.00	...	...	42	"	"	{ 5	" 23/8/17
15.00–18.00	...	...	92	"	"	{ 9	" 18/7/17
18.00–24.00	...	...	27	"	"	{ 7	" 22/8/17
						—	—

Total ... .. 251 cases.

05.00 = 6 A.M.; 18.00 = 6 P.M., &c.

Attack came on gradually in a large proportion of the trivial cases—probably in the great majority of them.

*Types of Cases.*

Trivial (temperature below 104°), 177.

Moderate ( " 104°–106°), 83.

Severe ( " 107° or above or grave symptoms), 78.

*Hyperpyrexia* (over 105°), out of 353 cases and 49 deaths:—

No. of cases.	Deaths.	No. of cases.	Deaths.
105°–106° ..... 18	3	109°–110° ..... 14	5
106°–107° ..... 23	2	110°–111° ..... 9	3
107°–108° ..... 26	4	111° ..... 1	—
108°–109° ..... 26	6		
		117	23

*Occupation at time of attack:—*

On duty ... .. 117	Bathing ... .. 1
Off duty ... .. 33	Not stated ... .. 94
Resting ... .. 108	

*Occupation of those attacked 15.00–18.00 (3–6 P.M.).—*Of 92 for which occupation was recorded 30 were not resting, and were thus occupied:—

Fatigues and grave-digging ... 5	Movement or waiting—
On guard or police ... .. 4	In sun on duty ... .. 3
Parade (2), orderly corporal ... 3	Duty not specified ... .. 3
Transport, driving, grooming... 3	Office duty, mess duty ... .. 2
Butchery, bakery, cook ... .. 3	R.A.M.C. duties ... .. 2
	On steamer ... .. 1
	Bazaar ... .. 1

*Aid-posts.*

Six aid-posts were established in May, some on the 5th and the rest by the end of that month, at important centres, such as bridgehead and railway station. They were staffed by 23 British privates in charge of a R.A.M.C. corporal, succeeded by a sergeant, an ex-policeman, under the direct supervision of the officer commanding a sanitary section.

These aid-posts were equipped with canvas bath, Persian cooler (a 20-gallon open-mouthed jar of porous earthenware), ice-chest, and one wheel stretcher, with lifter and hood apiece, and were open from May 5th to Sept. 16th. During this season these posts dealt with only 39 cases, since most cases were taken direct to a medical unit or dealt with temporarily by any medical officer in situ until removal could be effected.

*Consideration of Preventive Measures.*

With regard to the provision for future hot seasons—

(a) A large proportion of cases being due to the direct effects of the heat upon hospital patients with weakened constitution, it is essential to protect roofs and walls of hospital wards from the sun as much as possible and to provide electric fans freely. Much is already done in this way, but a final survey, before the season begins, might always reveal details requiring further action.

(b) Every case in hospital during the hot season should be examined for malaria and should take quinine if positive.



(c) With regard to healthy troops, it should be brought home to every man that constipation is dangerous, and medical officers in charge of units should be specially warned to pay attention to this habit.

(d) The occupations of those attacked in the afternoon suggest that a further warning is required with regard to fatigues and movements in the sun. Seasoned officers still frequently consider it manly to defy the heat, both in regard to clothing and duties. The late Sir Victor Horsley, here in Amara, paid for this heresy with his life. Greater folly and cruelty cannot be imagined. It may be generally stated that with a wet-bulb temperature of 80° hard physical work is impossible; at 90° all work is impossible; and at 95° life is impossible.

#### *Consumption of Water: Clothing.*

(e) The facts that the effect of heat must depend upon the loss of heat from the body, that this depends on evaporation and this again on the amount of water consumed and clothes worn, require further bringing home to all ranks. The consumption of water should be pushed. Men should be encouraged to count the number of half-pints of fluid they drink in the day, and in the hottest weather this should not be less than 16 (a gallon), and may be as much as 50 (three gallons) or more without harm.

(f) Similar emphasis and publicity require to be given to the question of clothing during the hot hours. The wearing of coats and belts should not even be optional; it should be forbidden. Puttees retain much heat, and thin stockings should be substituted. Shirts should always be worn outside shorts or trousers when working or marching; this at once doubles the body surface available for loss of heat, and adds greatly to the men's comfort. The adoption of a shirt-tunic to be worn in this way would be ideal for the hot weather. The blouse is already uniform in certain Indian regiments, and is worn in this way by their British officers. Its only faults are that it is too thick, and that it is not open at the neck. Finally, shirts should be worn open at the neck although buttoned, and in case of officers tied to the level of the top button, with stud holes buttoned outwards. This gives a smart appearance and adds vastly to the comfort by allowing a free issue of steamy air from inside the shirt.

#### *Other Suggestions.*

(g) In varying the official hours of work according to the weather, all ranks should be encouraged to keep early hours in the evening, with lights out at 10 P.M. at latest. Officers and others cannot be expected to be as fresh to stand the heat of the next day with only five or six hours' sleep in the cool of the night; and influence in such matters is contagious. "Early to bed and early to rise" should be a rule.

(h) The notification forms should be slightly amended to give in future further and more precise facts on these lines; and if records on similar lines could be kept by the whole Force each year a large body of evidence would be obtained of very great practical importance for military operations—and, indeed, for civil life—in hot climates.

(i) Further evidence of value in this connexion would be obtained from readings in various comparable conditions in different huts, tents, and buildings by the kata-thermometer, which shows rapidly of cooling from the human body, and so gives the effective result of humidity and temperature combined. One of these instruments has recently been issued to the meteorological station. They should be under the charge, as here, of a medical officer with special physiological training and an inquiring turn of mind.

Hitherto the value of the different types of hut and tent has been estimated by the general sensation of a few workers and a few patients and by very few and occasional thermometric readings. The importance of the subject warrants a much more extended and systematic inquiry, and I submit that, so long as any medical officer can be spared from hospital-work, an officer with special physiological training should be instructed to make a comprehensive inquiry on these lines throughout the Force, say during the months of June and July.

These suggestions appear to be the logical conclusions of Eastern experience and Western theory. In essential they have already for the most part been officially adopted. It is up to every M.O. in the Force to do his utmost to secure the carrying out of every detail.

## A NOTE ON *B. INFLUENZÆ*, ESPECIALLY AS REGARDS THE QUESTION OF "CARRIERS."

BY SHELDON F. DUDLEY, M.B., B.S. LOND.,  
SURGEON LIEUTENANT-COMMANDER, R.N.

BETWEEN Oct. 1st, 1918, and March 31st, 1919, 368 cases of influenza were treated in H.M. Hospital Ship *Agadir*. These cases came from 110 different ships or establishments at Scapa Base; as a result nearly every type and variety of the disease was seen, from the mildest to the most virulent. Descriptions of the pandemic one read of elsewhere and at first could not agree with often became explicable on admitting a fresh batch of cases.

#### *B. Influenzæ.*

As was the case a few years ago with the meningococcus, it is essential to state on what characteristics the organism one calls *B. influenza* was identified. Colonies on Matthews's medium<sup>1</sup> were circular, translucent, and brownish by reflected light; isolated examples often exceeded 4 mm. in diameter. Films from these colonies stained well with carbol-fuchsin, showing a Gram-negative bacillus that varied considerably in its morphology; some strains would show quite long filaments. Subcultures (if they grew at all) on to blood-smeared agar reverted to the text-book pin-point colonies, with the usually described characters of Pfeiffer's bacillus. On plain agar there was never any growth. As noted by Fildes and Baker,<sup>2</sup> using other media, stained films from a four- or five-day-old culture on Matthews's medium produced a peculiar granular debris with few distinct morphological bacteria. The differences in shape, size, and staining of bacilli, and the slight variation in the appearance and emulsifying properties of the colonies indicate that the bacteria which possess the above characters have different strains or are a group of organisms comparative to the Gram-negative diplococci.

#### *Culture Media.*

A probable reason why Pfeiffer's bacillus has not been invariably found in the late pandemic is the difficulty of being certain of the media and not realising this difficulty. Experiences in this ship with many medias found Matthews's to be the only really satisfactory one of those tried. I do not mean that Matthews's is better than the other medias used by other workers, but that owing to some unknown error in technique or materials satisfactory results were not obtained with other media in this ship. For example, 10 different strains of *B. influenza* which grew well on Matthews's media were planted on (1) blood-smeared agar, with the result six grew; (2) boiled blood-water agar—four grew; (3) a bad batch of "K" media<sup>3</sup>—none took; (4) blood boiled in agar—none took; (5) a media consisting of a killed, week-old culture of *Staphylococcus aureus* in blood broth added to agar—in this latter medium all the strains grew, but though in my hands this medium was the most satisfactory after Matthews's, it was not as good as the latter, as the following shows. *B. influenza* was isolated from the naso-pharynx from 10 men using Matthews's medium, whereas with the staphylococcus medium *B. influenza* was only recovered three times from the same 10 cases. In May and June, 1918, I tried to isolate *B. influenza* from various patients, using blood-smeared agar, but did not get a single success. I therefore very foolishly stated that I did not believe *B. influenza* was present in these cases. But I am now convinced if I had been using Matthews's medium they would have been found.

#### *Direct Smears of Discharges.*

The case against Pfeiffer's bacillus as a causative factor in influenza is often supported by the absence of predominant morphological influenza bacilli in stained smears from the patient's discharges. From 12 positive cases plates were inoculated and at the same time smears of the naso-pharyngeal mucus were stained with polychrome methylene blue and also carbol-fuchsin. In the plates from five cases the colonies of *B. influenza* predominated; in the corresponding stained smears numerous morphological *B. influenza* were seen in three instances, but in the other two one would not have liked to say they were present without the confirmatory evidence of the plates. On the remaining seven

<sup>1</sup> THE LANCET, July 27th, 1918.

<sup>2</sup> THE LANCET, Nov. 23rd, 1918.

<sup>3</sup> Ibid.



plates many colonies of the organism appeared, but in only one of the corresponding films were *B. influenza* at all evident. In all the stained smears except three, where organisms of any kind were scarce, numerous other bacteria were present complicating the picture. Hence, because *B. influenza* is not obvious in stained films of a patient's discharges it does not follow it will not grow luxuriantly on culture.

#### Carriers of *B. Influenza*.

There were many cases of influenza continually on board from October to the middle of March, when the number steadily diminished, until at the end of April only two mild cases remained in the ship. During this period the nursing staff of the ship were all examined as regards the presence of *B. influenza* in the discharges from the naso-pharynx.

1. On Dec. 5th-7th	21 men produced 19 positives, 90 per cent.
2. " March 13th-15th	22 " " 19 " 87 "
3. " " 27th	20 " " 10 " 50 "
4. " April 27th	22 " " 6 " 27 "

Sixteen of the men were swabbed on all four occasions, representing a positive result as + and absence of *B. influenza* as -. We can classify them thus in the order of the above dates.

4 men ... .. + + + +	4 men ... .. + + - -
4 " ... .. + + + -	1 man ... .. + - - -
1 man ... .. + - - -	2 men ... .. - - - -

This shows the infection died out fairly evenly in the nursing staff as the cases of influenza got fewer.

The mercantile crew of a hospital ship has quarters completely separated from the nursing staff, and are, of course, allowed no communication with the patients. A few of the crew were swabbed for comparison with the nursing staff.

10 men on Dec. 6th	gave 6 positive results.
12 " March 28th	2 " "
10 " April 27th	1 " "

As regards the incidence of influenza among the ship's company, 40 per cent. of the mercantile crew got infected (average strength 52 men); 62 per cent. of the medical staff had clinical influenza (29 men). The whole 29 of the medical staff were examined at one time or another, and 26 were proved to be "carriers." Of the 3 who were negative, 2 had had influenza and the other was a medical officer who joined when the epidemic was practically over. Of the positives 14 never had clinical influenza previous to the first positive swabbing, though 4 subsequently developed it. Of 12 who had had "flu" 2 got it again later.

By the courtesy of Surgeon-Commander H. S. Burniston, C.M.G., I was allowed to examine 20 seamen and stokers of *H.M.S. Revenge*. Four (20 per cent.) were positive "carriers." The ship's company of *Revenge* averaged about 1200 men. In May, 1918, 22 per cent. had clinical influenza; in October 21 per cent. got the disease (including roughly 3 per cent. of those who had had it in May). Thus about half the ship's company had had influenza. Of the 20 men swabbed 15 had never had clinical influenza, and only 1 of the 4 men who were "carriers" had had it. The latter 4 cases were all from widely separated parts of the ship. It may be guardedly presumed, therefore, that about one-fifth of the crew, or 240 men, were harbouring *B. influenza* in the naso-pharynx on Dec. 11th, a month after the last clinical case had occurred on board on Nov. 9th.

#### Secondary Infections.

Practically every pathogenic organism has been reported as present in the late pandemic. The experience was the same in the *Aqadir*—pneumococci and streptococci are the most obvious secondary infections; but *B. typhosus*, meningococci, diphtheria bacilli, and many unidentified bacteria were seen. This ship may be said to have dealt with about 100 different isolated outbreaks of the disease, each of which often seemed to have its own clinical and bacterial picture. For example, at Scapa in October and November the broncho-pneumonias were nearly all pneumococci, as proved by cultures from the blood and pleural fluids of the patients, and these cases tended to be delirious and terminated by crisis. By February streptococci had to a great extent replaced the pneumococci. The patients remained clear-headed to the end and the temperature swung considerably before settling down. It was not until the advent of the streptococcus that the typical cyanosis and pure blood expectoration (that one read of down South) became evident at Scapa. To give another example, though 8.3 per cent. of the total cases had epistaxis, in 19 cases from one ship, which were all mild in other respects, 9, or 47 per cent., had epistaxis.

#### "Filter Passers."

Considerable evidence has been brought forward to prove that a "filter passer" is a causal agent in influenza. The most constant characteristic of this filter passer appears to be that of causing hæmorrhagic lesions in the lungs of experimental animals. Yet in the mild cases of influenza, which form the great majority of all cases, lung signs and even cough are often absent, and clinically hæmorrhage is really not common in influenza as a whole. Altogether the evidence suggests the world-wide spread of an organism, fairly harmless in itself, which prepares the way for any pathogenic organism that happens to be in the environment at the same time. And perhaps this harmless organism (*B. influenza*) especially favours the spread of a filter passer which, though extremely virulent in its presence, cannot gain a footing in the human organism without the help of Pfeiffer's bacillus. Since the above paragraph was first written A. Ortoni and Barbie<sup>4</sup> have reported that *B. influenza* and the filtered sputum from an influenza case are harmless to guinea-pigs separately, but together are extremely pathogenic. Should this observation be confirmed, it would go a long way towards proving the double ætiology of influenza as due to a filter passer plus Pfeiffer's bacillus.

During the time influenza was being treated on board, three or four of the ship's company complained of feeling out of sorts; they were not definitely ill, but suffered from headaches and sometimes felt shivery. One case of this sort two or three times had to be put to bed for a day or two. His temperature never rose above normal; his pulse, which was rapid at first, soon settled down to a rate of about 50 beats a minute. *B. influenza* was present in his naso-pharynx. This class of man, who never had clinical influenza, may well have been a chronic ambulant type. Many of the post-influenzal "neurasthenics" and "debilities" may possibly be chronic toxæmias due to the influenzal parasite, whether *B. influenza* or anything else.

If we grant *B. influenza* as a factor in the cause of influenza, "carriers" and missed cases such as "feverish colds" and chronic ambulant cases probably are more dangerous and numerous than the bed case. These, together with the short incubation period, serve to explain the tremendous rate of spread of the disease.

#### Individual Immunity.

In a ship where 50 per cent. of the ship's company may be infected in a week the rest must be temporarily immune. The crew of a battleship sleep under circumstances where cubic space is very limited and perfect ventilation very difficult. Influenza will spread in a ward with 10 feet between bed centres; with hammocks 2 feet apart, the chances of contact infection by spraying is 125 times as great as in the ward if head-to-foot "slinging" is not insisted on, and 15 times as great where it is properly carried out. (The danger of infection being inversely as the cube of the distance.) From these considerations it can only be individual immunity that protects those who escape infection in the close confinement of a ship. That natural immunity to influenza must vary considerably from time to time in an individual is suggested by the incidence of the disease among the nursing staff, 60 per cent. of whom had influenza. Though in close contact with the cases all the time they did not all get it together, as in the ordinary ship, but the cases were spread more or less evenly over six months. The effect of lowered vitality is well illustrated by the four medical men on board who contracted the disease. They had all been attending cases for one or two months before succumbing themselves. In each instance there was a definite cause of lowered resistance about 48 hours beforehand. In two it was the long journey between Scapa and the south; in one, a temperate man, a larger quantity of alcohol than he was accustomed to; in the last case a long walk after some weeks' confinement in the ship.

Before concluding, I should state the examination of the staff could not be carried to the logical conclusion when all were free from *B. influenza*, because the ship's company was relieved before this was possible.

Enough evidence, I think, is collected to make it worth while to investigate how many people in normal times harbour *B. influenza* in their naso-pharynx. Even if *B. influenza* should be proved a harmless saprophyte, and if carriers of it are rare when there is no epidemic, its almost universal distribution during an epidemic surely requires some elucidating.

<sup>4</sup> La Presse Médicale, May 8th, 1919.



# A STUDY OF THE ÆTIOLOGY OF THE "DESERT," SEPTIC, OR VELDT SORE AMONGST EUROPEAN TROOPS:

AND ITS ASSOCIATION WITH FAUCIAL DIPHtheria.

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DURING the Egyptian and Palestine campaigns chronic sores, very resistant to local treatment, on uncovered parts, became a great scourge, especially amongst mounted units. I investigated these lesions in a field laboratory, established in connexion with this force in the desert, throughout the whole period and have had access to a very large amount of material.

Most observers are agreed that the "desert" sore is of distinct clinical type, that it is associated with peculiar geographical and climatic conditions, in no way connected with dermal leishmaniasis; and that it must be due to some specific organism. I am of opinion that this organism is the true Klebs-Löffler bacillus.

While my investigations were being undertaken a paper by Lieutenant-Colonel C. J. Martin, C.M.G., D.S.O., F.R.S.,<sup>1</sup> set forth the results of his examination of a limited number of cases amongst the Australian units, E.E.F. He examined hairs extracted from the vicinity of the lesion and noted diphtheroid organisms in this situation. Later he investigated one strain more thoroughly and found that it gave the typical reactions of the Klebs-Löffler bacillus. This particular case differed in no wise from the others and was associated with no obvious constitutional disturbances. He concluded that the diphtheria infection was superimposed upon some pyogenic coccal lesion.

## Clinical Characters of the Sore.

Under the term "desert sore" many sores have been loosely classed, which differ widely in their ætiology. The sore I refer to is invariably on exposed parts and mainly on those covered by hairs—i.e., dorsum of hands, forearm, around elbow and knee-joints, on lower part of thigh, and exposed part of legs. (At the commencement of the campaign mounted units, as well as infantry, were commonly clothed in drill shorts.) In a small proportion of cases the lesions occur on the face.

1. *The vesicle.*—The onset is sudden. The first appearance is one of acute inflammation round a hair follicle and in a few hours a vesicle forms full of clear straw-coloured fluid, varying from size of a pea to half an inch or more in diameter. The pain is at first quite out of proportion to size of lesion. It soon bursts and exposes the deeper layers of the cuticle, thus forming a shallow ulcer.

2. *The primary shallow ulcer.*—In the early stages the base is dry, red, and glazed. It is acutely sensitive. In a considerable proportion a thin pearly-grey membrane may form, though its absence does not indicate a non-diphtherial origin. The edges of the surrounding skin become undermined and the ulcer commences to spread peripherally.

3. *The chronic stage of the ulcer.*—The appearance is quite characteristic. It is punched out and circular in outline, with undermined edges and thickened margins. The base of such an ulcer is covered with grey-coloured debris, beneath which one can frequently determine a tough and adherent membrane. Such a deep ulcer may discharge little or no pus.

## Methods of Investigation.

Scrapings were taken from the spreading edge of the ulcers by a sterile knife and inoculated directly on to freshly prepared Löffler's serum. In unbroken vesicles the skin was first washed with alcohol; the vesicle was then ruptured and the fluid mopped up from the base, then inoculated on to medium by a sterile swab. The base was also scraped.

## The Results of Primary Culture.

One hundred and ninety-seven sores were investigated. The micro-organisms constantly present in the cultures were: (1) staphylococci (*S. albus*), rarely *S. aureus*, or *S. citreus*; (2) diphtheroid bacilli, of two morphological types, i.e.:—

(a) A small straight bacillus, staining uniformly with methylene-blue, Gram-positive but decolourising with ease,

showing no polar differentiation with Neisser's stain. Usually these small forms were present in moderate number and lay parallel in pairs.

(b) Forms morphologically identical with the true Klebs-Löffler bacillus.

I believe that type (a) is an immature form of (b). Inoculation experiments showed that the small form was equally as toxic as the large and developed into the latter.

One or other of these types was present in 129 out of 197 sores examined—67.5 per cent. I consider this percentage high when the following facts are considered. (1) In the chronic stage of the sore the bacillus is in scanty numbers and attenuated. (2) The frequent dressing of sores with anti-septic lotions. (3) With further cultures the positive findings would probably have been higher. (4) The positive findings compare favourably with results of swab culture of clinical diphtheria of the throat, especially under field conditions.

The following are the statistics of examination of swabs for Klebs-Löffler bacilli in this laboratory for two months in 1917:—Total examinations, 5442. Klebs-Löffler bacilli in throat, 455 (8.3 per cent.); diphtheria carriers, 34 (0.6 per cent.); contacts, 49 (0.9 per cent.).

## Association of Sores with Faucial Diphtheria.

During the period of investigation diphtheria both of throat and nose had been prevalent amongst the troops. The epidemic was distinguished by (a) the mildness of the average case; (b) the difficulty of tracing the source of infection. The question was to decide whether the diphtheroid bacillus in the ulcers was identical with the organism found in the throat.

The evidence I collected at that time may be stated as follows: there is a close correlation between the incidence of faucial diphtheria and the occurrence of the "desert" sore, the causal agent in each case being the true Klebs-Löffler bacillus.

The common occurrence of diphtheritic skin lesions under tropical conditions, as compared to their rarity in temperate climates, may be explained as follows: (a) by moistness of skin and activity of sweat glands, soddenness of epithelium providing an opportunity for entrance of bacilli and a suitable medium for their multiplication; (b) by the environment of the troops—close contact between man and man, lack of washing facilities, and constant liability to laceration of skin.

The clinical evidence I have collected in favour of this view is interesting and suggestive.

## Association of Sores with Constitutional Disturbance and Toxic Neuritis.

The question arose as to why constitutional disturbances and paralysis of the throat or limbs had not been observed. My contention is that cases of paralysis had occurred, and were, occurring, but that either they had been overlooked or attributed to a presumably untreated faucial diphtheria. [Cases were here cited of specific instances of typical diphtheritic paralysis occurring in association with "desert" sores.] Evidence on this score will also be found in a paper written after this work was completed by Major F. M. R. Walshe,<sup>2</sup> in which he described a large number of cases of paralysis following "desert" sores, in one series in 27 per cent.

Medical officers all appear impressed by the amount of debility and weakness, especially of the limbs, which is associated with these ulcers, and quite out of proportion to the size, number, or extent of the lesions. The amount of military inefficiency was considerable, as these debilitated men were the first to fall out during the heavy desert marching. The muscular weakness was probably due to chronic absorption of the toxins in an amount insufficient to cause paralysis.

## Confirmatory Bacteriological Tests.

The first experiments on animals were made with glucose-broth cultures of the small diphtheroid organism obtained from a "desert" sore. The organisms were stained uniformly and showed no polar differentiation. 2 c.cm. of the broth culture were then inoculated subcutaneously into a guinea-pig weighing 300 g. The animal died in 48 hours, and from the necrotic tissue at site of injection typical polar staining Klebs-Löffler bacilli were obtained.

Six strains of diphtheroid bacilli isolated from throat lesions and five from "desert" sores were submitted to animal and biochemical tests. All the strains produced acidity in glucose broth after 48 hours' incubation. Both

<sup>1</sup> Brit. Med. Jour., June 9th, 1917.

<sup>2</sup> THE LANCET, 1918, II., 232.



cultures of the strains in doses of 2 c.cm. were injected subcutaneously into guinea-pigs of approximately the same weight. Eleven control animals were given a similar dose of the organism with the addition of 1 c.cm. of diphtheria antitoxin. [The results were here set out in tabular form. Of the five strains from "desert" sore, the injected animals died in 24 hours, 24 hours, 36 hours, 24 hours, and 30 hours respectively. All the controls lived. Of the six throat strains, five died in 36 hours, 48 hours, 80 hours, 36 hours, and 60 hours respectively; the sixth animal was ill, but recovered. All the control animals lived.]

*Post-mortem appearances of injected guinea-pigs.*—At the site of injection there was intense congestion and oedema of surrounding tissues; in those animals which survived for more than 24 hours also membrane formation. In all animals an abundant straw-coloured effusion was found in the pleural, pericardial, and abdominal cavities. The suprarenal capsules were swollen, plum-coloured, and intensely congested; section showed hæmorrhagic changes. The spleen, pancreas, liver, and other viscera appeared normal. Klebs-Löffler bacilli were recovered on culture in every case from the site of injection—that is, from the necrotic tissue. Similar cultures from the heart's blood proved sterile, showing death from toxæmia.

All these typical post-mortem appearances agreed with the classical description of the action of the Klebs-Löffler bacillus upon these animals.

The tendency to the production of serous effusions by diphtheria toxins would explain the vesical formation of the primary cutaneous lesion and the suddenness of the onset of the "desert" sore.

A striking experiment was performed on quails, a bird apparently very susceptible to the diphtheria bacillus. Birds were selected after two months in captivity and in very good condition. 2 c.cm. of a broth culture of a typical diphtheria bacillus isolated from a "desert" sore were injected into the pectoral muscles of one bird; a second was given a similar dose mixed with 1 c.cm. of diphtheria antitoxin. The first bird died in 16 hours; the second exhibited no symptoms. Considerable serous effusion found at site of inoculation, from which the bacillus was recovered; heart's blood was sterile.

I conclude that the diphtheroid organism isolated from "desert" sores can be none other than the true Klebs-Löffler bacillus. The question may be raised why are not the cutaneous lesions more frequently associated with membrane formation and constitutional disturbances. The answer is that only a very small percentage of positive throat cases presented lesions or constitutional disturbances such as are commonly associated with clinical faucial diphtheria. Out of a series of 221 positive cases I examined clinically only 10·8 per cent. presented such symptoms.

#### *The Results of Antitoxin Treatment.*

Diphtheria antitoxin proved an absolute specific for the chronic "desert" sore of the type described. This will be supported by the experience of a large number of regimental medical officers, medical officers in field ambulances and casualty clearing stations. The sores which have resisted treatment for weeks and months heal in a few days with an average dose of 4000 units. Critics have suggested that the normal horse serum would have the same effect. Antidysenteric serum (horse serum) had a partial protective influence, the animals recovered, but suffered considerably nevertheless. The natural deduction is that horse serum normally contains a certain amount of antitoxin to the diphtheria bacillus.

#### *Prophylaxis: General and Personal.*

*General prophylaxis.*—I am convinced that the human carrier cannot account for the prevalence of diphtheria during this campaign. The bacillus is capable of a saprophytic existence. I suggest that one medium is horse manure. From horse manure I isolated a diphtheroid bacillus morphologically identical with the Klebs-Löffler, but non-pathogenic to guinea-pigs. Since the troops have advanced into the cultivated portions of Palestine the incidence of "desert" sores has fallen to a negligible quantity. These facts, with the greater incidence of "desert" sores amongst mounted units suggest an intimate connexion between horse manure and the causation of throat diphtheria and "desert" sores. I would suggest further investigation on these lines.

*Personal prophylaxis.*—The measures suggested are the protection of exposed parts of the body, and especially the

knees, from injury; the wearing of "shorts" by mounted units is unsuitable. The use of antiseptic lotions to the arms and knees of the men, and especially to any abraded surfaces, is to be advocated wherever possible, as well as protection of sores with a dressing, and the avoidance of too intimate a contact between man and man.

#### *Conclusions.*

1. That this "desert" or septic sore is a distinct clinical entity and has a distinct geographical distribution.

2. That the ætiological factor is the Klebs-Löffler bacillus, which is responsible for the specific characters of the lesion.

3. That this organism possesses a low virulence, and therefore only produces constitutional disturbances in specially susceptible individuals.

4. That under favourable conditions these sores may be responsible for outbreaks of faucial diphtheria.

Against these conclusions certain objections raised are:—

1. That the diphtheria bacillus is but a secondary infection superimposed upon some pyogenic lesion. The frequency with which I have isolated the Klebs-Löffler bacillus from the primary lesion with appropriate technique shows that it is a primary infection.

2. The inability of pathologists at the base hospitals to find Klebs-Löffler bacilli in the majority of these sores. The more chronic the sore, the greater the number of pyogenic organisms present, the more difficult it is to isolate the Klebs-Löffler bacillus. Also in base hospitals a large proportion of these cases were deep-seated pyogenic infections with which I was not dealing. In this way I explain the discrepancy between my results and those published by Warren Crowe.<sup>3</sup>

3. The question of the curative action of antidiphtheritic serum I have dealt with.

I desire to place on record my indebtedness to Major A. R. Ferguson, R.A.M.C., for enabling me to carry out part of this work in his laboratory. My thanks are also due to Captains P. H. Bahr, T. J. Mackie, R.A.M.C. (T.F.), F. Standish, R.A.M.C. (T.F.), and J. G. Willmore, R.A.M.C. I wish also to thank Captains Higgins, R.A.M.C., and C. Newton-Davis, I.M.S., for providing me with clinical histories of their cases.

## COMPULSORY INOCULATION AGAINST SPANISH INFLUENZA.

By FRANCIS TEMPLE GREY,  
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EXPEDITION, 1918.

My experience in the South Sea Islands so impressed me with the value of antipneumostreptococcal inoculation as a prophylactic against Spanish influenza that on my return in February, 1919, to Australia (where the scourge had already got a hold in Melbourne, but had so far been kept out of Sydney) I urged the importance of making it compulsory. But outside the Service nothing happened.

The following preliminary communication submitted early in March to a semi-scientific periodical was published six weeks afterwards.

"The vaccine prepared by the Commonwealth Serum Laboratories has in my hands achieved results which are nothing short of miraculous. As a result of my experience, I urge compulsory inoculation on the first signs of the appearance of epidemic influenza in any community as the one efficient means of tackling the scourge; inoculation to be repeated every month or six weeks. I claim that this measure will (1) decrease enormously the incidence of the disease; (2) mitigate its severity; (3) reduce the mortality to a low figure.

The following evidence in support of my recommendation is, to say the least of it, impressive.

(1) The entire ship's company of the man-o'-war which took my expedition to the islands were inoculated. Communication with the shore at the various ports was, as far as possible, avoided, but this ideal was not entirely attained. Not one case developed.

(2) Every member of my expedition was inoculated at least four times in three months. Not a single case developed, although the risk of infection was no small one, when it is remembered that in Samoa alone one-fifth of the entire population was wiped out by the scourge. Two officers had an illness of four to five days not as severe as the so-called influenza of normal times.



(3) An interesting experiment to test the efficacy of the vaccine was provided by the Governor of American Samoa, who sent, against the wishes of British Samoa, 40 natives from Pago Pago (a clean port) to Apia during the progress of the epidemic. These were isolated, inoculated, and not released until judged to be in a positive phase. Not one contracted the disease, and the Secretary of Native Affairs, who knew their names and villages, reported all clear after a lapse of one month.

(4) Ship's company and passengers of the steamer which brought the expedition from Suva to Sydney were inoculated without exception. We anchored in quarantine in Sydney, and on the second day a case was taken ashore. We remained on board, quarantined another week. Although the ship was very overcrowded not another case developed.

(5) The naval dépôt at Williamstown contains a floating population of about 500, half of whom live on shore, and the rest, of course, have a fair amount of shore leave. All hands have been inoculated twice in the last three months. There have been only 15 cases, all mild except two, and no deaths.

The severe reaction in some cases to the lymph during the small-pox epidemic of 1913 on an unvaccinated adult community has done much harm to what must perforce be called the 'cause' of vaccination in Australia, seeing that the public has been taught nowadays that it is entitled to an opinion on subjects it knows nothing about. It may reassure these opinionated objectors to know that in this case, at any rate, there is little or no reaction. I myself have seen only one reaction in all my inoculations.

Conscientious objectors, if the legislature has not the courage to compel inoculation, should be isolated from the rest of the community, it being pointed out to them that we object not so much to their committing suicide as to their carrying the disease unmitigated to those who are not tired of life.<sup>22</sup>

In the middle of March, a fortnight after my first communication was submitted, an epidemic broke out in the ship referred to in paragraph 1, and by the end of the month there were about 100 cases with no deaths. Inoculations (end November and end December) appear, therefore, to have given immunity up to the middle of March, and, when the disease broke through, to have rendered it non-fatal. To deny mitigation by inoculation in this case is to say that the disease was not Spanish influenza (which has a high mortality), and, therefore, that the immunity was absolute.

Soon after my first communication was submitted an influenzoid epidemic broke out in the naval dépôt at Williamstown, and within a fortnight we had 100 cases (characterised by high infectivity, extraordinary mildness, and an average age-incidence of 18½). I was inclined to regard this as a separate clinical entity, but if it were Spanish influenza then the case for inoculation is rendered stronger than ever.

From the beginning of the year to date (June 20th, 1919) 2875 ratings have been vaccinated at the dépôt; there have been 345 cases of influenza, 5 with pneumonic signs, and no deaths.

#### *The Constituents of the Vaccine.*

A full dose of the vaccine used by me contains 125 millions of *Micrococcus catarrhalis*, 50 millions each pneumococci, streptococci, and of a Gram-positive diplococcus. My experience shows Pfeiffer's bacillus to be unnecessary as a constituent of a vaccine directed against this epidemic, and, in view also of the risk of a negative phase, it is clearly unwise to use it in any community where the epidemic is already well under way.

If Spanish influenza be caused by a streptococcus for which the way has been prepared by, say, the bacillus of Pfeiffer or a filter passer, and especially if this last represent a stage in the development of the streptococcus, an anti-streptococcal vaccine should be, and in my experience has been, competent to protect.

On May 14th half the dépôt were given a pure anti-streptococcal vaccine and the other half were given the vaccine already mentioned, with a resulting difference in incidence to date of practically nil.

Immunity begins to peter out after the fifth week. I give a full dose (50 millions each pneumococci and streptococci) every five or six weeks, and never get more than the mildest reaction. I do not inoculate children or the old unless requested, as these appear to have relative immunity. The disadvantage, from the public point of view, of a preliminary dose, apart from the fact that it is unnecessary, is that the public are apt to

think that the preliminary dose is all that is required, and for this and other reasons (if reasons they can be called) do not come up again, and their non-immunity is charged against inoculation. The theoretical objection to a full dose without preliminary—viz., that in stray cases a focus of chronic suppuration may be lit up or that a nephritic may stand it badly—has no weight against the foregoing consideration, and is in any case the concern of the individual vaccinator, who, if ignorant, will damage this as he has damaged other causes.

I have to acknowledge with grateful thanks the help and encouragement I have received from Surgeon-Captain Eames, R.N., Director of Naval Medical Services (Australia); his predecessor, Surgeon-Commander Bean, R.N.; Surgeon-Lieutenant Commander Ramsay Smith, R.A.N., in medical charge of the naval dépôt, Williamstown; and especially from Dr. Penfold, director of the Commonwealth Serum Laboratories.

## A CASE OF "606" DERMATITIS TREATED WITH INTRAMINE, WITH SUBSEQUENT MULTIPLE SUBCUTANEOUS TUMOUR FORMATION.

BY A. R. FRASER, M.D. ABERD.

THE following case of exfoliative dermatitis occurred in my wards at the Scottish Command Central Venereal Hospital, Robroyston.

#### *Account of Case.*

The patient was a recruit of six weeks' service, attached to a labour company, aged 41, a healthy man, but undersized and slightly and slimly built, with a large double inguinal hernia. His medical category was B2. He had no history of previous venereal disease. He was admitted to hospital with a large spirochætal chancre of three weeks' duration. This was a diamond-shaped erosion, with a moist, greyish, finely granular surface. Very definite induration could be made out between finger and thumb. It was somewhat larger in size than a sixpenny-piece, and was situated on the upper external aspect of prepuce. There was a marked inguinal, axillary, epitrochlear, and posterior cervical adenitis. A scattered, diffuse, irregular, fairly symmetrical faint macular rash was present over the trunk and flexor aspects of limbs, being, however, most marked below the scapular angles. The fauces were somewhat injected, but there was no other mucous membrane lesion. Lungs, heart, and the central nervous system showed nil abnormal. Spirochæta pallida was found present in the sore on the day of admission, and two days later his Wassermann reaction gave a strongly positive result (++).

He was then put on a course of neo-kharsivan intravenously, and mercurial cream (metallic mercury) intramuscularly. On the day of his third injection the sore had completely healed, having meanwhile been locally treated with calomel ointment, 30 per cent. Seven days later the rash had disappeared and except for a slight adenitis the patient showed no active signs of lues. His course consisted of 3.90 g. neo-kharsivan intravenously, and gr. 7 metallic mercury intramuscularly, extending over a period of 56 days. This he underwent without incident, on no one occasion showing the slightest reaction. His urine was free from albumin throughout the course. On the fifty-eighth day his Wassermann reaction gave a complete negative result. He was forthwith discharged from hospital.

On the morning of his discharge, having drawn his kit and prepared for the journey to his dépôt, he complained to me of having a headache and generally feeling off colour. On examination it was found that a scarlatinial eruption had appeared over both forearms on the flexor aspect. His temperature was 102° F. He was readmitted to the ward and put to bed, and adrenalin 1:1000 administered in 10 m. doses every four hours. This occurred on the sixtieth day. Calomel gr. 5 followed by a saline was given. The following day the rash had spread over the face and neck, legs and trunk. It was well marked on the forehead. At this stage the rash might have passed for scarlet fever, but later blebs and pustules developed, with scaling and crusting on their rupture. There was very considerable exudation into the skin, most marked on the face and head. The cheeks and eyelids became very swollen and puffy, the eyes practically closed. The temperature remained at 102°. The patient was put on ichthyol m. 5 in cachets, three being given daily. The application of calamine cream and bran bathing failed to diminish appreciably the intense skin irritation. By the fourth day the rash had become confluent, particularly over the thighs and abdomen. The tongue was dry and very heavily coated; it was difficult to induce the



patient to take even a little milk, and he was losing ground rapidly from loss of sleep. He complained most of pain in the eyes, and a dry, congested, choking feeling in his throat. Swallowing was obviously a trying and painful procedure. Ichthyol was continued until the eighth day, but no improvement could be seen from its employment. It was discontinued. On this day 2.50 c.cm. intramine was given intramuscularly. The following day the temperature dropped to 99.4°, the patient expressed himself as feeling better, and exfoliation commenced over the face and forehead. There was no pain at the site of injection, and no local reaction. Exfoliation continued, and four days later a second injection of 2.50 c.cm. intramine was given, again causing no local pain. The skin exudation had now gradually subsided and exfoliation had continued apace. A third and fourth injection of intramine in similar doses followed at four-day intervals, and the patient steadily improved. The skin had now become of an intensely reddish-brown tint and the itching was very severe. This gradually subsided and the skin became very thin and atrophic and of a deeply pigmented dull coppery hue. The patient's general condition steadily improved, his voice was stronger, he became interested in his surrounding, his appetite improved, and he became much less depressed.

On the twenty-seventh day a very large non-inflamed swelling appeared suddenly at the lower end of the sternum in much the same manner as a pyæmic abscess. By evening it had reached the size of a cricket ball. There was no surrounding inflammation and no "pointing." The following day similar smaller swellings had appeared over the external condyle of the left femur, the upper third of the left fibula, over the symphysis pubis, the upper third posterior aspect right thigh, the external surface upper third of the right tibia, the left epigastrium, the back of the left elbow, and on the sacrum. They varied in size from a walnut to a large plum. These were fluctuating, non-inflamed, painful swellings. They seemed peculiarly tender, ordinary gentle palpation being resented by the patient. The contents proved to be a thick gelatinous, slightly opalescent, stringy mucinoid substance which was very difficult to draw into a syringe, even through a needle of large lumen. There was no pus. Microscopically it showed no pus cells and no organisms present. An occasional epithelium cell could be seen. No organism could be cultured. Although the patient's general condition improved, these swellings continued to appear, until by the fifty-first day they had reached a total of 72. In every case the swelling increased in size, remained for two or three days, eventually burst, and healed over in 24 hours without a scar. The patient steadily lost weight, but otherwise maintained his general condition. He did not look ill, and his voice was that of a strong, healthy man.

The tumour formation continued without abatement, and owing to lack of nursing facilities he was now transferred to a general hospital. There he lost ground insidiously, and the case terminated fatally a few months later. The post-mortem findings coincided with that condition described as acute yellow atrophy.

#### Conclusions.

It is extremely difficult to suggest any definite cause for this extraordinary process of tumour formation. Pyæmic abscesses containing definite pus occur in severe cases of "606" dermatitis. Here, however, the absence of pus and the sterility of the tumour contents, together with the non-inflammatory nature of the swelling, makes it extremely difficult to draw any analogy. The process seemed to be of the nature of a subcutaneous myxomatous degeneration. In all probability salvarsan was the exciting cause. There seems nothing to suggest that the intramine was in any way responsible for the condition. On the contrary, I think this drug was beneficial, and essentially non-toxic.

The immediate improvement following the administration of intramine was very marked. The fall of temperature, the early exfoliation and the appreciable improvement in the general condition coincided with the first and second intramine injections. In spite of the patient's very poor cachectic condition its intramuscular administration caused no pain or discomfort whatever.

Although no such condition has been described, it seems a possible suggestion that his syphilis was in itself the exciting cause. One feels, however, that this is unlikely, since his disease had reached a "latent" condition. It is extremely probable that in both "606" jaundice and dermatitis the benzene or amino group, and not the arsenic, is the causative agent, and as this condition has never been observed as caused by arsenic apart from this chemical combination, the amino radical may also in this case have been the causative agent.

Aberdeen.

## Clinical Notes:

### MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

#### THREE UNUSUAL CASES OF INTESTINAL OBSTRUCTION.

BY W. H. C. ROMANIS, M.B., M.C. CANTAB.,  
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INTESTINAL obstruction may justly be regarded as one of the more interesting forms of acute abdominal disease, both from the point of view of the diagnosis of its cause and no less from the consideration of the various problems involved in its surgical treatment. The three cases recorded below are not only instances of obstructions from rare causes, but one at least presented a complex problem in surgical treatment.

CASE 1.—A woman, aged 45, after some weeks of ill-health and constipation, was suddenly seized with acute abdominal pain and vomiting, which rapidly became dark and evil-smelling. When seen four days later the pain and vomiting were unaltered, the abdomen was very distended, and visible coils of bowel were present, especially in the right iliac fossa, where a large, resonant, rounded mass was present. The bowels had not been opened for four days, and her pulse and general condition were poor. Laparotomy was performed, and the first organ that presented itself was the cæcum, distended to a diameter of 7 inches and completely green and gangrenous, the gangrene extending up the colon to the hepatic flexure. All the intestines were very distended, especially the large bowel, and low down in the pelvic colon was a small movable ring carcinoma causing complete obstruction; the cæcum was in no way twisted, and had evidently become gangrenous from the tension of its walls caused by its distended condition. The gangrenous cæcum and ascending colon were removed, but the patient's condition was not sufficiently good to permit of the growth (which was operable) being also resected, while the distended and friable condition of the bowel rendered any attempt at an intestinal anastomosis hazardous. Paul's tubes were therefore tied into the lower end of the ileum and the upper end of the ascending colon and the abdomen closed. The patient made a rapid and uninterrupted recovery, was not troubled with soreness and digestion of the skin round the enterostomy wound, and gained weight. Some weeks later the growth was resected and a double anastomosis done, the two ends of the pelvic colon being united by end-to-end suture and the divided end of the ileum implanted in the side of the transverse colon.

CASE 2.—A woman, aged 62, was admitted with a history of no previous ill-health, but of five days intense pain and vomiting of sudden onset. The bowels had not been opened and the vomiting was incessant, and consisted of black and foul-smelling matter. The abdomen was very little distended, but visible intestinal coils were present, and in the left iliac fossa a round and very hard movable mass the size of a large chestnut could be felt. It was thought that this was probably a ring carcinoma causing the obstruction. The abdomen was opened and a large gall-stone was found firmly impacted in the ileum 2 feet above the ileo-cæcal valve. The bowel above was extremely distended, and the condition of its wall at the point where the stone was and for a foot or two above was very bad, and gangrene appeared to be imminent. The stone was extracted through an incision in the bowel wall, the bowel resutured and covered with an omental graft, the patient recovering rapidly. Examination at the time when the abdomen was opened showed that no further gall-stones were present, but there were many old adhesions round the gall-bladder and duodenum, though on inquiry afterwards the patient stated that she had never had any pain or symptoms that could in any way have been caused by the presence of gall-stones.

From these two cases it appears that distension of the bowel alone without any direct strangulation of its blood-supply can, if allowed to continue long enough, go beyond the stages of congestion, œdema, and infiltration of the bowel wall, and lead to actual gangrene of the whole thickness of the intestine. Perforation of stercoral ulcers in the distended colon above an obstruction is by no means uncommon, but distension-gangrene of the whole cæcum is a considerable rarity.



CASE 3.—A soldier, aged 20, was admitted with a history that 14 hours previously he ran a seven mile race, and for 12 hours had had acute abdominal agony of sudden onset, with intense vomiting. His bowels had been well opened, and on examination his pulse was 70, his abdomen retracted, board-like and dull in the flanks. Laparotomy was performed at once and the abdomen was found full of a blood-stained purple fluid, a large number of black gangrenous coils of ileum, in places already turning green, presenting themselves. It was found that many feet of ileum had passed through a small hole in the lower part of the mesentery, and that not only was the portion of howel that had passed through the mesentery gangrenous, but the pressure had produced gangrene of that part of the ileum in whose mesentery the aperture was, the gangrenous portion extending down to within 2 inches of the cæcum. The whole gangrenous portion was resected almost down to the cæcum, the ends closed, and a lateral union made with two layers of silk sutures between the lower end of the ileum and the side of the cæcum. On subsequent examination the resected portion was found to consist of 14 feet of ileum, all black and gangrenous, but the patient was too bad on the table for any investigation as to the amount of ileum remaining. He made an uninterrupted recovery, and after the first week rapidly put on weight until in four weeks he was heavier than before the operation. At first there were six or seven loose motions daily, but when seen four months after the resection, he was having two soft motions daily and doing his full day's work with ease.

#### Other Recorded Cases.

There have been many and prolonged controversies as to the amount of ileum necessary for the maintenance of normal nutrition. Probably the longest resection recorded is a case of Brenner's referred to in Moynihan's "Abdominal Operations," in which 17½ feet were removed, the woman dying 2½ years later of marasmus. Several other cases of resection of more than 14 feet appear to have lived without any signs of malnutrition, whereas other cases in which only 8 or 9 feet have been removed, have suffered from and even died of malnutrition, and it appears that individual peculiarities exist which render any dogmatic statement quite impossible.

### VESICAL PAPILLOMA SIMULATING VESICAL TUBERCULOSIS.

BY ROLF CREASY, M.R.C.S., L.R.C.P. LOND.

I VENTURE to publish the notes of this case as they may prove both interesting and instructive.

**Previous history.**—T. H., 46 years. Primary hæmaturia in December, 1917, frequency of micturition following soon after. Discharged from the Army in March, 1918, for "tuberculosis of testicles and bladder." Attended as an out-patient for 17 months (April, 1918, to August, 1919) at one of our largest London hospitals under treatment for tuberculosis of bladder and testicles. Between May and July he attended at the R.C.S. examinations three times, being shown as a case for diagnosis (in the light of subsequent events one wonders if any luckless candidate was ploughed for not diagnosing T.B. of bladder). Was examined four times to January, 1919, by pensions board and diagnosis confirmed.

**Condition on admission.**—The patient was admitted in August to All Saints' Hospital for Genito-Urinary Diseases, when his condition was as follows: Testicles wasted; nodules felt in both epididymes and thickening of both cords. Prostate normal; vesicles rather thickened. Cystoscopic examination revealed a cherry-sized, innocent papilloma springing from the bladder wall just above the right ureteric orifice. Bladder walls quite healthy, showing no signs of tubercle. Both ureteric orifices normal, with good efflux. Trigone normal. A test dose of old tuberculin, 0.0005 c.cm., gave marked positive reaction, local and general.

#### Points of Interest.

The points of interest in this case are:—

1. The improper assumption of tuberculous bladder because of the tubercle elsewhere. It is surely a grave reflection on the study of urology in our London hospitals that no cystoscopic examination was made in the case of this man complaining for over two years of hæmaturia and frequency of micturition. The case emphasises also the necessity for early cystoscopic examination in all cases of hæmaturia. The cod-liver and malt prescribed in hospital for his condition naturally benefited in no way the papilloma in his bladder.

2. The prompt treatment of his papilloma by Mr. Canny Ryall by diathermy fulguration.

3. The positive reaction to the tuberculin test (which test should without doubt be applied to all cases of suspected tuberculosis of the genito-urinary system), enabling the treatment by tuberculin injections to be at once started.

In regard to the last point, with the assistance of Mr. Ryall and Dr. Camac Wilkinson I am carrying out a series of some 20 cases of genito-urinary tuberculosis treated by tuberculin injections, the result of which I hope to publish in due course.

Grafton-street, W.

### A CASE OF BACILLARY DYSENTERY

IN WHICH FLEXNER-Y WAS RECOVERED FROM THE BLOOD STREAM DURING LIFE.

BY J. S. K. BOYD, M.B., CH.B. GLASG.,

CAPTAIN, R.A.M.C. (T.C.); FORMERLY OFFICER IN CHARGE, BRANCH NO. —, MOB. BACT. LAB., B.S.F.

It is a general experience that dysentery bacilli have been rarely recovered from the blood during life. Glynn and his collaborators<sup>1</sup> (1917) have collected from the literature 15 cases, viz.: *B. dysent.* Shiga, 2; *B. dysent.* Flexner, 1; inagglutinable *B. dysent.* Flexner, 1; and *B. dysent.* Y, 11. In 12 other cases the bacilli were found in the blood after death—viz., Shiga, 6 times; Flexner, 4; Y, 2. Maer<sup>2</sup> (1918) has since recorded the presence of *B. dysent.* Shiga in the blood of a soldier in the East, who subsequently died. Caussade and Marbais<sup>3</sup> (1919) described a remarkable case of acute dysentery with pyrexia, which was fatal in a week. The stools were examined three times, with negative results, for amœbæ and pathogenic bacteria. Typical Shiga bacilli, however, were isolated from the blood post mortem. The patient's blood also gave positive agglutination to Shiga 1-100. The large intestine was inflamed and the epithelium necrosed, but there was no definite ulceration. L. Rosenthal<sup>4</sup> (1903) isolated agglutinable Shiga bacilli from the heart blood and spleen of a male, aged 20, who died after four days' acute dysentery; there was typical dysenteric thickening of the large intestine and the mesenteric glands, which were one and a half times the normal size and contained much blood.

While serving with the Salonika Force in the summer of 1917 I encountered another case, the seventeenth; here Flexner-Y was the organism.

L.-Cpl. K. was admitted to C.C.S. complaining that four days previously he "turned ill with sickness, vomiting, and diarrhoea"; the latter symptoms progressively became worse. On admission his bowels were moving "every few minutes" and he was passing small stools of blood and mucus. He had severe general abdominal pain. He was flushed, but had no typhoid facies. The tongue was dry and heavily furred, the abdomen sunken. No rash was observed, and the spleen was not palpable. The temperature was 100° F. and pulse 98. The patient had not been inoculated against dysentery.

**Stools.**—These presented macroscopically and microscopically the typical appearances of bacillary dysentery—i.e., they were small stools consisting altogether of glairy mucus streaked with blood and contained many leucocytes and a moderate number of red blood corpuscles, desquamated and degenerating epithelial cells. Plated on MacConkey's medium an almost pure culture of an organism with the following cultural characters grew. Glucose—acid, no gas; mannite—acid, no gas; maltose, lactose, and cane—unchanged. The organism was agglutinated to the full titre, 1-1500, by Lister Institute Flexner-Y antiserum.

**Hæmoculture** was performed in the usual way on the day of admission, 2 per cent. bile-salts in distilled water being used. In 36 hours an organism was recovered from this which gave the same cultural and agglutinative characteristics as that isolated from the stool.

Before the special interest of the case was recognised the patient had recovered sufficiently to be evacuated to the base, and was consequently lost sight of.

It will be noted that the organism is of the "Y" type, and that the symptoms show no unusual variation from the ordinary acute dysentery.

I have examined about 12 other apparently similar cases of acute bacillary dysentery in about the same stage of the disease with the same hæmoculture technique, but the results were negative.

<sup>1</sup> Glynn, E. E., &c.: Report upon 2360 Enteritis "Convalescents," Medical Research Committee, Report No. V., Special Report Series No. 7. <sup>2</sup> Maer: Brit. Med. Jour., 1918, vol. 1, p. 84.

<sup>3</sup> Caussade, G., and Marbais, S.: Bull. Soc. Med. des Hôpitaux de Paris, 1919, No. 7-8, p. 145.

<sup>4</sup> Rosenthal, L.: Deutsch. Med. Woch., 1903, No. 6, p. 93.



## Reviews and Notices of Books.

*Human Infection Carriers.* By CHARLES E. SIMON, B.A., M.D., Professor of Clinical Pathology in the University of Maryland School of Medicine. Philadelphia and New York: Lea and Febiger. Pp. 250.

THE problem of the human carrier of bacterial infection is assuming ever greater importance. Professor Simon regards all such individuals as a menace to society. He "wants to make your flesh creep." He refers to "the hidden foe," and estimates, on figures of doubtful validity, that there must have been at least 2679 carriers of the *B. diphtheriae* in New York in 1915, and that the same city may be assumed to harbour some 25 000 typhoid carriers; though he is led to express some surprise that, in such circumstances, typhoid fever is not much more prevalent than is actually the case. Viewed in this light, as the case for the prosecution, the book makes instructive reading, though it is difficult to withhold some measure of sympathy from the carrier in the dock, and one is left with a feeling that a conviction on all counts would hardly be obtained on the evidence submitted. As a critical survey of the carrier problem the work cannot compare with that of Ledingham and Arkwright published seven years ago, to which, strangely enough, Professor Simon does not once refer. Much recent work in connexion with poliomyelitis, cerebro-spinal fever, and pneumococcal and streptococcal infections is included in the chapters dealing with these subjects. Many of the more important facts which have recently come to light in connexion with the epidemiology of meningococcal infections are, however, omitted or passed lightly over. Certain errors and omissions are probably the result of haste in preparation and will be corrected in a subsequent edition. The most glaring examples occur in the table of fermentation reactions on p. 94.

A strong plea is put forward for the control of convalescents from infectious diseases, based on bacteriological findings, and for the rigid quarantine of all detected carriers, whether convalescent, contact, or non-contact. Where this is obviously impossible the strict limitation of their activities is suggested as the most desirable alternative. Several large assumptions are made: that practically all carriers derive the organisms which they harbour directly or through a series of contacts from a case of the disease in question; that the efficient control of the patient would largely prevent the occurrence of carriers; that our technique is sufficiently accurate to enable us to detect such individuals by a practicable routine; and that a thorough campaign carried out along these lines would eventually eliminate the carriers and hence the diseases which they spread. Almost all these basic assumptions may be, and have been, doubted. In the case of cerebro-spinal fever the rise in the carrier-rate has clearly been shown to precede the epidemic. Once this has started many carriers will be produced by direct or indirect contact with actual cases; yet it may be that the actual case is often the final product of a process in which the passive carrier and the atypical case mark successive stages. The numerous statistical results, which have been obtained as regards repeated examinations of individual carriers over long periods, do not tend to strengthen our confidence in our ability to eliminate these unfortunate persons by practicable measures. The widespread dissemination of the meningococcus among the healthy population, so clearly brought out by the work of Eastwood, Griffith, and others in this country, is hardly compatible with the belief that any scheme of quarantine will avail to rid us of carriers of this organism, and observers of repute have expressed a definite opinion that efforts along these lines are useless in this disease. The book is marred in some respects by being written too exclusively from the point of view of the clinical pathologist, and certain fundamental facts of epidemiology are misstated or ignored. Twice, at least, is the suggestion made that epidemics started by carriers may spread until suitable soil is no longer available. In the sense that an epidemic ceases because all susceptibles have been attacked, this view has been shown by numerous authorities to be untenable. The mischievous activity of certain types of carriers has been demonstrated to the satisfaction of almost all those

who have studied the question, and Professor Simon presents us with several new histories illustrating this, including the latest chapters in the life of the famous "Typhoid Mary."

Among the most interesting features of this work is the appended summary of the State laws and regulations pertaining to infection carriers; and it would be hard to find a better text from which to preach the urgency of further inquiry into the whole matter. Most of the laws and regulations are new. While 16 States, at least, have given no definite rulings on this question, one hopefully includes scarlet fever in a list of diseases in which carriers shall be liable to special control. Illinois strikes a practical note in prohibiting typhoid convalescents from engaging in the preparation or handling of foodstuffs or milk until the excreta are certified to be free from bacilli, and in imposing a fine of not more than \$200 or imprisonment in the county gaol for not more than six months, or both, as a penalty for each offence. The effort to deal with a problem of such real importance along legislative and administrative lines reflects great credit on the activity of the health authorities of the United States, and is full of interest to ourselves in a year marked by the birth of the Ministry of Health. The problem is exactly one where the new Ministry will require sound medical guidance. Are detection and quarantine, involving an enormous amount of bacteriological investigation and the control of many thousands of apparently healthy persons, the only or the best ways to deal with the position? Or is it possible that more will be accomplished by less rigorous methods combined with a determined attempt to lessen overcrowding and to educate the public in the ways of cleaner and more healthy living? How much, again, can we expect from widespread schemes of preventive inoculation, and to how many diseases can this method be usefully extended? If we are to succeed in those plans for the gradual diminution of infective disease, in which our hopes are so largely centred, we must secure the hearty coöperation of the population in general. This might well be lost by restrictive legislation applied without clear proof of its necessity. Unpopularity should never be an excuse for inactivity when the facts are clear, but we should do well to build carefully and on sure foundations.

Professor Simon's book serves to impress upon us that action cannot be indefinitely delayed. If we could learn that the financial outlay involved in a thorough and systematic survey of the whole subject would probably save us from endless mistakes, and some possible disasters in the not far-distant future, we should have gained much.

*Practical Obstetrics.* By E. HASTINGS TWEEDY, F.R.C.P.I., Professor of Obstetrics, Royal College of Surgeons in Ireland, Past Master of the Rotunda Hospital; and G. T. WRENCH, M.D., late Assistant Master. Fourth edition. London: Henry Frowde (Oxford University Press). 1919. Pp. 557. 21s.

THIS edition is particularly interesting, as in the absence of the master, Dr. Henry Jellet, on war service, the governors of the Rotunda Hospital asked three past masters to carry on the work. Dr. Hastings Tweedy therefore has had exceptional opportunities of renewing his acquaintance with the clinical teaching of that institution which is embodied in the present volume. The demand for a fourth edition in so short a space of time shows the practical success of the work, which is founded upon the experience gained in what is, taken all round, the best lying-in hospital in the United Kingdom. We may not all of us agree with some of the details of the teaching of the Dublin school, but that the "Rotunda" opinion upon any matter in the science and art of obstetrics must be seriously accepted no one could be found to deny.

In view of the interest the subject is exciting at present the results of the observations of Dr. J. R. Freeland and Dr. B. Solomons on twilight sleep are important. Their report is, on the whole, in favour of the method, but it must be noted that they gave, as a rule, relatively small doses and only 10 out of their 100 cases appear to have exhibited complete analgesia. The authors believe that the results obtained by scopolamine-morphia injections demonstrate that so-called secondary uterine inertia is in reality not due to a "tired-out uterus" but to a "tired-out woman," and that the



appearance of strong labour pains in the early stages of labour is due to an hysterical condition of exaggeration and alarm in a hypersensitive woman. The very constant effect of twilight sleep has in producing secondary uterine inertia must, however, be borne in mind, and we regard the teaching that there are two conditions of primary and secondary uterine inertia and a third one of obstructed labour to be the more correct.

The section dealing with the treatment of eclampsia is a very good one, and the fact that in an appendix the authors have reprinted a paper read by one of them before the International Medical Congress, 1911, and also a paper by Stroganoff, gives the reader additional information in regard to the methods described in the text, methods which certainly give extremely good results. The two-bladed cephalotribe is at the present time old-fashioned, and, we imagine, seldom used. If a practitioner attempted to use the instrument according to the description given by the authors he would certainly fail in a difficult case—that is, if we are right in assuming that Braxton Hicks's instrument is referred to. The authors still favour plugging in the treatment of rupture of the uterus, and quote six cases successfully treated by this method. It is a pity they do not state whether these were cases of complete or incomplete rupture. But in spite of these slight differences of opinion between us and the authors, we regard their book as a very good one and one which can be most highly recommended both to students and practitioners as thoroughly sound in its teaching.

*Veneral Diseases: a Practical Handbook for Students.* By C. H. BROWNING, M.D., D.P.H., and DAVID WATSON, M.B., C.M. London: Henry Frowde and Hodder and Stoughton. 1919. Pp. 336. 16s.

IN order that students should benefit to the greatest advantage from any treatise three conditions must be fulfilled. The presentation of the subject must be systematic, clearness and brevity must go hand in hand, and the information afforded should be stimulating.

This volume is divided into two parts, the first treating of syphilis and the second of gonorrhoea. In Section I. (Syphilis) the foregoing conditions are, on the whole, admirably satisfied. From the student's point of view the pathological teaching is extremely good. We can find little which calls for adverse criticism, much that deserves eulogy. The illustrations are on the whole good, but we think that the plates (2, 3, and 4) illustrative of different chancres might be much more definite. More space might have been allotted to the differential diagnosis of penile and other chancres.

It is not necessary or desirable for anyone to attempt to carry out the Wassermann test unless he is justified by long experience in doing so. Every practitioner, however, should understand its rationale, and therefore we are sorry to find that the explanation of this reaction is not as clear as it might be. Now that the importance of the pre-natal treatment of syphilis is recognised, it is to be regretted that no more than 2½ lines are devoted to this subject.

It would have been more satisfactory if the authors had given their readers more definite ideas as to the comparative value of the various substances which are now being used for the administration of intravenous injections. We consider that the paragraph devoted to the "contra-indications" to the administration of salvarsan should at least give some definite information for the benefit of students as to the course to be adopted with a patient who is suffering from chronic Bright's disease, acute nephritis, or aortic disease. The statement that "there are no absolute contra-indications to the administration of the drug" is one that will not commend itself generally to syphilologists. If it is necessary to devote half a page to the illustration of an apparatus for giving intravenous injection by pressure, it is desirable to afford some explanation of its methods of action. Lastly, after calling attention to the emergencies contingent upon the administration of salvarsan treatment, it is advisable to give the student information as to how to combat the same. We are purposely pointing out what we think to be weak spots in a valuable section of the treatise.

But while we believe that the first part of this book is, as a whole, admirably suited to subserve the purpose of its existence as "a practical handbook for students," the same can hardly be said of the second section on

"Gonorrhoea." It is not systematic, and therefore it is not clear. We are certain that the student knowing nothing of his subject who comes to this volume for instruction will leave it in a mentally nebulous condition. The aim of a work of this nature should be to instruct a student how to examine and treat a case of gonorrhoea in a methodical fashion. In this respect the authors have failed, and, further, their teaching is not always in agreement with the best views. In regard to the treatment of acute anterior urethritis the authors warn the students with respect to injections as given by a syringe. "No force must be used, otherwise a minute quantity of gonococcus-laden pus may be forced into the posterior urethra and an acute posterior urethritis incited. This is an accident which frequently happens in cases treated by this method." On pages 190-191 the authors advise what they term "urethro-vesical lavation" (generally termed posterior irrigation). They advise that the reservoir containing the antiseptic fluid should be placed at a height of 4½ feet above the level of the patient's pelvis. We feel assured that the danger which they aim at preventing when using the syringe will be lavishly present if the above method of "lavation" be used in a case of anterior urethritis. Again, in dealing with the subject of chronic gonococcal urethritis the authors fail to emphasise sufficiently the value of digital examination of the prostate and of the vesicles. This we regard as a serious omission; in fact, we consider it most necessary to impress upon students the need which exists for the valuable information which is to be obtained from the constant examination of prostate and vesicles. For there is no doubt that the rectal is the high road which leads to success in both the diagnosis and treatment of chronic posterior urethritis.

The consideration of the subject of strictures, their diagnosis and treatment, is inadequate, and when it is considered what can be effected by careful dilatation and the resultant avoidance of urethrotomy the omission is a serious one. Insufficient attention is given to the technique involved in urethroscopic examination. We regret, also, that we are unable to find any reference to the necessity of making a systematic examination of every patient before he is discharged from treatment. The authors suggest that "any persons who have previously suffered from gonorrhoea should submit to an expert medical examination before marriage." This is not enough. Every patient who has been under treatment for gonorrhoea should be systematically examined before he is discharged, whether married, about to be married, or without any idea of marriage. From a sociological point of view the man who has no idea of marriage is likely to prove the most dangerous to the community if he is discharged from treatment without a thorough examination.

We are sure that the authors can make a valuable treatise out of their work if they will boldly throw over altogether the teaching of the schools where it conflicts with recent clinical experience, and will bear in mind that the present-day student must be equipped on every hand for a medico-social conflict.

*Through a Tent Door.* By ROBERT WILLIAM MACKENNA. M.D., R.A.M.C. London: John Murray. 1919. Pp. 310. 8s. net.

THIS book of war essays has none of the robustness and rollicking humour of others of its kind, though it is possibly none the worse for that. Incidents of the war as seen from a field hospital form the basis of the book, but one feels that the author would have been just as happy had his vantage point been an English provincial hospital, for his comments on life rather than on action. He is interested in books, religion, and human nature—in fact, in things in general; and it is merely an accident that he happens to have thought and written in Flanders. Dr. Mackenna has a pleasant, gentle style, somewhat reminiscent of Elia, and on the whole his work reaches a high level. Were we called upon to select any one essay for special praise it would be the one entitled "Through a Tent Door," but many others are almost equally successful. "The Visitant," a work of pure imagination, pleased us least; and "Margarine and Café-au-lait," a desultory discourse on books, might well have been omitted; the kind of thing has been done, and done better, elsewhere. Dr. Mackenna's public may not be large, but it will be appreciative, for his work is thoughtful and sincere.



# THE LANCET.

LONDON: SATURDAY, SEPTEMBER 13, 1919.

## The Eradication of Epidemic Diseases.

CAN the great epidemics of disease which from time to time sweep over the whole or a great part of the earth's surface be prevented by human effort? Will it ever prove possible to trace them to their place of origin, and by appropriate measures applied there destroy the cause of each disease at its very source? In the case of a large number of infectious diseases human effort can, and does to a great extent, control the spread of an infection once introduced, and limit its disastrous effects on the community. But the aim of the epidemiologist and public health administrator is something higher than this. To them, even more than to the clinician, prevention is infinitely to be preferred to cure, for while he deals with single lives they are dealing with lives in countless numbers. When the recent truly terrible epidemic of influenza (we use the words deliberately, for the deaths caused by that epidemic outnumbered immeasurably those caused by four and a half years of the greatest war in history) swept over the world, how many—or how few—persons were saved from its attacks by individual or by communal measures of precaution? The medical profession cannot claim that the course of the epidemic was seriously affected, still less stayed, by any such measures. Had it proved possible to detect from the outset the place of origin of the disease and to destroy the infection then and there, or at least to prevent its spread beyond local limits, the millions of lives thus sacrificed might have been saved; one more—and perhaps the greatest of all—would have been added to the list of triumphs of preventive medicine; and the very course of history itself might have been changed. And if this is true of influenza, it is no less true of other and allied epidemic diseases.

We have been led along this line of thought by the instructive presidential address delivered by Dr. SIMON FLEXNER before the recent Congress of American Physicians and Surgeons. The address covered much ground, and we only here refer to one or two of its salient points, as they appear in the abstract printed in our issue of last week. As Dr. FLEXNER points out, in the case of one disease at least, the aim we have tried to formulate above has been actually attained. "We have," he says, "a splendid example of eradication of disease in yellow fever. We did not wait for the disease to become epidemic; it was destroyed in its endemic home." But in the case of influenza the problem to be solved is more complex than in that of yellow fever, and more complex perhaps than Dr. FLEXNER's remarks (of necessity much concentrated in our abstract) seem to imply. "In the history of epidemics," he says, "influenza took its origin in a region somewhere near the Russian border of Turkestan, spreading along the trade routes as rapidly as transportation moved. . . . The endemic focus of influenza is somewhere on the Eastern border of Russia." Consequently he holds that "it is not too much for a reconstructive

medical profession to conceive the clearing up a region which by its inaccessibility and its neglect has every 25 or 30 years originated waves of disease spreading over the globe." We should share this hope more willingly were we convinced of the correctness of the geographical premise. In the great pandemic of 1889 and subsequent years there was strong evidence to show that the outbreak did in truth take its origin on the borders of European and Asiatic Russia. The evidence was set forth in two articles<sup>1</sup> published in THE LANCET by Dr. F. G. CLEMON in 1894, and was based on original and unpublished reports made by Russian doctors in the regions in question to the Medical Department of the Russian Ministry of the Interior at the time of the epidemic. But that evidence was restricted to one particular outbreak of the disease, and we are not aware that it has ever been claimed, or that the historical facts would lend any support to such a claim, that influenza epidemics always or even frequently arise in the regions indicated. The so-called "Spanish influenza" of 1918-19 arose we know not where. The records of its course, owing to the state of the world at the time, were far more imperfect than those of the 1889 pandemic; and, so far as they are available, they do not seem to show the same clear progress from one well-defined centre to the rest of the globe. In this respect influenza must always, save perhaps on rare occasions, offer great difficulties to those who would aim at destroying it at its source. But the aim need not for that reason be lost sight of. The interests at stake and the rewards of success in preventing even one single pandemic, such as that of 1889 or 1918, are on too colossal a scale for a policy of despair; and we fully share the hope that, when order once more reigns in Russia, a careful watch may be kept on the regions which gave birth to at least one great epidemic of influenza, and may yet give rise to another.

But while a massed attack on an endemic focus seems as yet too sanguine a prospect where influenza is in question, the conditions surrounding the origin of the great cholera epidemics offer more hope for the attainment of the aim. The endemic home of cholera is universally believed to lie in Lower Bengal—in the Sundarbans and the delta of the Ganges. The problem of the eradication of this disease, therefore, is not complicated by uncertainty as to its place of origin. The real difficulties arise here when the practical measures necessary for such eradication come to be considered. The large size of the area in question, the engineering difficulties, and the cost, with no direct financial profit, of draining and "sanitating" this vast region all stand in the way of a radical solution of the cholera problem. But these are not in truth insuperable difficulties. In a world awake to the blessings of health can any cost be deemed too great or any obstacles be thought insuperable where the saving of millions of human lives and the prevention of incalculable suffering will be the rewards of success? Each of the great epidemic diseases presents its own special problems, and preventive medicine can already claim a wonderful series of triumphs in discovering the causes of most of these diseases and pointing the way to their control. It may no less proudly claim to have opened the eyes of modern statesmen and administrators to the overwhelming importance to the

<sup>1</sup> Recent Pandemic of Influenza, its Place of Origin and Mode of Spread, THE LANCET, Jan. 20th and Feb. 10th, 1894.



State and the people of dealing seriously with the problems of disease prevention. To-day large, costly, and far-seeing measures with this object occupy a place in practical politics. But we like to picture a world where the prevention and eradication of all diseases that can be prevented or eradicated should be the aim—even the *first* aim—of national and international policy and effort; where measures having as their object the saving of millions of human lives would be thought as worthy of a great statesman's energies and of the interest of the public as Free Trade, bimetallism, and the nationalisation of railways. It may—and, indeed, we are not optimistic enough to doubt that it must—take many long years to reach this ideal. But in the meantime much may, and should, be done; and we hold that it should prove quite feasible to trace some, if not all, of the great pandemic diseases to their source and to make a serious effort to stifle them in their cradle. We do not hide from ourselves the vastness of the task or the practical difficulties to be overcome, but modern science exults in difficulties. When the smoke and noise of war have cleared away, and the nations are really at peace again, the statesmen of the world could find no higher or more stimulating aim for their energies than the cleansing of epidemic breeding grounds.

### The Teaching of Obstetrics in London.

No one who has read the report of the Committee of the Section of Obstetrics and Gynæcology of the Royal Society of Medicine, appointed to consider this subject, can fail to agree with their conclusions that the present methods of teaching midwifery are very defective. There has been little alteration in these methods for a long time past, and while it is true that the establishment of midwifery wards of recent years in certain of the hospitals has done something towards reform, the main and gravest defect still remains. We refer to the fact, strongly emphasised by the Committee, that the student learning clinical midwifery is completely out of touch with his senior teachers, as he does not see them actually engaged in the work he is trying to learn and seldom has the advantage of their supervision and guidance. This is certainly true of those hospitals, the great majority in London, which have no midwifery ward, and even in those which have it is true to a very large extent. It is generally impossible for the senior members of the staff to be present at any normal labours, and it is no exaggeration to say that in most hospitals they are not there even when a case of abnormal labour is being conducted, and the most the student can expect to see is the performance of the Cæsarean section by one of the visiting staff, a class of case he will seldom meet with and an operation he will probably never attempt. The result of this is that while in medicine and surgery the student has the great advantage of receiving most of his clinical teaching from the visiting physicians or surgeons, in midwifery, just as important a subject, the teaching is mainly in the hands of junior residents or registrars.

This being the case, it is little wonder that the reputation of the London School of Obstetric Medicine is but a poor one, and that research in the subject is practically non-existent. It is high time that some change was made and that the

whole matter was put upon a more satisfactory basis. Not only is the clinical teaching of midwifery in London very deficient, but the small number of beds available for lying-in cases is almost scandalous. In these days the medical student no longer should be dependent upon attendance in the extern maternity department for his experience in midwifery practice. In the unsuitable surroundings that obtain in the homes of the poor it is quite impossible for antiseptic or aseptic methods of conducting a confinement to be efficiently carried out, and if they cannot be properly practised they cannot be properly taught, as they should be by example and not merely by precept. One of the pressing needs of London, and, indeed, of every other town in the country, is a more adequate provision of lying-in beds. It should be possible for every woman who desires to do so to be admitted to a properly equipped lying-in hospital, and it should be just as great a scandal to conduct a difficult case of midwifery, possibly necessitating an operation, in the utterly unsuitable surroundings of a tenement house as it would be to carry out even a simple surgical operation amid such surroundings. And yet this is happening every day in the week and almost every hour in the day. In the ratio that exists between the number of beds available and the number of beds required for lying-in cases, we imagine that London is in a worse position than any other large city in the world. It is to be hoped that the new Ministry of Health will take this matter in hand and will insist that the provision of lying-in beds in the large hospitals with medical schools should be such as to render it possible to admit other cases than merely those which are sent in from the maternity, district or by medical practitioners because they require operative interference. The fact that a woman who has to undergo an obstetric operation frequently runs a greater risk than one who has to undergo an ordinary major operation of surgery should be made quite clear to the public, and it is not just or fair that in these circumstances she should be terribly penalised because sufficient accommodation is not to be found in the large voluntary hospitals. The fact that neither the majority of the medical staffs nor the managing committees of many hospitals appear to recognise the necessity for such a provision is becoming a strong argument for placing the hospitals under State control.

But when the beds needed have been provided they will be useless from the student's point of view unless a very radical change is brought about in the present methods of teaching. The crux of the whole question lies in the provision of some means whereby the student can receive his teaching in theoretical and practical midwifery from teachers of a class comparable to those who are engaged in teaching him medicine and surgery. As we have pointed out, at present this is only true as regards systematic instruction in midwifery, the practical teaching being mainly in the hands of junior teachers occasionally but seldom above the rank of a registrar. In the near future, perhaps, several of the medical schools in London will have whole-time properly paid teachers in medicine and surgery, and no one who has given any attention to the needs of medical education can doubt that this step will tend not only to advance and improve the theoretical and clinical teaching, but that it will tend also greatly to the advancement of



research in these two subjects. An appointment in obstetrics on these lines—namely, a whole-time properly paid teacher provided with paid assistants and with adequate laboratory accommodation for the carrying out of research—is urgently needed, and is one of the chief recommendations of the Committee whose report we are considering. Whether such a teacher should be the head of a separate institution on the lines of the Rotunda Hospital in Dublin, or whether he should be closely associated with one of the existing medical schools and take charge of a greatly enlarged obstetrical and gynaecological department in the associated hospital is largely a matter of convenience and detail; the principle remains the same in either case. Until an appointment of this kind is made by which the student will be taught his theoretical midwifery and be able to see clinical midwifery practised and obstetrical operations carried out as they should be carried out, in suitable surroundings by a master of the art, the teaching of midwifery will never make any appreciable progress in London, and the reproach that research in this subject in London is a negligible quantity will never be overcome. We have said little about the teaching of the London student in gynaecology, because on the whole it is satisfactory, the same difficulties do not surround it, and no modifications are really required, but the two subjects cannot, and should not, be divorced. They should be taught together in a single institute, and under the same roof should be located a corresponding maternity and child-welfare centre.

### Mind and Medicine.

THE truism that history repeats itself is suggested by the reading of a lecture with this title delivered in the John Rylands Library by Dr. W. H. R. RIVERS, Prælector in Natural Sciences at St. John's College, Cambridge. Continual progress and fresh scientific discoveries notwithstanding, an impartial scanning of the phases or trends of medicine at various epochs in world history points to the conclusion that the human mind in its relation to the practice of medicine moves through cycles in which time is measured not by years but by centuries. Primitive associations of medicine with religion and with magic seem in the fullness of time to be replaced by modern associations not widely differing in essence. Subsequent search for a material basis for disease in a humoral theory is paralleled by a not much more scientific conception of the interrelation of the endocrine glands and their bearing on many morbid states. To the student of medicine the succession of animism by materialism, and of the latter by deeper appreciation of the mental factor in disease does not, however, represent the historical facts other than superficially. At no time has either the mental or the material factor been predominant to the complete exclusion of the other; as long as a dual conception of man's being has existed, so long has medical opinion oscillated between one and other aspect of it, and so will it continue to oscillate. A system of healing styled "New Thought" is in reality very old thought; while the organisms of the germ theory are the counterpart of the worms and snakes of savage medicine.

What is new is the determination of the precise scope of the psychological factor in disease, and the laying down of the principles of psychotherapy. For the time, we may say, the growing point of the study of nervous disease is in the direction of

applied psychotherapy, thanks to the immense impetus afforded by the silent appeal of the phalanx of sufferers from war neuroses and psychoneuroses. Behind the therapy looms large the desire to probe further into the why and the wherefore, hence the renewed investigation of psychical theories of disease, and, as Dr. RIVERS justly concludes, the willingness of the great majority of students to consider the position, and to accept, in part at least, the doctrine of pioneers such as FREUD. Appreciation of the importance of psycho-analysis as a means of discovering what lies behind the external phenomena of functional nervous disease implies no acceptance of the Freudian attribution of all neurosis to disordered sexuality; for that matter, there is no finality of interpretation of the symbols, which, in Freudian doctrine, constitute a large proportion of the stuff of the mind, still less of the motives laid bare by such technique. Thus should a hidden spring of action be shown to be linked with some "woman in the case" it would not thereby necessarily bear only a sexual interpretation. In one of his University sermons the late Principal EDWARD CAIRD laid stress on the love of knowledge for its own sake as one of the potent dynamic forces stirring the mind of man to action, and should this be given fuller effect by one in his love for his partner, its tingeing with an added colour does not alter its essentially non-sexual nature.

As the working man insists on his war bonus being permanently incorporated in his wages, so the advances recently made in the understanding of the unseen trends of the human mind will be permanently embodied in medical doctrine. There can be no going back to the barren psychology of the schools. We have learned too much of the significance of the affective or emotional aspects of functional nervous disease to rest content with what is little less than therapeutical "bluff." The casual patient, it must frankly be admitted, knows not merely much about venereal disease that was hidden from his father; he has heard of blood-tests, and demands treatment by injections; he also knows more than some physicians may suspect of how "nerves" should be treated and will not submit to be put off by an airy reassurance. If the modern hospital is to earn or enhance a reputation for healing the sick it must take cognisance of all the ills to which flesh is heir and organise a neurological department for the benefit, among others, of the sufferer from functional nervous disease, presided over by, or including on its staff, someone trained in the recent acquisitions of knowledge and convinced that psychological disorders deserve psychological treatment. This investigation of the underworld of conflicting impulses, desires, and instincts must lead also to the medical man's playing a greater part in the solution of the problems of criminology. The criminal deserves psychological study at least as much as, if not more than, legal. Social and political problems, too, are in their turn based on deeper problems of the trends of the social mind which provide a fit subject for patient research. We should not claim mere psychological analysis to be a panacea for the disorders of the body politic, but we are frequently reminded by intelligent publicists of the real roots of social unrest in feelings and impulses that are essentially only half-expressed, and therefore potential mischief-makers unless dealt with as the psychologist deals with the impulses of the individual. In all this we see a ripe field for systematic investigation by competent workers.



## Annotations.

"Ne quid nlmis."

### OFFICERS FOR THE R.A.M.C.: THE NEW CONTRACT.

IN the recent Students' Number of THE LANCET we regretted the inability to publish the rates of pay that would be contained in the new contract which the Army Medical Service was prepared to offer to medical practitioners, though we were able to announce that these terms would be of a very advantageous sort. This week the new contract has been made public, and the conditions under which the War Office is prepared to accept the services of medical practitioners, including those who have been demobilised, will be found set out on page 503 of this issue. The contract, it will be seen, is in many ways a great improvement on the old one. The pay is increased for lieutenants and captains, so that the pecuniary start which the young man receives by qualifying for a commission in the R.A.M.C. is now a distinctly good one. There are allowances for foreign service, and specialist or charge pay is available in certain conditions. As directorates in pathology and in hygiene have now been created within the Army Medical Department, specially selected men can rise through all the ranks of the Army to Major-General on the strength of their scientific work, and we have before now insisted on the attractive nature of the outlook which is thus provided for the scientifically minded man. Applications for commissions should be addressed to the Secretary, War Office, Cornwall House, Stamford-street, London, S.E.1. The full regulations for admission and form of application will be found in the Students' Number of THE LANCET, August 30th, 1919, p. 397.

### THE MEDICAL ASPECTS OF STATE SCIENTIFIC AND INDUSTRIAL RESEARCH.

THE report of the Committee of the Privy Council for Scientific and Industrial Research for the year 1918-19, issued last week, claims for the work of the department over this period a steady growth both in usefulness and in amount. This is the fourth annual report of their proceedings, and a review of the detailed work of the Advisory Council, which forms the executive of the department, fully justifies this claim. The personnel of this Council includes authorities of the highest standing on the manifold subjects investigated, whilst the assessors to the Council, responsible for the departmental work and organisation of research, are all experts in the various Government Departments which they officially represent. The outcome is an official compilation of progressive work in research and industry, the results of which deeply concern the future industrial welfare of the nation. The solvency of the nation may well, indeed, depend upon the earnestness with which the lessons conveyed by this work are absorbed.

Scientific and industrial research are wide terms of reference, and the scope of inquiry includes, as will be anticipated, medical matters of insistent interest. Such, for example, are mine rescue apparatus, the preparation and preservation of foods, cold storage and its effect on meat, oxygen research, industrial fatigue, the rendering

of "power alcohol" undrinkable, and the patent laws, in so far as they affect discoveries which concern the health and life of the people. It is interesting to learn that the Advisory Council recognise the strong professional tradition of the medical profession in this country in regard to the patenting of inventions of genuine value for the preservation of health or of life, and the Council have provisionally decided that applications for patents within this category should be refused. It is admitted, however, that the whole question needs careful watching and discussion by those best able to form a judgment. There seems to be a suggestion that the State should take over such inventions and reward the inventor on a scale which would compare reasonably with that compensation which he would gain by patent protection. The scale of remuneration by the State in such a case would form an interesting contrast with the enormous profits made from the sale of secret remedies based on no discovery at all; these profits, in the main, are mercenary exploitations purely and simply. Such preparations are in no sense patented medicines, for in that case they could not be secret remedies, as a patent implies the publication and protection of their composition. The Government compels the use of a stamp in the sale transactions, which means no more than the stamp on a receipted bill exceeding £2 in value. In other words, the stamp is a duty and in no sense a guarantee that the preparation is an approved therapeutic agent. This official procedure, however, no doubt helps materially the sale of many nostrums. We hope the Government will introduce a much-needed reform on the lines suggested in the admirable report of the Select Committee of Patent Medicines, which was ordered by the House of Commons to be printed on the very day war broke out. Since then nothing has been done. The Committee of the Privy Council for Scientific and Industrial Research might note these things. It is a body with great prestige, and its constitution, which has recently come under acute criticism, may put it out of sympathy with pure research, but should enable it to act forcibly in the cause of practical reforms.

### A CASE OF LETHARGY.

THE case related by Dr. Grace H. Giffen Dundas in our issue of last week presents features of interest and rarity. The illness from which the patient, a young woman, suffered had an acute onset, with rise of temperature, increase of pulse and respiration, headache, sweating, and other signs pointing clearly to a toxi-infective condition. These general symptoms were coupled with others of localising significance, including paresis or paralysis of various motor cranial nerves (though Dr. Dundas excludes the third nerves she specially mentions sluggish pupil reactions and partial double ptosis), resulting in, among other things, a mask-like facies and inability to depress the lower jaw. The arms and legs were rigid and motionless, and there was a double extensor response. Bladder and rectal control were greatly impaired. The patient slept deeply most of the time. There can be little doubt that the correct neurological diagnosis is encephalitis lethargica, which is usually characterised by general symptoms of cerebral toxæmia and localising symptoms pointing to mesencephalic involvement, precisely as in this case. The lower motor cranial nerves were rather more



involved than the upper, as occasionally occurs; the limb paralysis is an index of the severity of the attack, but does not necessarily signify a structural change in the cortico-spinal paths or centres; an extensor response may occur where no change in structure is demonstrable. An examination of the spinal fluid by lumbar puncture would doubtless have been of considerable help in diagnosis if only for the exclusion of other conditions with which the case might be confused. It is not quite clear whether the patient showed a true catatonia or not—a common symptom in lethargic encephalitis; Dr. Dundas speaks of the cataleptic-like condition, but does not state whether, for instance, the limbs remained in any position in which they were put; as there was no voluntary movement the test would have had to be made by lifting the arms passively off the bed. One of the distinctly unusual features is the loss of the sense of position in the limbs; the fact that the patient did not know her limbs were being manipulated may also be taken to indicate cutaneous loss of sensibility, and there is no a priori reason why such might not occur in encephalitis. On the other hand, however, she was aware of her incontinence and knew when the catheter was being passed, so that it is possible the loss of position and direction was an index of the cerebral apathy. To this suggestion it might with justice be replied that were such the case she would probably also have been indifferent to her incontinence. Of considerable scientific interest are the peculiar hallucinations, as exemplified by "her eyes up at the roots of her hair and her teeth several inches in front of her mouth." Some alienists have insisted that hallucinations of the muscular sense in the insane are of unfavourable prognostic import as compared with those of other senses (sight, hearing), and indicative of a greater degree of cortical defect. Be this as it may, Dr. Dundas's patient made a perfect and on the whole rather quick recovery considering the acuteness of the illness. One might hazard a conjecture that the ignorance of the position of the limbs and the erroneous references in respect of other parts of the body (eyes, teeth) were both the expression of a disturbance of the "sense of attitude," which is something more than mere impairment of sense of position.

#### EROSION OF THE GREAT VESSELS OF THE NECK IN SCARLATINAL ABSCESS.

CERVICAL adenitis with abscess formation is a common complication of scarlet fever. A very rare consequence is erosion of one of the great vessels of the neck, with serious and even fatal hæmorrhage. In the Johns Hopkins Hospital Bulletin for August Mr. T. M. Rivers has reported the following case. On Dec. 1st, 1916, a girl, aged 5½ years, vomited and had slight fever. Two days later a practitioner was called in, found a small membrane on the right tonsil, and administered 15,000 units of diphtheria antitoxin. About Dec. 5th the cervical glands began to swell, she became stuporous, and did not pass urine for 56 hours; then a small amount of urine containing much albumin was passed. In the third week a diffuse maculo-papular rash appeared and she was admitted to hospital three days later. The temperature was 99°F. and the pulse 110. She was drowsy and emaciated. The tongue was heavily coated and the breath foul. Part of the tonsil, soft palate, and posterior pillar on the right side had sloughed, leaving a ragged hole lined with greenish-

white pus. The cervical glands were enlarged. There was a fluctuating mass of the size of a lemon, deeply situated, below the right angle of the jaw. The liver extended two fingers' breadth below the ribs. Over the body was worm-eaten desquamation. The palms and soles were very dry and later desquamated in a way typical of scarlet fever. A throat culture was negative for diphtheria bacilli, but showed long chains of streptococci. The urine contained 3 g. per litre of albumin, hyaline and granular casts, pus cells, red blood corpuscles, and epithelial cells. The abscess was punctured and 2 oz. of pus escaped, from which a hæmolytic streptococcus was grown. She seemed to be doing well until 11 P.M. on Dec. 26th, when she was found in a pool of blood, exsanguine, pulseless, and gasping for breath. The bleeding had stopped and the wound was not disturbed. A subcutaneous injection of 300 c.cm. of saline solution was given and an intravenous injection of 225 c.cm. of citrated blood obtained from the mother. There was another hæmorrhage of about 2 oz. at 7 A.M. and at 11 A.M. Blood began to spurt from the wound at 1 P.M. Dr. Dandy, the resident surgeon, enlarged the incision into the abscess and found erosion of the lingual and external carotid arteries and internal jugular vein, the hæmorrhage coming from all three sources. The common carotid was ligatured and the bleeding from the jugular was controlled by packing. The child was greatly exsanguinated, and was given 150 c.cm. of citrated blood which had been kept on ice since the transfusion the previous night. She rallied immediately, but the pulse remained irregular for weeks. On the 28th the hæmoglobin was 40 per cent. On the 29th she received 200 c.cm. of citrated blood. On the 30th her hæmoglobin was 58 per cent. Both ear drums were punctured, releasing pus. On Jan. 1st there was another large hæmorrhage. Evidently the carotid ligature had sloughed. The bleeding was controlled by pressure and 150 c.cm. of citrated blood were given. General œdema, insensibility to pain, waxy flexibility, exaggerated reflexes, double ankle clonus, and loss of memory for recent events developed. She gradually improved and the wound healed slowly under Dakin's solution. Recovery ensued. Mr. Rivers could find recorded only about 50 cases of erosion of the great vessels of the neck after scarlet fever. Curiously the great majority are old, only one being reported subsequently to 1885. Two were recorded in our columns in 1870<sup>1</sup>—one by Lovegrove, in which the patient bled to death in a short time through ear, nose, and mouth, and the other by Hymes, in which the patient bled to death through ear and mouth. Is the absence of cases in recent years due to diminished virulence of the disease? Veins and arteries have been involved about equally. The bleeding may come from an opened abscess, from the ear, or through the mouth and nose. Most cases have been fatal.

#### MEDICAL EDUCATION IN THE UNITED STATES.

THE annual educational number of the *Journal of the American Medical Association* (issue of August 16th) contains an interesting summary of the facilities for medical study offered in the United States of America for the year ending June 30th, 1919. It is well known that the United States had at one time more medical schools than the rest of the world put together, the supply far exceeding the needs of the country. Reduction in

<sup>1</sup> THE LANCET, 1870, i., 729, and ii., 431.



the number to one-half has been one of the principal signs of progress in the last 15 years, and the reduction is still going on. Of the 13,052 students studying medicine (578 less than in 1918) the very large majority—94 per cent.—were doing so in “non-sectarian” colleges. Homœopathic colleges scored an attendance of 397, “eclectic” colleges of 86, while 310 students were obtaining their instruction at a group of colleges, 2 of them “semi-osteopathic” and outlawed in their own State of Missouri, the third “eclectic” and not subject to a set curriculum. It is evident that in the United States the tendency is now prevailing towards a standardisation of medical training on broad, orthodox lines. 2656 students graduated in medicine during the year, 44 per cent. of them being already graduates of colleges of liberal arts, witness of a growing appreciation of the value to medical practice of a sound preliminary training. Compared with conditions ruling here, it is surprising to note what a small proportion of their cost of training is paid by medical students themselves. Financial reports from 82 schools show an average annual expenditure per student of \$419, of which the student only pays \$150. A State-controlled medical service should not be difficult to introduce in a country in which the State already contributes, directly or by endowment, 60 per cent. or more of the cost of medical training. In regard to the character of the training, the most important change noted is the gradual replacement of lectures and lecture clinics by bedside training in small group clinics. Thus in all important respects the medical curriculum this side and that side of the Atlantic is converging towards a common objective.

#### PELLAGRA AMONG TURKISH PRISONERS OF WAR IN EGYPT.

A VALUABLE contribution to the literature of pellagra has recently been published at Alexandria by the military authorities, dealing with the occurrence of the disease among captured Ottoman troops. A prevalence of pellagra having been reported among the Turkish prisoners of war interned at Kantara, in Lower Egypt, the D.M.S. Egyptian Expeditionary Force appointed a committee to investigate whether the disease in question was in reality true pellagra, and, if so, whether the prisoners of war were generally infected before or after their capture; whether the disease was increasing; and, if so, was it spreading by infection from case to case or by infection due to location or local conditions; or whether, on the other hand, it was due to some defect in diet or to other general conditions. Further, the committee was to investigate the etiology of the malady in its relation to bacteria, protozoa, blood conditions, pathology, and food. The committee consisted of Colonel F. D. Boyd, C.M.G., A.M.S., consulting physician to the E.E.F., and Lieutenant-Colonel P. S. Lelean, C.B., R.A.M.C., assistant professor of hygiene, R.A.M. College, along with six collaborators, each an expert, respectively, in pathology, bromatology, protozoology, biochemistry, hæmatology, and bacteriology. The inquiry was begun on Oct. 7th, and the report<sup>1</sup> is dated Dec. 31st, 1918. The conclusions of the committee of inquiry may be summed up as follows: The disease was true pellagra and the patients were generally

pellagrous before capture. The great majority of the cases that were systematically questioned stated that they had similar symptoms before capture, while amongst those examined shortly after they were made prisoners many were found suffering from the fully developed disease. For example, in one batch of 1300 prisoners seen on their arrival direct from the front, 18 per cent. had the malady fully developed. There was no evidence of case-to-case infection, and none pointing to location or local conditions having had anything to do with the causation or spread of the disease. The camps at Kantara left little to be desired as regards their situation and hygienic condition. As regards diet, judged by existing standards, the food issued to both non-labour and labour prisoners provided an ample margin over the requirements of healthy men and gave a suitable balance of proximate food principles. Any increase in the disease has not been due to other general conditions than those unavoidable for prisoners in monotonous confinement in an alien, hot, and arid country, with no stimulus to check the inevitable decline in their physiological resistance. Pellagra as a primary or immediate cause of death played an insignificant part in the series of cases that were examined. As a contributory cause its influence was shared by other debilitating diseases, of which chronic dysentery was the worst. After thorough investigation by the various experts, no evidence was found as to the ætiological relationship of the disease to bacteria, protozoa, or to blood conditions. With regard to food, the committee found so constant an association between the biological protein value of diet and the occurrence of pellagra that they considered that the lack of sufficient biological value of protein stands in ætiological relationship to pellagra, certainly as an exciting factor, and possibly as the determining factor. The report states that the deficiency in biological value of protein may be: first, absolute, as determined by the standard for normal persons, or, secondly, relative, as determined by individualistic correlation between food assimilation and energy expenditure, and thus modified by ill-health and idiosyncrasy. A large proportion of the cases showed helminthic and flagellate infections of the intestines. These cannot be regarded as causal factors, but merely contributory to digestive disturbance and malnutrition. Pellagra produces loss of resistance to the invasion of bacterial and protozoal disease, and this is, therefore, a contributory factor to a high rate of mortality. The recommendations made by the committee were:—1. In view of the pellagra admission rates having remained approximately constant in non-labour camps during the last two months, and having diminished so markedly in labour camps in the present month (December), it is considered that the full authorised diets are adequate, and that it is not necessary at present to introduce any cardinal change. 2. Full variety should be given under the alternatives of the existing ration scales, and close supervision should be exercised over preparation and cooking of food, with special regard to pulses in both respects. 3. Any increase in pellagra should be met by an increase in animal protein; the occurrence of œdema should be met by an increase in fat. It may be added that over 2000 German, Austrian, and Bulgarian prisoners of war occupied a compound immediately adjoining that occupied by 6000 Ottoman prisoners. Both compounds had been living under precisely the same conditions, but

<sup>1</sup> Report of a Committee of Enquiry regarding the Prevalence of Pellagra among Turkish Prisoners of War. Published at Alexandria. (Not on sale.)



not a single case developed among the Germans, Austrians, or Bulgars, whereas there were some 300 cases among the Turks in the adjoining compound. No case of pellagra occurred among the British troops. The Turkish prisoners for long periods prior to capture had been on rations considerably below the value of those they received after arrival at Kantara, and also below the standard of minimal needs, and had been subjected to great physical strain and privations.

#### GREAT MAURITIANS.

MAURITIUS, whose fate is in some places under question, although only three times the size of the Isle of Man, is—with its 370,000 inhabitants—more than twice as densely populated. With an oceanic climate and a mean temperature of 74° F., it consists of highly fruitful valleys separated by wooded spurs running up to over 2500 feet in height in several places. The island has changed hands more than once. Occupied by the Dutch in 1598, it was abandoned by them in 1710, when the French took possession, until precisely a century later it fell to the British, whose tenure was confirmed by the Treaty of Paris in 1814. French is the current language of the "Isle of France," while English is officially used in the courts of law. Dr. Joseph Rivière, of Paris, whose name heads an appeal on behalf of his fellow Mauritians to the Prime Ministers of England and France, recalls the names of a number of famous Mauritian creoles, using the term in the strict French sense. One of these, Charles Edward Brown-Séquard, son of a sea captain of Galway origin and born in Port Louis in 1817 of a Provençal mother, was an ornament alike to medicine and to his island home. His whole-hearted devotion to the cause of experimental physiology, for which he renounced a professorship in Virginia, a fashionable practice in London, and an easy competence in New York, entitles him to a place by the side of Claude Bernard, with whom he shares the honour of demonstrating the existence of a nervous mechanism presiding over the physics of the circulation. Brown-Séquard's cosmopolitan origin made it appropriate for him to preside over the Société de Biologie in Paris at the same time as he was the recipient of the Baly medal of the Royal College of Physicians of London. He died in Paris in 1894.

#### THE MORBID ANATOMY OF MALARIA.

Dr. Leonard Dudgeon and Dr. Cecil Clarke made a notable contribution to our knowledge of the pathology of malaria when, in 1917, they published in THE LANCET an account of their observations on cases of paludism in Macedonia, and more especially on the severe fatty degeneration of the cardiac muscle which they had been able to demonstrate in a certain number of cases of pernicious infection. In a second paper, which appeared in the July number of the *Quarterly Journal of Medicine*, they record the results of "An Investigation on Fatal Cases of Pernicious Malaria caused by *Plasmodium falciparum* in Macedonia." The material on which the investigation is based was collected with the definite object of correlating, as far as possible, the clinical history with the microscopical examinations, and throughout the paper this useful method of correlation has been followed. When dealing in this communication with the condition of the

cardiac muscle previously described, and which was found to be a diffuse fatty degeneration similar to what is met with in acute diphtheritic toxæmia, the authors point out that the effects of a long period of hot weather acting on men unaccustomed to such heat, and the fact that the military situation prevented the necessary degree of rest being obtained, undoubtedly played a part in the ætiology of the condition. Other matters to which special attention is directed are the hæmorrhages into the pulmonary alveoli and the pathological changes seen in the suprarenals. As regards the latter, the most constant lesion has been the reduction of the fatty lipoids of the cortical layers. In a few instances other important histological changes are noted, but the authors consider it would be incorrect to attribute the fatal result in these cases to a disturbance of the functions of the adrenals. This is important from the point of view of treatment, as experience has shown that the administration of adrenalin in such cases produces no permanent beneficial effects. This is to be expected, for the action of the drug rapidly passes off, while the gross changes in the glands are already established. There are other points of interest in this paper, which merits the close attention of all interested in the pathology of malaria. It may be mentioned that the authors found no evidence of any intracellular form of the malarial parasite. They purpose publishing further observations on the tissue changes in chronic malaria associated with grave anæmia.

#### SYPHILIS IN THE NEGRO.

In an article based on the general experience of one of the authors in dealing with syphilis in the Southern States, and upon the intensive study of 300 consecutive cases of syphilis occurring in negro soldiers, Major Loyd Thompson and Lieutenant Lyle B. Kingery<sup>1</sup> state that in the negro syphilis is contracted on an average at an earlier period of life than in the white race. Twenty per cent. of the 300 cases were patients with chancres, ranging in duration from a few days to several months. A striking characteristic was that of indolence. In the great majority of cases the chancre had been in existence for a much longer time than was usually found to be the case with similar lesions in the white race. This occurrence is attributed by the writers, who have made a careful collation of the existing scanty literature on the subject, to the fact that during the period of sexual activity the average negro has a succession of penile lesions. As regards the secondary manifestations, the writers agree with Hazen that macular and maculo-papular eruptions are not common. On the other hand, the annular lesions of early syphilis are remarkably common and may be said to be almost peculiar to the coloured race. Involvement of the mucous membrane appears to be more frequent in the negro and is often characterised by hypertrophic tendencies. The general lymphadenitis, which is confirmatory evidence of syphilis of some weight in the white, is so frequently found in the non-syphilitic negro as to be of doubtful value in diagnosis. Although there is a general consensus of opinion that the osseous system of the negro is more frequently involved than that of other races in syphilis, the writers met with only four cases in their series, but explain this discrepancy by the

<sup>1</sup> American Journal of Syphilis, 1919, iii., 384-397.



fact that their cases consisted of young individuals in whom only the secondary type of lesion, if any, would be likely to be found. The same reason accounted for the absence of any visceral involvement in their cases. As regards prognosis, the chances for recovery in the negro are not so favourable as in the white, as the large majority of the coloured race are totally indifferent to the fact that they have syphilis when no lesions are manifest, and only submit to treatment while outward evidence of the disease is present. On the other hand, the negro is less prone than the white to develop complications involving the central nervous system, especially paresis and tabes, although arteritis and aortitis are quite common and frequently fatal. The writers have been unable to confirm the statement that the negro more frequently shows a severe reaction to salvarsan than the white, as out of several hundreds of injections in the present series only two or three reactions occurred, none of which could be termed severe.

#### MEDICAL ABSTRACTS AND REVIEWS.

NEXT month appears the first number of *Medical Science: Abstracts & Reviews*, published for the Medical Research Committee by the Oxford University Press. This publication is the lineal successor of the Medical Supplement to the Daily Review of the Foreign Press, issued by the General Staff of the War Office, which made its appearance privately in January, 1918, with a view of keeping our Army Medical Staff in touch with useful enemy inventions and discoveries, soon to take on a wider character and to become a work of reference to foreign literature accessible to the medical profession as a whole. The Medical Supplement ceased with the issue of April, 1919, and the index to this truncated volume is in our hands. Serviceable as it was in the special circumstances of the time, the format was of a makeshift kind, and not a little unworthy of its contents. That is all to be made good in *Medical Science*. The first number contains 130 pages of agreeable size ( $9\frac{3}{4} \times 6$  inches), the printing easy to read, well arranged and spaced. The choice of different varieties of type for the names of authors and periodicals and for the titles of articles is judicious and might well become the standard for such things. It has, we believe, been in the minds of those who have spent much time and thought on such apparent trifles that their efforts might result in an increasing homogeneity in the publication of scientific matter. The contents consist of a series of "reviews" or critical summaries of articles on a common subject culled from various sources. Some of these, taken at random, are: spina bifida, habitual or recurrent dislocation of the shoulder, typhoid and paratyphoid diseases, dysentery, lethargic encephalitis. They occupy two-thirds of the first issue, the remainder being "abstracts," or similar critical reviews dealing with a single paper or article. In either case, the referring is done by men widely conversant with their subjects. The names on the title page of those giving editorial superintendence in the subjects named are: surgery, Mr. W. G. Spencer; medicine, Dr. J. D. Rolleston; pathology and bacteriology, Dr. W. Bulloch; neurology, Dr. F. M. R. Walshe; radiology, Dr. W. S. Lazarus-Barlow and Dr. Sydney Russ. In most cases we gather from the initials that they have actually done the work

themselves and not merely superintended the work of others. We have dealt with these external things in detail, for the publication is a novelty; how great a novelty is shown by the fact that no familiar English words occur to the mind to represent the various sections. "Review" can, of course, well be used in the sense of a Sammelreferat, but it is in common use for the critical examination of a single book. What term other than Referent suggests itself for the person who reviews and abstracts? Is there any equivalent in our tongue for Format? All this goes to show that what is being attempted by the Medical Research Committee is something which has hitherto hardly been attempted in this country in relation to medical science as a whole. There are those who contend that the Centralblatt is a growth which flourishes only in continental soil. But its foundation should be laid in industry and fair-mindedness, and these are qualities which we should like to think are indigenous. We wish every success to our contemporary.

#### THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

THE last meeting of the British Association for the Advancement of Science was held at Newcastle in 1916, when the proceedings were devoted entirely to the discussion of a limited number of scientific papers. In the spring of 1917, when the general outlook was black, the Council, after consultation with the local committee, decided to cancel the summer meeting which was arranged to take place at Bournemouth, this being the first time in the history of the Association that an annual meeting was not held. The annual event was resumed at Bournemouth on Tuesday last, marking the passing of the great ordeal. The President, Sir Charles A. Parsons, D.Sc., F.R.S., delivered an interesting address on the future opportunities, position, and welfare of the nation. We are gathered together, he said, at a time when, after a great upheaval, the elemental conditions of organisation of the world are still in flux, and we have to consider how to influence and mould the recrystallisation of these elements into the best forms and most economic rearrangements for the benefit of civilisation. The address presented an absorbing review of the events of the war in the light of scientific developments and applications. The subjects traversed related, naturally enough, to those great technical issues, to which Sir Charles Parsons has devoted intensive study. The position of the power resources of the nation was clearly brought forward, and the direction in which its energies should be concentrated in the future outlined in plain and convincing terms. In regard to fresh sources of power, Sir Charles Parsons revived his suggestion of tapping volcanic power by sinking a shaft to a depth of 12 miles, which would take 85 years to complete, at an estimated cost of £5,000,000. The addresses of the presidents of the various sections were delivered on Tuesday morning, and the usual reading of scientific papers followed. In these communications the speakers by common consent referred mainly to the opportunities presented to science, as accelerated in scope and processes by the war, for obtaining official recognition. The proceedings come to a close to-day (Sept. 13th).



AN INDUSTRIAL MEDICAL SERVICE.<sup>1</sup>

## III.—THE MEANS OF PROMOTING THE SERVICE.

OUR distinguished contemporary, the *Times*, has recently done good service in pointing out,<sup>2</sup> as we had already done, the development which is taking place in relation to industrial medicine. We have no doubt that employers are beginning to recognise the value of this new branch of preventive medicine; nor have we any doubt that the workers will welcome the appearance of the factory medical officer. We also entirely agree with the *Times* as to the training and knowledge required by those who undertake the work; but we feel some doubt as to the suggestions put forward that the General Medical Council should "found" a diploma in industrial medicine, and that the Royal Society of Medicine should forthwith form a section devoted to this subject. Industrial medicine must prove itself by deeds, and by showing employers of labour its economical value, and the workers its capacity for increasing efficiency and diminishing suffering. By such spade work only can foundations be laid. There is no royal road to construct a building by commencing with specious decorations.

*What Need is there for a State-recognised Diploma?*

On the side of curative medicine we do not find a diploma for the ophthalmic surgeon, another for the gynaecologist, for the rhinologist, the dermatologist, the bacteriologist, and the X-ray operator. Nor in preventive medicine is a special diploma demanded from the tuberculosis officer, the school medical officer, or the officer of the maternity and child-welfare clinic. The Diploma of Public Health as it exists to-day, though the scope of its requirements might, as Sir G. Newman has pointed out, be advantageously widened, is a sufficient portal of entry to preventive medicine. By all means let teaching authorities grant additional certificates to those who have benefited by special courses of instruction; this has long been the custom in curative medicine, and Manchester has already acted in this way in relation to industrial hygiene. Let us follow this example and avoid multiplication of portals of entry. Let us strive to obtain for industrial medicine recognition in the D.P.H. course and also in the earlier training of the medical student. The latter is a stronghold to attack, for the battlements are manned by the teaching consultants whose knowledge of general practice and of the life of the people is not conspicuous, while their acquaintance with factory life and the occupations of their hospital patients is woefully deficient. How many ophthalmic surgeons have been down a coal mine? Yet they teach on miners' nystagmus. How many dermatologists have been in an engineering factory to justify their comments on lubricant dermatitis? How many physicians have inspected the conditions under which lead-poisoning is contracted? In fine, what example do these teachers give to students in investigating at the fountain head the causation of even the obviously occupational diseases that come before them? Joseph Bells are indeed scarce.

The proceedings of sections of medical associations are liable to become far too select and specialised to recommend without urgent need the multiplication of sections; and industrial medicine to-day needs to excite interest, not to retire into seclusion. Further, anyone who has watched the proceedings of the Epidemiological and State Medicine Section of the Royal Society of Medicine must have noted that ample opportunity has been given for the discussion of industrial problems; among others, phthisis in industry; T.N.T. jaundice; industrial accidents have recently occupied the section, but the attendance at the meetings has not been such as to justify a new section.

*Bringing Conviction to the Employer.*

A more healthy line of advance is being followed in the United States, as may be seen from our report of the American Medical Association held in June last. Stress was laid on the value of medical service to industry from examples of what has already been done. "Show," said

Dr. Hastings (Toronto) "the employers of labour how the loss of 10 to 15 per cent. of efficiency in the employee could be saved, and they would be willing to put in good ventilation or any other desired improvement." Another American writer elsewhere<sup>3</sup>: "One of the greatest expenses in industry is the cost of labour turnover, and nearly 4500 new employees were examined to keep 3000 positions filled. In one department the work is of such a character that it costs \$100 to teach a new employee to become efficient." Greenwood has shown<sup>4</sup> that in this country labour turnover is much the same as in the States. We have about 8 millions employed in factories alone; let us take the annual migration of workers at rather less than the probable cent. per cent., say at 6 millions; and the cost of engagement and training at only £1 a head; we arrive at an annual charge on industry due to the present-day trial and error method of engagement of 6 million pounds. Greenwood's investigation further indicated that careful selection and supervision of workers can divide this turnover by three. Four millions so saved would far more than cover the total cost to industry of an adequate medical service; and this matter of turnover is only one of many ways in which the service would benefit industry, and through it, as no other medical service can, the health of the community.

*Avoidance of State Control.*

What is required to-day is to interest employers as the Americans are doing. A letter appearing in our correspondence columns from the director of the Industrial Welfare Society suggests that a nucleus for this interest is already existent. A further need is to avoid stereotyping functions, the result of State "recognition," at too early a stage. From this industrial medicine is suffering to-day; and one fence to be surmounted is the employer's disgust with the work of the certifying factory surgeon who is called upon by the State to undertake for 6d. work worth six times that sum, and who, therefore, does badly what he was not originally called into existence to perform. Once birth certification was established the post of certifying surgeon should have been abolished; it has only lingered on to the harm of medical progress. Let the State even at this eleventh hour abolish the post, step aside, and allow the factory medical officer to evolve naturally, his appointment being made and his services remunerated according to the laws of supply and demand.

We note with satisfaction that the new Ministry of Health shows no inclination to take a hand here. Those who direct the policy are clearly too wise and far-seeing. Knowledge must always precede progress, and industry will resent any medical service forced on it. But once employers know its value there will be no need for State action, unless it be to assist. Such assistance was recognised during the war when the salary of a factory medical officer was allowed to be charged as a working expense when calculating excess profits duty. No more was needed or is needed to-day. Industrial medicine is too vigorous a child to require the swaddling clothes of a diploma or the supporting irons of State orders to enable it to grow to a sturdy manhood.

<sup>3</sup> Medical Inspection of Factory Employees, M. A. Austin, M.D., Journal of Industrial Hygiene, June, 1919.

<sup>4</sup> Final Report, Health of Munition Workers Committee.]

## PENSIONS AND ALLOWANCES FOR DISABLED MEN.

—The revised scale of disablement pensions for the higher ranks affecting soldiers and airmen comes into force as from Sept. 3rd. It provides an increase of 17 per cent. to 19 per cent., varying with the rank, on the previous rate (including bonus) for total disablement, in addition to allowances in respect of wife and children. Various alterations and adjustments have also been made for widows of men in all services. The new rates will continue for at least three years, and thereafter will be subject to readjustment according to the cost of living, but in any case they will not be lowered by more than 20 per cent., or under the previous rates (including bonus). The Ministry of Labour and the Ministry of Pensions make the following announcement:—

1. War Pensions Committees are authorised, where recommended by the medical referee, to continue to pay allowances to disabled men in training under the Ministry of Labour, over and above the training allowances which they are receiving from the Ministry of Labour for (a) "constant attendance" and (b) special diet.

2. The divisional directors of the Ministry of Labour are not responsible for the granting or payment of these allowances, which come under the heading of treatment, and any disabled men who desire their continuation or authorisation should apply to their War Pensions Committees.

<sup>1</sup> Previous articles appeared under this heading in THE LANCET of June 28th, The Need of an Industrial Medical Service, and July 5th, How to Start an Industrial Medical Service.

<sup>2</sup> The Times Trade Supplement, August 23rd, 1919.



## THE TEACHING OF OBSTETRICS IN LONDON.

THE following is an abstract of the report made by a committee to the Council of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine on the Teaching of Obstetrics and Gynaecology to Medical Students and Graduates in London.

Under their terms of reference the work of the committee fell into two parts:—(1) The present methods of teaching midwifery and gynaecology to medical students and graduates in London. (2) The changes required to make it more efficient. The committee point out the great importance of the subjects they were called upon to examine, not only to the medical profession but through it to the women of the country and to the community in general. The provision of doctors more highly trained in practical midwifery work, and the provision of adequate hospital facilities for dealing with serious complications of pregnancy, labour, and the lying-in period, are matters which are intimately related to one another, and are of equal importance to the public health. A large increase in the present hospital accommodation for midwifery cases in London is as urgently needed as an improvement in the training of medical students. And, further, if by suitable arrangements better training in the management of infants could be associated with midwifery training, a great advance would be made in dealing with the difficult problem presented by the high rate of infant mortality.

### A.—The Present System: Midwifery.

*Systematic teaching.*—Systematic lectures are given in all the hospitals by the obstetric physicians, usually in the summer term—i.e., once a year only: the number of lectures varies from 20 to 40. A "practical midwifery" course, which includes operative demonstrations on the dummy, is also given either by the obstetric physician or by the tutor. In the latter case it is combined with the tutorial class. In most hospitals the regulations provide that students attend the systematic lectures and the practical midwifery course before being allowed to attend cases of labour. The Dean of the school may, and sometimes does, suspend this rule.

The tutorial or revision classes are held each term by the tutor, and are attended mainly by the students then preparing for the examination in midwifery and gynaecology. Attendance at the systematic and practical midwifery courses is compulsory under the regulations of the examining bodies. Attendance at the tutorial classes is optional, but in practice all students do attend.

*Clinical instruction in normal and abnormal pregnancy.*—Systematic instruction is given in the gynaecological wards and out-patients' departments of all hospitals on the diagnosis and management of pregnancy, the clinical material consisting of such women as present themselves for one reason or another during pregnancy. Pregnant women who desire to be attended at their own homes are usually required to present themselves at the hospital for examination beforehand. They are seen, usually, by an obstetric physician or by the tutor, and any students who care to attend are present and are allowed to examine the patients; the attendance of students is, however, not as a rule compulsory, and in practice sufficient use is not made of this department for purposes of teaching. Except in the case of hospitals with a midwifery ward, this is all the provision which is made for instruction in normal and abnormal pregnancy.

*Clinical instruction in the conduct of labour.*—In four hospitals midwifery wards are established for the instruction of medical students; others have a midwifery ward which is used chiefly for training midwives; for the purposes of this report these are of no value. The remaining hospitals have no midwifery wards at all at the present time. In every hospital serious complications of labour can be admitted to the gynaecological beds, where they come under the charge of the obstetric physicians; in many cases, however, the registrar actually deals with them.

In the case of hospitals with no midwifery ward the training of students in the actual conduct of labour, normal and abnormal, is practically non-existent. In order to attend the 20 cases required by the regulations of the examining bodies the student is attached to the maternity district of his hospital; previous to this he has attended the lectures mentioned above, and, in addition, in some hospitals special demonstrations are given by the tutor or the resident obstetric officer to each batch of students before going on the district. As a rule, however, the students of hospitals with no midwifery ward have never seen women in labour before going on the district to attend them.

Every hospital has a regulation that the student is to be accompanied to the first case or the first two cases by the R.O.O., but this regulation cannot in all instances be carried out, and the student not infrequently goes to his first case alone. It is assumed that he needs no assistance after the first two cases in conducting a normal labour, but he is under instructions to report at once to the R.O.O. any abnormal conditions which he may discover. His ability to detect abnormal conditions is, however, very small from lack of training. At one hospital a trained midwife in the service of the hospital is also present at every labour, and gives the student assistance; as a rule the student conducts normal cases without any assistance, even in respect of the toilet of the infant. Abnormal conditions are frequently dealt with by the R.O.O. in the patient's home; practically all hospitals have a rule that serious complications, such as ante-partum hemorrhage or eclampsia, should be at once transferred to the hospital, where they are admitted under the

supervision, usually indirect, however, of the obstetric physicians. There the student is able to take part in their management, and to see any obstetric operations which are required.

The student continues to attend his district cases during the first seven to ten days after the puerperium, under the same instructions to report any abnormal conditions which may arise regarding either the mother or the child. It must be recollected that unless he has previously attended the midwifery ward the student has received no practical instruction whatever in the management of infants; as a rule his work is done without any systematic supervision during the puerperium.

In some hospitals the number of cases available in the district is insufficient to allow 20 for each student; a certain number of students from these hospitals are sent to the lying-in hospitals, where they can be "signed up" for 20 cases in 14 days (Queen Charlotte's), 21 days (York-road), or 14 days (City of London). In some instances the student goes for a fortnight to the Lying-in Hospital, and then serves for a fortnight on the district of his own hospital.

In the case of the hospitals having a midwifery ward for students, the conditions require separate notice. The number of beds in these midwifery wards varies from 8 to 24; the number of cases admitted per annum varies from 180 to 550 to 600; the number of cases admitted per student trained varies from 3 to 11 or 12. The number of cases actually delivered by medical students in the ward is limited, in all but one hospital, by the fact that, not being in residence in or near the hospital, they only attend the deliveries which occur in the daytime. The instruction is given in part by the visiting physicians, but mainly by the registrar or the resident officers. The period of attendance in the midwifery ward is four weeks, and the student is not permitted to begin attending cases in the district until he has conducted a certain number of deliveries in the ward and received a certain amount of practical instruction. After this he attends his district cases alone, as do the students of the other hospitals.

*Maternity and infant-welfare centres.*—These centres, where they exist, provide opportunities for instruction in the care of the nursing mother, in infant feeding, and in the general management of the infant during the first year of life. The midwifery department of a hospital ceases to be concerned with the average normal case in 10 to 14 days after delivery; the work of these centres is a continuation of the work of the obstetrician, and its utility from the point of view of preventive medicine is generally recognised as being very great. It is of the first importance that these centres should be made use of in training students in continuation of their midwifery work, yet only five hospitals have a maternity and infant-welfare centre in connexion with them. Others are soon to be started.

### B.—The Defects of the Present Methods of Teaching Midwifery.

The systematic instruction given is, generally speaking, satisfactory, and is in the hands of the obstetric physicians. The practical instruction leaves very much to be desired, and in some respects merits emphatic condemnation. We desire, however, to acknowledge the great improvement which has followed the establishment of midwifery wards for the instruction of medical students. The change is of recent date and is at present operating in only four hospitals; but its great usefulness is apparent and will receive general acknowledgment. The case of the hospital having no midwifery ward for students is the least satisfactory; the additional experience which may be obtained when the student also goes to a lying-in hospital for a short time is most unsatisfactory. The following considerations must be borne in mind:—

(1) *The hospital without a students' midwifery ward.*—The grave defects of this system may be set out as follows:

(a) Students learn to deliver women only under conditions in which surgical cleanliness is extremely difficult to secure. Under a satisfactory system the same principle should be followed as obtains in general surgery—viz., they should be taught upon the highest plane of efficiency which it is possible to attain, not upon the lowest, which can be reached without unjustifiable risk to life. A not unfair analogy would be for surgeons to teach students the technique of abdominal operations under conditions where they would be deprived of adequate light, ventilation, and the means of cleanliness.

(b) Students who are taught thus, under makeshift conditions, will absorb the impression that careful and exact precautionary measures are unnecessary. The effect of such an impression upon their future work in private practice can only be disastrous, and may be related directly to the incidence of puerperal fever in the country as a whole.

(c) Unless complications occur in his district cases, he will never see the obstetric physicians dealing with labour at all; and even when patients are transferred to the hospital the control of the obstetric physician is often indirect, and is exerted through the registrar or R.O.O. who actually deal with the cases themselves after asking his advice. The student, therefore, learns extremely little of abnormal labour; he may not see a forceps delivery during his month, and in occasional instances may go up for his final examination without having seen this procedure except upon the dummy.

(d) It follows from (c) that the student learning clinical midwifery is completely out of touch with his senior teachers; he does not see them actually engaged in the work he is trying to learn, and never has the advantage of their supervision and guidance.

(e) That a student should conduct deliveries in the district is undoubtedly useful, for the single-handed conduct of cases of labour may be assumed to develop his sense of responsibility, a valuable aspect of his training as a doctor. But this should come after and not before he has been made acquainted with the nature of his task. In the case of the student of average ability, to thrust responsibility upon him before he has been taught his work, will be more likely to hinder than to help him in learning.

(f) Attendance upon 20 to 30 cases of midwifery ought to afford invaluable opportunities of instruction and experience in the management of the normal puerperium, of minor disorders of the puerperium, and of infant feeding. Under the district system these opportunities are completely wasted, owing to the total lack of systematic supervision of the students when at work.

(2) *The lying-in hospital.*—The great defect here is that no direct provision is made for the instruction of medical students at these hospitals.



They attend the practice of the hospital in order to be "signed up," but no one is responsible for teaching them. The visiting physicians pay regular visits to the lying-in wards, where they are followed by a mixed class of graduates, students, and pupil-midwives, to whom they give what instruction is possible in the circumstances upon the puerperium and the management of infants. They rarely, if ever, conduct a case of normal labour, and are seldom in the labour wards except for difficult cases which require their presence. "Waiting cases" which present abnormal conditions are usually seen by the visiting physicians, who may demonstrate them to the students; but under the rules of the hospital the visiting physicians do not undertake any responsibility for the instruction of medical students. It has been already stated that the student does not actually deliver all the patients he is certified to have "attended"; it suffices if he is present at the delivery as a spectator. The number he actually delivers is variable and depends upon the goodwill of the R.O.O. and the resident midwives, either of whom may supervise his work. Instruction of students is, however, no part of their duty to the hospital and they are under no obligation to take pains in giving it. Some students may be allowed by the R.O.O. to conduct a forceps delivery under supervision, but this depends entirely upon the goodwill of the R.O.O. himself.

(3) *The hospital with a student's midwifery ward.*—This system undoubtedly marks a great advance in the training of students, but certain defects are inherent in it. Only four hospitals have such a ward in actual working; its size varies from 8 to 24 beds. The greater number of cases admitted are normal cases. Students are attached to the ward, in all cases exclusively, for a period of four weeks. They come into close touch with the obstetric physicians, who demonstrate cases to them and give general clinical instruction on their regular visiting days. The women are delivered by the R.O.O. or the resident sister midwife, under both of whom the students work, and by whom they are personally instructed in the conduct of normal labour. The students are not in residence except in the case of one hospital, and, as a rule, only the daytime labours are seen by them. It must be pointed out, however, that the visiting physicians take little or no part in teaching the conduct of normal labour, that the more serious cases of abnormal labour are not all seen by them, and even when conducted under their supervision, they are not necessarily delivered by them.

The small size of the midwifery ward is one of its chief defects. It suffices to allow each student to conduct a small number of normal deliveries before commencing his work on the district; this number could with advantage be much increased. The more serious abnormal cases from the hospital district are sent in to the midwifery ward, but it is impossible for these wards to deal with large numbers of abnormal cases, and there is no doubt that the students' opportunities of seeing difficult labour dealt with are inadequate.

The non-continuous character of the student's attendance, in all but one hospital, is a grave disadvantage. A large proportion of all deliveries occur at night, when the student is not there to see them. Complicated cases may occur at any time, and from their nature the great majority must be dealt with promptly. As a rule, they cannot be left over until the hours of the student's attendance come round, and thus invaluable opportunities of instruction are lost. To tell the student all about a difficult case the day after it has been dealt with is not a satisfactory method of clinical instruction. The time the student devotes to the midwifery ward (four weeks) is quite inadequate, if his attendance is only in the day time, and even that may be broken up by other duties.

The bulk of the practical teaching in the midwifery wards is given by the registrar and the R.O.O., particularly in regard to the conduct of normal labour; whereas the student ought to be taught both normal and abnormal conditions by senior obstetric officers of greater experience and higher standing than the average registrar. The major part of the student's clinical teaching in surgery is given him by surgeons and assistant surgeons, and this is universally regarded as being necessary. It is equally necessary that he should be taught his clinical midwifery by men of similar standing. In the nature of midwifery work this would involve the presence in resident control of the midwifery ward of senior officers, who would be always available, would personally supervise the work of the labour wards, and would themselves deal with abnormal cases at whatever hour they might arise.

### C.—The Present System: Gynecology.

A certain small number of systematic lectures in gynecology are given by the obstetric physicians either as a part of the course of midwifery or separately. As a rule the student clerks for one to two months in the gynecological department; although the regulations of the majority of the examining bodies require him to spend three months at clinical gynecology, the hospitals do not all enforce it. In some instances his gynecological clerkship is done in the same month as he attends his midwifery cases on the district. The number of gynecological beds in the various hospitals varies from 11 to 34, the average being about 20. In the wards the clerk is taught by the registrar or the R.O.O. to take the history of a gynecological case, and is usually taken over the physical examination by the same officer. He follows the obstetric physician in his rounds, and is present at the operations which take place during his clerkship. His attendance in the wards may be much restricted if he is at the same time doing his midwifery cases on the district. In the wards he gets certain opportunities of making pelvic examinations under anaesthesia, and of personally assisting at operations. The operations and the operation specimens are demonstrated more or less fully, according to the custom of each operator and the amount of work he may have to get through. In the case of hospitals with only 10 to 20 gynecological beds the number and variety of cases seen in a month is necessarily very limited, and is, in fact, quite inadequate as a course of clinical training.

Among gynecological out-patients, the student usually sees a large number of minor cases, and is allowed to examine a fair proportion of them. He needs close supervision and a good deal of assistance in learning to make the bi-manual examination, and in the case of a large out-patient clinic the number of cases which have to be seen precludes the out-patient physician from devoting close attention to the student. In a small clinic the number and variety of the cases seen by the student in one month is quite inadequate. As a rule, the out-patient physician is assisted by the R.O.O., but it is rare to find any system operating for the sifting of cases, so that those most suitable for teaching may be

passed at once to the out-patient physician. Usually the R.O.O. sees all the old cases and the out-patient physician all the new ones irrespective of their clinical importance.

*Deficiencies in gynecological training.*—It is in the clinical training of the students that defects are most apparent. These deficiencies can be traced mainly to two causes: (1) The very inadequate number of gynecological beds in all the hospitals; (2) the very inadequate amount of time which the student devotes to the subject. With regard to the number of beds it must be recollected that midwifery and gynecology together form one-third part of the final examination, and are associated on equal terms with medicine and with surgery. The combined number of gynecological and midwifery beds available for teaching is less than one-third of the number allotted either to medicine or to surgery. This policy of cramming the work of the obstetric physician is due partly to the failure of colleagues to realise the importance of these subjects to the medical practitioner and to the community and partly to the relatively low level of the requirements of most of the examining bodies. In both medicine and surgery the student is obliged to clerk for six months, while to clinical midwifery and gynecology combined he does not devote more than three months at most hospitals.

### D.—The Consequences of Defective Training in Midwifery and Gynecology.

(a) The training of medical students is a matter of the first importance to the State, for efficient doctors are necessary to the maintenance of the public health. In the early years of his private practice midwifery and the minor ailments of women and infants form a large proportion of the young doctor's work, and yet these are probably the subjects in which his practical training has been most deficient.

(b) Since the great majority of students learn to conduct labour only under conditions in which surgical cleanliness cannot be enforced, they carry with them into practice the impression (perhaps subconsciously) that surgical cleanliness is not of the same importance in midwifery as in surgery. The makeshift methods with which they begin their experience tend to become stereotyped in their minds, and the effect of this upon their work in private practice must be very bad.

(c) The bearing of this point upon the incidence of death from child-bearing in the country cannot be overlooked. During the period 1891 to 1914 this death-rate of childbirth for Great Britain and Ireland was almost stationary, the fall being only from 5.8 to 5.08 per 1000 births. This can only be regarded as extremely unsatisfactory, for it shows that during a period in which surgical training made such rapid advances midwifery training made none. Indeed, in all divisions of the country except Ireland the death-rate actually rose in the quadrennium 1911-1914. The conclusion cannot be avoided that both medical students and midwives are being imperfectly trained.

(d) The student has been accustomed to pay only perfunctory attention to the puerperium, for he has been left largely to himself at this period while attending his cases on the district; he therefore cannot be expected to realise its importance from the point of view of the health and working efficiency of the mother.

(e) The average newly qualified doctor has had little or no clinical training in the management of the infant and usually leaves it entirely to the nurse. Even in the case of the well-to-do the nurse often regards the infant as her patient, and feeds it or dresses it without reference to the medical attendant. Mothers also come to think that this is the proper arrangement and to prefer the advice of the nurse. There is no doubt that many infant lives are lost owing to the fact that medical students receive insufficient clinical training in this subject.

(f) It is the personal experience of all the members of your committee that medical practitioners do not consider it necessary to obtain the services of a specialist or of a hospital in the emergencies of midwifery to the same extent as they undoubtedly do in the case of general surgery. This is largely due to the fact that they have not, during their training, seen such cases dealt with by the senior obstetric officers in the way that they have seen serious surgical cases dealt with by surgeons. Their custom is to call in a neighbouring practitioner and to do the best they can.

(g) The lack of hospital accommodation for women in labour and the lack of public means of transporting patients to hospital tend to confirm the practitioner in this attitude.

(h) The close relation which subsists between bad midwifery and pelvic disease in women is well recognised. A sound practical training in the recognition and treatment of pelvic disease is as important as the midwifery training itself. Young medical practitioners are probably less able to recognise common forms of gynecological disease than they are common forms of medical or surgical disease. The results are very serious in regard not only to the life, but also to the health, working efficiency, and subsequent capacity for child-bearing of the women of the country.

### E.—The Bases of an Efficient Training in Midwifery and Gynecology.

(1) Owing to their intimate relationships these subjects should be taught, as is the British practice, by the same teachers, and the training of students in them should run concurrently.

(2) Midwifery training should be extended in one direction (antenatally) so as to comprise a fuller study of the whole course and management of pregnancy, and in the other (post-natally) so as to comprise the management of the whole nursing period and the management of the infant.

(3) The management of labour should be taught as a surgical procedure; this can only be done in hospital, under surgical conditions, with adequate equipment, and a highly trained staff of teachers. Owing to the peculiar nature of the work the senior officers upon whom the ultimate responsibility rests should be resident in the hospital, or should be available at any time their presence may be required.

(4) There should be adequate hospital accommodation in all large centres of population to allow of all serious obstetric emergencies being immediately admitted for treatment; this is recognised as being necessary in respect of surgical conditions, and it is equally necessary in respect of midwifery.



(5) From (4) it follows that the number of beds available for cases of midwifery must be very largely increased, allowing due provision to be made for the emergencies which so frequently arise.

(6) Medical students and midwives cannot be suitably trained in the same institution unless in separate classes.

(7) The proportion of beds allotted to midwifery and gynaecology is quite inadequate to the importance of the subject from the point of view of the public health; the number should bear a definite proportion to the total number of beds in the hospital; at the present time the average proportion is less than one-twentieth of the total in the 12 teaching hospitals; this proportion should be increased to at least one-tenth. A considerable number of gynaecological cases are dealt with by the surgeons in the surgical wards, which are largely lost for teaching purposes.

(8) The requirements of the examining bodies in both subjects should be strengthened so as to enforce (a) an adequate period of clinical training during which the student should be allowed to undertake no other work; (b) the provision of suitably arranged and sufficiently large facilities for clinical work.

(9) The extent to which the student's training is influenced by the nature of the qualifying examination must not be overlooked, and the present system of examination in midwifery and gynaecology urgently needs amendment. The examination of the Conjoint Board, for example, is very unequal owing to the large number of examiners from different teaching hospitals in London and from provincial universities, who often set widely different standards. And the absence of a clinical examination in both subjects leads the student to neglect his clinical work and to underrate its importance.

The examining authorities should be urged, whenever it is possible, to recognise the principle that the student should be examined by his own teacher with a second examiner as assessor, and that clinical examinations should be accorded the same importance as in the case of medicine and surgery.

#### F.—Sketch of a Satisfactory Scheme.

(I.) There are two different lines upon which fully equipped departments, of adequate size, for the teaching of midwifery and gynaecology could be organised:—

(a) Certain of the larger teaching hospitals might provide for a great expansion of their existing midwifery wards, from which, with their associated gynaecological, pathological, and other services, a midwifery department could be formed capable of providing for the training, not only of their own students, but also, if necessary, of students from other hospitals where there is no midwifery ward in existence.

(b) New centres might be found in outlying districts where there is at present no adequate maternity service. These new centres, though not in proximity to existing teaching hospitals, might be affiliated to certain of them which were unable to develop fully equipped maternity departments of their own, and which might send their students to the new centre for training. These new centres could be made use of for training not only students but also post-graduates, and in addition they would afford much-needed facilities for research.

(II.) Departments developed out of existing maternity wards at a teaching hospital (Subsection I.a) ought to provide a minimum of 75 beds, of which 50 would be for midwifery and 25 for gynaecology. Of the midwifery beds a certain number would be allocated to ante-natal conditions and puerperal complications. "Departments" developed in connexion with the larger teaching hospitals, which have greater facilities for expansion, might exceed these figures if students from other hospitals were received in addition to their own.

In the opinion of the committee a midwifery department containing less than 50 beds cannot be satisfactory for the teaching of students, as it will not afford them an opportunity of seeing all the ordinary difficulties and complications of pregnancy and labour during the limited period of time in which they are attending the department. It would be impossible for every one of the existing teaching hospitals to supply such a large number of beds for midwifery. So it is obvious that under this scheme some form of concentration would be necessary—that is, that some of the hospitals should provide midwifery departments which would be attended by their own students and, in addition, by students from the hospitals which were unable to provide such departments.

(III.) Newly founded centres (Subsection I.b) would probably be much larger than the "departments" on account of the urgent public need which exists for increased hospital accommodation for midwifery cases. They could provide about 200 beds each, of which, roughly, 20 would be for ante-natal conditions, 100 for labour, 20 for infective cases (isolation), and 60 for gynaecological cases. The provision of a certain number of such centres as these in selected outlying districts would form a most valuable contribution to the provision of an efficient maternity service for London. It is obviously of great importance that full use for teaching purposes should be made of such new centres when they come into existence.

The provision of a proportion of gynaecological beds in the centre is an essential feature of the scheme. It would be needed to meet the medical requirements of the district, and, further, it would allow the student to do his practical work in the two subjects together and under the same teachers; knowledge of either subject is incomplete without the other, and the student learns them together much more readily than separately.

(IV.) The medical staff required to work the "centre" also involves a new departure. Reasons have been advanced for the view that a much larger proportion of the teaching in the conduct of normal and abnormal labour should be given by senior obstetric officers, than is the case at present. This involves senior officers being either in residence at the centre or on duty during certain definite hours of the day and night. Such services could not be required of them without payment upon an adequate scale. Next to them would be required assistants in residence, of the status of the present registrar or tutor, whose whole time would be required, and who also must be adequately paid.

(V.) "Departments" developing out of existing midwifery wards at teaching hospitals (Subsection II.a) would probably be best staffed as follows:—

(1) A staff of two or more visiting obstetric physicians (or surgeons) who would, in rotation, undertake the duties appertaining to the director or chief of the department, for definite periods as might be most suitable.

(2) A resident "*chef de clinique*," appointed for a term of years, who must be a whole-time officer, and who would have charge of the department under the visiting staff. His professional status should be above that of an obstetric registrar—i.e., comparable with that of a resident assistant surgeon or a resident assistant physician.

(3) One or two resident senior assistants of the status of the registrar, who would direct the students personally in their work in the labour wards, the lying-in wards, and on the district, and a number of resident assistants (house surgeons). These would also be whole-time officers.

Departments such as these would probably eventually develop into "units" with professors of midwifery and gynaecology, on the lines of the units of medicine and surgery which are about to be founded. Such professors of midwifery and gynaecology should not be "whole-time" professors, but should remain in touch with consulting practice.

(VI.) New centres formed in outlying districts (Subsection II.b) would probably be best worked by:—

(1) A resident director or superintendent, who might be appointed for a term of, say, five to seven years. He would be of the status of an obstetric physician at the teaching hospital. He would be responsible for the control of the work of the institution generally, and would take a large share in operative work, in teaching, and in research. The director should not be a "whole-time" officer, but should remain in touch with consulting practice.

(2) One or more resident assistant directors.

(3) Working under (1) and (2) a sufficient number of resident assistants to direct the students personally in their work in the labour wards, the lying-in wards, the gynaecological wards, and in the district. They would also be responsible for the clinical pathology of the centre, and would carry out research under the supervision of the director and the assistant director.

These appointments when first instituted would afford an opportunity for the teaching hospitals affiliated to the centre to be represented upon its teaching staff, and thus keep the students in touch with their own hospital staff.

It must be borne in mind that outlying districts which are in need of a midwifery hospital service require general hospitals as well; these would, no doubt, eventually be established, and thus provide for the association of pathological and other services with the new centres.

(VII.) In the opinion of the committee the requirements of the students' training can only be completely met under the scheme of new "centres," on account of the necessity which has been already emphasised of the senior teachers taking a considerably larger part than at present in the work of clinical instruction. Under the alternative scheme of "departments" at existing teaching hospitals the senior teachers would, in effect, not take any larger part in teaching than they do now.

(VIII.) Students belonging to hospitals with a fully equipped midwifery department (Subsection I.a) should be attached to the department for a period of four months, during which their whole time would be devoted to midwifery and gynaecology, and they would be in residence for, at any rate, a part of the time. Students from other hospitals would probably come to the department for practical midwifery only; they would be in residence for at least one month. In the second month they would attend their cases on the district of their own hospital under the supervision of their own medical staff, and would, in addition, continue to attend the department for clinical teaching, operations, &c. These students would receive their gynaecological training at their own hospitals, as at present.

(IX.) The midwifery districts of the teaching hospitals would, therefore, be continued, for it is of great importance that the student should have experience of district work during the latter part of his training, as long as it is under proper supervision. In the case of certain hospitals the district could not provide sufficient cases to enable each student to attend the required number. Arrangements could, perhaps, be made for a proportion of the students from these hospitals to do their district work elsewhere—i.e., in the district of another hospital.

(X.) Each teaching hospital should provide means of properly supervising its students in their work on the district. Under the present system the assistant obstetric physician is in nominal charge of this work, with the assistance of the registrar and the R.O.O. The control of the assistant obstetric physician should be made effective under the rules of each hospital, and the duties of the registrar should include the instruction of each student in the management of his district cases during the puerperium.

(XI.) Students attending a new centre (Subsection I.b) would be attached to it for a period of four months, during which their whole time would be devoted to midwifery and gynaecology, and they would be in residence for, at any rate, a part of that time.

#### G.—First Steps to be Taken.

(I.) While the committee are of opinion that eventually the foundation of new "centres" will be necessary for the proper training of students in midwifery and gynaecology, it is recognised that it will probably be some time before such a scheme could be put into operation. The necessity of taking steps promptly to effect the most urgently needed improvements is, however, obvious, and the formation of "departments" at existing teaching hospitals (F, Subsection II.a) could be put into operation without prejudice to the later formation of new "centres." In this way the two schemes could be developed side by side, and there is no doubt that the one found by experience to be best suited to the special requirements of London would eventually prevail.

(II.) It is of great importance that a "department" of the size indicated, formed at a teaching hospital, should in addition to their own students receive a certain number of students from one or more hospitals which have no midwifery ward. If this plan were carried out the existing inequality of the training in practical midwifery in London which results from the absence of a midwifery ward in many teaching hospitals would be to a great extent obliterated, and the general level of midwifery training would be at once appreciably raised.



(III.) As hospitals without a fully equipped midwifery department would continue to train their own students in gynaecology as at present, an immediate increase in the number of gynaecological beds at these hospitals is urgently required for the reasons which have been already stated.

(IV.) The first steps to be taken would probably be to inquire into the following points:—

1. (a) The possibility of the hospital designated being able to allot the required number of beds to midwifery.

2. (b) The willingness of other hospitals to make use of the "department" for training their students.

3. (c) Suitable financial arrangements being made between the affiliated hospitals, assisted by a Government grant.

(V.) Another development which might be put into immediate operation is the much greater utilisation of ante-natal and infant-welfare clinics for the instruction of students.

(VI.) It is also very desirable that all teaching hospitals should, as far as possible, compel their students to give up a minimum of four months solely to midwifery and gynaecology, and the examining bodies should be moved to alter their requirements in this sense.

#### H.—The Teaching of Graduates.

##### Midwifery.

(1) There is no doubt that it is very desirable that provision should be made for the clinical instruction of graduates in midwifery; there is a considerable demand for it now, and this demand is likely to be greater in the future.

(2) The essential conditions for the practical instruction of graduates in midwifery are: (a) an institution able to receive large numbers of cases, and making special provision for difficult and operative labours; (b) resident teachers of status and experience.

(3) The case of the medical student is in our opinion more urgent than that of the graduate and should be dealt with first. When large central institutions on the lines indicated above have been set up there will be no difficulty, in addition to meeting the needs of the students, to provide the clinical material, the teachers, and the laboratory facilities which are requisite for the instruction of graduates.

(4) Under the conditions which exist at present it is practically impossible to organise post-graduate instruction upon satisfactory lines. Certain suggestions for improving the existing facilities at lying-in hospitals will be found in Appendix D.

##### Gynaecology.

(1) The abundant clinical material of the special hospitals for women is largely lost for teaching purposes under the present conditions. A certain number of clinical assistants (qualified) are usually attached to them who attend out-patients and operations, but there are no systematic arrangements for clinical teaching upon a considerable scale.

(2) Those hospitals would be of invaluable service in providing clinical teaching for graduates, and this appears to be their proper educational sphere.

(3) The three principal hospitals (Chelsea Hospital for Women, Samaritan Free Hospital, Soho Hospital) should be affiliated, so that graduates taking a course would be entitled to follow the practice of all of them. In this way graduates taking a course of clinical gynaecology could be continuously employed in out-patient departments, wards, operating theatres, and laboratories.

(4) Courses of instruction lasting for six to eight weeks should be provided—viz., (a) clinical gynaecology; (b) operative gynaecology;

(c) gynaecological pathology.

*Clinical gynaecology.*—Demonstrations on selected cases should be given in the in-patient and out-patient departments, and the senior and junior members of the staff should take part in the teaching in both departments. Facilities should be afforded to each graduate to acquire a knowledge of the bimanual methods of examination by repeated practice while the patient is anaesthetised; to acquire a knowledge of the instruments, appliances, &c., used in the practice of gynaecology. Case-taking cards should be provided in both in- and out-patient departments.

*Gynaecological pathology.*—Instructions should be given in (a) recent specimens, (b) microscopic preparation, (c) bacteriology, (d) specimens in the Museum of the Royal College of Surgeons.

(5) Advanced courses might be arranged for those who desire to specialise in gynaecology, and opportunities afforded them both in the wards and in the laboratory for research.

(6) Clinical assistantships might still be available for those who, having taken a post-graduate course, desire to continue their work at the hospital.

The report is signed by Dr. T. W. Eden (chairman of the committee), Dr. H. R. Andrews, Dr. G. F. Blacker, Dr. J. S. Fairbairn, Dr. F. J. McCann, and Mr. Gordon Ley (secretary).

## A MONTHLY RECORD OF ATMOSPHERIC POLLUTION.

METEOROLOGICAL OFFICE: ADVISORY COMMITTEE ON ATMOSPHERIC POLLUTION: SUMMARY OF REPORTS FOR THE MONTHS

Oct. 31st, 1918.

Nov. 30th, 1918.

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre.										Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre.									
		Insoluble matter.			Soluble matter.		Total solids.	Included in soluble matter.			Insoluble matter.			Soluble matter.		Total solids.	Included in soluble matter.						
		Tar.	Carbonaceous other than tar	Ash.	Loss on ignition.	Ash.		Sulphate as (SO <sub>2</sub> ).	Chlorine (Cl).	Ammonia (NH <sub>3</sub> ).	Tar.			Carbonaceous other than tar	Ash.		Loss on ignition.	Ash.	Sulphate as (SO <sub>2</sub> ).	Chlorine (Cl).	Ammonia (NH <sub>3</sub> ).		
ENGLAND.																							
London—																							
Meteorological Office <sup>1</sup> ... ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						
Embarkment	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						
Gardens ... ..	22	0.05	1.44	2.29	7.21	15.57	26.57	6.39	1.91	0.11	28	0.09	1.21	1.69	3.45	10.92	17.36						
Finsbury Park ...	65	0.10	1.06	2.77	4.45	9.07	17.45	5.04	4.00	0.13	52	0.08	1.56	5.41	4.69	7.70	19.44						
Ravenscourt Park	28	0.02	0.55	0.67	1.41	3.44	6.09	1.28	0.66	0.09	54	0.03	1.24	2.24	3.92	5.63	13.05						
Southwark Park ...	31	0.05	1.32	2.74	3.51	5.70	13.32	3.86	0.61	0.30	50	0.07	1.58	2.95	5.87	11.22	21.68						
Victoria Park ...	30	Tr.	0.66	2.05	1.14	3.45	7.29	1.73	0.35	0.07	40	0.01	0.97	2.50	2.37	6.92	12.78						
Wandsworth Com. <sup>2</sup>	—	—	—	—	—	—	—	—	—	—	19	0.00	0.01	0.15	0.52	1.77	2.46						
Golden Lane ...	31	0.04	2.55	3.80	0.99	3.84	11.23	1.51	0.55	0.12	50	0.07	3.63	4.37	1.40	5.38	14.84						
Malvern <sup>3</sup> ... ..	—	—	—	—	—	—	—	—	—	—	39	Nil	0.33	1.36	0.61	2.24	4.55						
Manchester—																							
Whitworth Street (garden) (roof of)	25	—	—	—	—	—	10.40	—	—	—	38	—	—	—	—	15.80	—						
College) ... ..	27	—	—	—	—	—	11.30	—	—	—	49	—	—	—	—	15.70	—						
Newcastle-on-Tyne	55	0.12	4.36	5.91	1.85	2.94	15.19	1.61	0.39	0.18	39	0.10	3.16	9.05	1.79	4.42	18.51						
Rochdale ... ..	—	—	—	—	—	—	23.16	—	—	—	—	—	—	—	—	23.16	—						
St. Helens ... ..	72	0.14	2.87	5.34	2.88	6.12	17.36	3.32	1.82	0.06	38	0.09	1.58	2.02	3.22	10.33	17.25						
Southport—																							
Hesketh Park ...	83	0.02	0.19	0.23	0.62	2.83	3.89	0.93	0.79	0.01	52	0.07	1.95	5.42	1.29	4.60	13.33						
Woodvale Moss ...	61	—	—	—	—	—	2.73	—	—	—	35	—	—	—	—	5.73	—						
SCOTLAND.																							
Coatbridge ... ..	117	0.11	1.76	4.70	3.52	7.46	17.55	3.97	1.29	0.35	83	0.16	3.80	10.20	3.47	6.80	24.43						
Glasgow—																							
Alexandra Park...	89	0.09	2.66	4.92	2.29	4.65	14.61	2.64	0.28	0.20	75	0.11	1.56	4.24	3.31	6.90	16.12						
Bellahouston Park*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						
Blythswood-sq. ...	129	0.16	2.58	4.28	1.76	9.14	17.92	3.49	0.38	0.34	96	0.19	1.80	5.25	1.95	5.85	15.04						
Botanic Gardens <sup>2</sup>	127	0.14	2.07	4.98	11.88	15.19	34.26	6.91	1.59	0.25	111	0.14	2.26	4.16	4.95	9.04	20.55						
Richmond Park*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						
Ruchill Park ...	133	0.15	1.75	2.93	3.20	6.80	14.83	3.89	0.35	0.28	108	0.14	1.60	3.15	2.53	5.40	12.82						
South Side Park ...	131	0.12	2.27	4.84	3.62	8.94	19.79	3.20	0.42	0.24	92	0.09	1.62	2.48	3.15	5.33	12.67						
Tollcross Park <sup>2</sup> ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						
Victoria Park* ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						

\* No returns.

1 Bottles overflowed.

2 The water was dark violet in colour.

Tr. = trace.

"Tar" includes all matter insoluble in water but soluble in CS<sub>2</sub>. "Carbonaceous" includes all combustible matter insoluble in water and in CS<sub>2</sub>. "Insoluble ash" includes all earthy matter, fuel, ash, &c. One metric ton per sq. kilometre is equivalent to: (a) Approx. 9 lb. per acre; (b) 2.56 English tons per sq. mile; (c) 1 g. per sq. metre; (d) 1/1000 mm. of rainfall.

The personnel of public health authorities concerned in the supervision of these examinations and of the analytical work involved remains the same as published in previous tables. The analyses of the rain and deposit caught in the gauge at the Meteorological Office are made in THE LANCET Laboratory.



## THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

A MEETING of the Executive Committee of the Belgian Doctors' and Pharmacists' Relief Fund was held on Thursday, July 31st, at the offices of THE LANCET, when the following final balance-sheet was presented by Dr. Des Vœux, the honorary treasurer:—

### BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

*Treasurer's Cash Statement from Commencement to Close of Fund, July 24th, 1919.*

	£	s.	d.		£	s.	d.
Donations and sub-				Relief ... ..	25,766	4	11
scriptions ... ..	25,790	11	6	Loans not repaid ...	97	8	0
Interest received ...	1,143	12	7	Drugs ... ..	250	16	8
				Clothes ... ..	344	17	0
				Auditors' fees ... ..	16	16	0
				Printing and stationery	199	14	3
				Postages and sundry			
				expenses... ..	46	19	2
				Balance for final dis-			
				tribution... ..	211	8	1
	26,934	4	1		26,934	4	1

We have examined the above account with the books and vouchers of the Fund and certify it to be correct according to the books. In our opinion the receipts and payments have been fully recorded, and we have compared the receipts with the published acknowledgments and have had certificates of the balance produced to us from time to time. The above account incorporates the periodical accounts which we have previously certified.

CREWSDON, YOUNG, AND HOWARD, Chartered Accountants.

70A, Basinghall-street, London, E.C. 2, 24th July, 1919.

It will be seen that the Committee, by judicious investment and husbanding of their resources, were enabled to maintain the Fund in its charitable capacity while actually disbursing £800 more than was received from subscribers.

The Committee decided to pass no resolution at the time with regard to the disposal of the small balance remaining in the treasurer's hands, as certain expenses of printing and publication might yet have to be incurred.

Dr. Squire Sprigge, the honorary secretary, offered to keep the papers and books having reference to the Fund at the offices of THE LANCET for the present.

## THE POSITION AND PAYMENT OF THE PENSIONS BOARDS;

### DEPUTATION TO THE MINISTRY OF PENSIONS.

As will have been made clear by communications to our correspondence columns for some time past, medical men serving on Pensions Boards are not altogether satisfied with the conditions of service and with the remuneration offered. On Sept. 4th a deputation from the British Medical Association waited on the Minister of Pensions at Westminster House to bring these matters before his notice. The deputation included the responsible officers of the Association, and was received by Sir L. Worthington Evans, with whom were Lieut.-Colonel A. L. Webb, Dr. R. Cunyngnam Brown, and Mr. J. F. Christie.

Dr. T. W. H. GARSTANG, as spokesman of the deputation, said that there were six main points which it had been decided to bring to the notice of the Minister. These were:—

1. That the fees for doctors attending boards under the Ministry of Pensions should be raised from the present standard of 1 guinea to 2 guineas.
2. That the specialists' fee be advanced pro rata.
3. That the number of cases to be seen in an individual session should not exceed eight.
4. That the length of the session should not exceed 2½ hours.
5. That payment to doctors attending on these boards be made more promptly than at present.
6. What was the policy of the Ministry as regards throwing open the posts of medical referees to men who had returned from the Services, and when was this policy likely to be carried out?

Dr. Garstang and several other members of the deputation explained the general feeling of the medical profession that the 1 guinea fee was inadequate, and that it had only been accepted as a temporary measure, owing to the anxiety of the profession to help the country during the war. Now that the war was over the Ministry could not expect to have this work done at an admittedly inadequate rate and still retain a choice of the best men. Chapter and verse were given for the other grievances alleged.

Sir L. WORTHINGTON EVANS, while assuring the deputation of the careful consideration of all their points, indicated that the suggested increase in the sessional fee to 2 guineas would probably cost the country over £1,000,000 a year—an increase in expenditure not to be lightly undertaken. As regards the number of cases examined in a session, it was found that the average had for some time been 7·2 cases, and latterly even less, and he thought that if that was so it should be considered as having met the point submitted. He was entirely in agreement as to the length of the session being 2½ hours, though he pointed out that there would every now and then be occasions on which, for the sake of dealing with a case which might have come some distance, the members of the board should be willing to extend the time of the session a little. He considered that there must be some give and take in the matter. He offered to look into the question of prompt payment, as, in his opinion, there should be no arrears such as had been mentioned. As regards the posts of medical referees, the District Commissioners had been instructed some time back that, as soon as they knew that practically all the doctors had returned who were likely to apply, the posts should be thrown open, preference being given in the following order:—

- (a) Service overseas.
- (b) Service in this country.
- (c) Men who had already held the posts.

Action, he added, had been somewhat delayed owing to the rearrangement of the administrative areas of the Ministry, but in Scotland this was now complete, and the procedure mentioned would be put into operation almost at once; Wales would shortly follow suit. Similar action would be taken in other districts as soon as the District Commissioners reported that the bulk of the men had returned.

## PARIS.

(FROM OUR OWN CORRESPONDENT.)

### *A Monument to Medical Men Killed during the War.*

A PROPOSAL has just been made to commemorate by a monument those medical men who have been killed by enemy action. M. Landouzy, the dean of the Paris Faculty of Medicine, has had their names engraved on a tablet on the walls of the great hall of the faculty since 1915. A form of monument had actually been proposed, consisting of names engraved on a wall, framed by plaques of mosaic, and surrounding a statue representing military courage. Since then, however, the number of victims has increased considerably. The French Medical Corps consider that the monument should be proportionate to the magnitude of the sacrifice and the number of the heroes. The idea is to honour the dead not only of Paris but of the whole of France, and new projects are on foot. One suggestion was the erection of a monument on the Boulevard St. Germain, in front of the entrance to the Faculty of Medicine, but this was thought to be lacking in originality and possibly in discretion. Up to the present nothing has been decided except the main principle of opening a subscription list among medical men in France, and including also old students of French universities now living abroad. The scheme most likely to be adopted is that supported by the present dean of the faculty, Professor Roger, which comprises the rebuilding of the old eighteenth-century amphitheatre of the School of Surgery on a more suitable site near the faculty. This old building is doomed to destruction, and the beauty of its architecture would justify its reconstruction in the form of a small temple, with marble slabs on which could be engraved the names of medical men who had fallen in the service of their country.

### *Influence of Orientation on the Physiology of Man and Animals.*

A curious communication by M. Jules Regnault to the French Society of Comparative Pathology again brings up the question of the effect of the earth's magnetism on the physiology of living animals. Some such influence has been suspected from the earliest times. In 1845 Reichenbach observed that certain people experience real discomfort when facing east, even when unaware of their position. During the last two years M. Regnault, following up



the experiments of Abrams, has convinced himself that if, after having percussed out liver and heart with the subject facing west, the observer repeats the percussion with the subject facing north, east, or south, the area of dullness is found to be perceptibly smaller. Other experiments show that visceral reflexes react most strongly to electro-magnetic or electric stimuli when the subject faces west. These facts correspond, moreover, with those recorded by M. Raphael Dubois on the orientation of development in bacterial colonies.

*Foreign Doctors Practising in France.*

This question is causing some perturbation among French doctors who return from the war to find their practice absorbed by foreign doctors. These latter are still present in large numbers, especially in Paris and the big towns. The situation was tolerated during the war because the civil population was really short of medical aid; moreover, the intrusion of some of the foreigners was condoned because of services rendered by them to wounded in hospitals. Now, however, the medical societies are moving in the matter and are agitating for the return to the normal interpretation of the laws regulating medical practice in France and requiring the possession of a State diploma as distinguished from that of a university diploma.<sup>1</sup> Many petitions have been sent to the Government by medical men with Spanish or South American or other degrees, claiming exemption from these laws on the grounds of service rendered during the war. On the representation of the Paris medical societies all except 12 of these applications have been refused. The exceptions for the most part have been made for Canadian medical officers of French origin. In the *Bulletin des Syndicats M. le Filiâtre* approves of this exception, and even suggests that it may be extended so as to allow all Canadian doctors to practise in France, assuming that French doctors are granted a reciprocal concession in Canada.

Sept. 8th.

<sup>1</sup> THE LANCET, 1919, i., 477.

## URBAN VITAL STATISTICS.

(Week ended Sept. 6th, 1919.)

*English and Welsh Towns.*—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had been 10.0 in each of the three preceding weeks, rose to 10.7 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual rate was 10.5, and was 0.9 per 1000 above that in the preceding week, while among the remaining towns the rates ranged from 4.0 in Swindon, 4.5 in Acton, 4.6 in Enfield, and 4.9 in Coventry, to 14.8 in Plymouth, 14.9 in Gateshead, 17.1 in West Bromwich, and 20.1 in Middlesbrough. The principal epidemic diseases caused 345 deaths, which corresponded to a rate of 1.1 per 1000, and included 251 from infantile diarrhoea, 31 from measles, 30 from diphtheria, 16 from whooping-cough, 13 from scarlet fever, and 4 from enteric fever. Measles caused a death-rate of 1.2 in Newcastle-on-Tyne, 1.3 in Barrow-in-Furness, and 2.2 in Gateshead. There were 1454 cases of scarlet fever and 1006 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 1421 and 1004 respectively at the end of the previous week. The causes of 16 deaths in the 96 towns were uncertified, of which 3 were registered in Liverpool and 3 in Gateshead.

*Scotch Towns.*—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had been 9.9, 10.7, and 10.9 in the three preceding weeks, fell again to 10.8 per 1000. The 223 deaths in Glasgow corresponded to an annual rate of 10.4, and included 18 from infantile diarrhoea, 4 from whooping-cough, 3 from measles, and 1 from diphtheria. The 78 deaths in Edinburgh were equal to a rate of 12.1, and included 2 each from infantile diarrhoea, scarlet fever, and diphtheria, and 1 from measles.

*Irish Towns.*—The 153 deaths in Dublin corresponded to an annual rate of 19.7, and included 24 from infantile diarrhoea, and 1 each from enteric fever and measles. The 112 deaths in Belfast were equal to a rate of 14.5, and included 12 from infantile diarrhoea, 2 from scarlet fever, and 1 each from enteric fever and diphtheria.

**THE King of the Belgians** has been pleased to grant the *Médaille du Roi Albert* to the following medical men for medical services rendered to Belgian refugees:—

Sir Rickman J. Goilee, Bart., K.C.V.O., Sir Frederick Taylor, Bart., Dr. C. St. Aubyn Farrer, Dr. S. Squire Sprigge, Dr. Chittenden Bridges, Dr. Neville Hart, Dr. J. H. Philpot, Dr. W. E. Robinson, Dr. Arthur C. Roper, Dr. R. M. H. Randell, and Dr. L. Vintras.

**ROYAL INSTITUTE OF PUBLIC HEALTH: TUBERCULOSIS DEPARTMENT.**—A course of lectures for candidates desirous of obtaining positions as tuberculosis officers, for general practitioners and others, will be given in October, November, and December, on successive Thursdays at 5 P.M., beginning Oct. 9th, at the Institute, 37, Russell-square, London, W.C.1. Further particulars can be obtained from the secretaries. The individual lectures will be announced in the Medical Diary.

## Obituary.

THOMAS PICKERING PICK, F.R.C.S.,

LATE VICE-PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND; INSPECTOR OF ANATOMY FOR ENGLAND AND WALES; CONSULTING SURGEON TO ST. GEORGE'S HOSPITAL.

WE regret to announce the death, which occurred at Great Bookham, Surrey, on Saturday last, of Mr. Thomas Pickering Pick, the well-known surgeon and anatomist, whose connexion with the Royal College of Surgeons of England for so many years as an examiner made him a familiar figure in educational circles.

A Liverpool man, he came to St. George's Hospital in the days when Prescott Hewett, Timothy Holmes, George Pollock, and the two Lees adorned the staff, and obtained his first diploma in 1862. He held the junior appointments at the hospital, proceeding to the Fellowship of the Royal College of Surgeons of England in 1866. In 1869 he was elected assistant surgeon to the hospital, having previously been an extremely successful demonstrator of anatomy. Indeed, it is as a teacher of anatomy that Pick is always recalled to the memory of his pupils. As a lecturer on his subject he was rapid and correct, but not very inspiring, for he followed the lines of Gray's Anatomy so closely that he was popularly reported among the students to know that elaborate treatise by heart; he was, of course, its most painstaking and capable editor for many years. But as a demonstrator Pick was thoroughly in his element, and he went on demonstrating in an informal way many years after he had become the lecturer on the subject. In talking to a class of students he made the dry bones live, and showed the relations of a dissection in a manner which made the topography of the region for ever a part of the pupil's personal knowledge. For many years he was examiner in anatomy at the Royal College of Surgeons of England, where a dignified presence and a courteous manner concealed to some extent from the students the fact that his standard of exact anatomical knowledge was a very high one. He was possibly responsible for rejections which the disappointed candidate put down to examiners of a less agreeable address. He was at the time of his death Inspector of Anatomy for England and Wales.

In 1879 he became full surgeon to the hospital. He hardly made the same mark as a surgeon or lecturer on surgery that he had made as an anatomist, but his date was decidedly a difficult one. The theory of antiseptics was universally accepted, but only after discussions in which many of Pick's immediate superiors were not found on the progressive side; while the technique of what in the early eighties was still regarded as a completely new thing, called for much perfecting. Pick was not quite flexible enough to assimilate the Listerian doctrine, nor had he a sufficiently scientific outlook to enable him to see its tremendous promises. He remained the absolutely capable surgeon of his time, conforming to the antiseptic creed, but unable to forget that only a few years ago he had passed successfully tests in his professional subjects without requiring any knowledge of germ influence. He wrote, however, a good little treatise on fractures and dislocations, exclusive of fractures of the skull, as well as a treatise on surgery for practitioners. Each book was the outcome of personal experience, as well as a record of the principles of surgery as he had learnt them and practised them. He also edited Holmes's "Principles and Practice of Surgery," which was for many years one of the most popular manuals with English and American students. The handbook, however, was not kept up to date, and, indeed, the years when Pick was its editor were so marked with surgical developments that the work would have required almost annual re-issue if it was not to fall behind, as well as steady collaboration with younger men.

Pick's connexion with the Royal College of Surgeons of England was a long and honourable one, though he failed to be elected President. Appointed to the Board of Examiners in Anatomy and Physiology in 1876, he continued to be a member of the Court of Examiners until 1894. In this year, as Hunterian Professor, he delivered at the College an interesting series of lectures on Diseases of the Ends of the Long Bones in Children, which were published in these columns, and display their author as a sound surgeon



with a great knowledge of pediatrics. In 1898 he delivered the Bradshaw lecture, taking as his subject the Union of Wounds, and in 1903 he became Vice-President of the College. No doubt the failure to be elected President of the Corporation for which he had worked so long and loyally was a great disappointment to him.

ALEXANDER MACALISTER, M.A., M.D. CAMB., M.D., D.SC. DUB., LL.D. GLASG., MONTREAL, & EDIN., F.R.S.,  
PROFESSOR OF ANATOMY IN THE UNIVERSITY OF CAMBRIDGE.

By the death of Alexander Macalister Cambridge loses one of her most ardent spirits and devoted servants, for though he had been educated elsewhere and had made his reputation before he migrated, no one of her sons was more loyal than was Macalister to the home of his adoption, or brought to bear on the duties of the professoriate a wider and riper experience of men and affairs. Looking back on the many and prominent parts he played, it can be realised how profound and beneficial has been his influence in the moulding of the character and work of his pupils.

Alexander Macalister was born in Dublin in 1844, the second son of Robert Macalister, and grandson, on his mother's side, of Colonel James Boyle of Dungiven. Educated at Trinity College, Dublin, he took his first medical qualification in 1862, and became in succession demonstrator of anatomy at the College of Surgeons, and professor of zoology, and then of anatomy and chirurgery in the University of Dublin. During this period he published an introduction to "Animal Morphology" (1876) and the "Morphology of Vertebrate Animals" (1878), and entered very fully into the life of the University, becoming a member of the Senate.

Macalister came to Cambridge in 1883 in that great period of evolution—almost of revolution—inaugurated by Coult's-Trotter, Humphry, George Paget, Michael Foster, and Latham, their survivor—men who, though not always pulling together, launched a new and vigorous medical school on the main stream of comparative anatomy, embryology, and physiology. Succeeding Sir George Humphry, Macalister had assigned to him the task of reorganising the work of the department of anatomy and of remodelling the teaching of his subject. How far he succeeded in adapting modern scientific teaching and methods to the requirements of the university is now a matter of history; for though it is sometimes maintained that his teaching was not sufficiently "surgical" to meet the requirements of the student of medicine, he built up a department that, ample enough at the time it was planned, is already inadequate to the demands made upon its resources and accommodation. It may be that if the passing of professional examinations outside the university by his pupils be made the stand of his success it was not so complete as was that of some, but if the thorough grounding of men in the principles of anatomy be taken as the test, his was the more solid and lasting education. Macalister's exceptional powers and abilities could never have found sufficient outlet in any single branch of anatomical investigation and teaching; archæology, craniology, and comparative anatomy all claimed a share of his energies, his attention to detail and marvellous thoroughness ensuring the success of his researches in all these fields, whilst the same attention to detail, the wealth of illustration he always had at command, his directness and independence of thought, combined with his devotion to the interests of his pupils, rendered his teaching not instructive merely but intensely stimulating and highly suggestive. Only those who know how willingly and lavishly he gave of his time and strength to the advancement of his subject and in the training of those working under him on broad scientific lines can have any idea of the success of his teaching, and how sorely colleagues and students, young and old, will miss the quiet persuasive manner, calm, well-balanced judgment, wide, almost encyclopædic, but profound, knowledge, and dry humour that characterised his dealings with them. His deep religious feeling and acute moral sense account for the keen interest he took in missionary work and the call to which he responded so joyously to visit the Far East, there to advise, help, and encourage those labouring in the China mission-field. One of the most highly equipped of our intellectuals he was modesty and humility personified in his respect for the opinions of others and in his attitude

towards religion, which with him was no superficial thing, but was woven into the very web of his being, animating, guiding, and controlling his whole scheme of life.

One of his old demonstrators (E. R. T. C.) writes: "Macalister was an outstanding example of a man officially associated with the exposition of one subject (human anatomy), but capable, in virtue both of his intellectual powers and actual knowledge, of assuming an equally eminent position to any of several other spheres of learning (zoology, philosophy, archæology). From all these provinces of thought Macalister drew deeply wherewith to enrich, to exemplify, and to integrate his teaching of human anatomy. His draughtsmanship was inimitable, and his execrancy as a dissector that of a master craftsman, most excellent to witness. Many old Cambridge students will regretfully miss the kindly reminiscent welcome which was theirs when, on rare visits, they looked in at 'the Rooms.'"

Professor Macalister married a daughter of James Stewart, of Perth, who predeceased him. He leaves two daughters, one of whom is the wife of Sir Donald MacAlister, and a son, Dr. R. A. S. Macalister, who is professor of Celtic archæology in Dublin. G. S. W.

ARCHIBALD HENRY HOGARTH, M.A., M.D. OXON., D.P.H.,

MEDICAL OFFICER OF HEALTH FOR BUCKINGHAMSHIRE.

THE death of Dr. A. H. Hogarth at Quainton on Sept. 5th, in his 42nd year, leaves a gap in the Public Health Service which it will be difficult to fill.

Archibald Henry Hogarth was educated at Westminster School and Christ Church, Oxford, where he graduated in 1901. Going on to St. Bartholomew's Hospital, he obtained the Conjoint qualification in 1903, and the M.B., B.Ch. Oxon. in the following year. He then acted for some time as assistant medical officer to the Port of London, where the housing problems could hardly fail to arrest the attention of a man of his bent, and his first considerable contributions to social medicine were in the form of comprehensive reports to the Mansion House Council on Health and Housing, to which for some time he acted as secretary. Leaving the Port and its sanitary problems to join the educational staff of the London County Council, Hogarth met the second great pre-occupation of his busy life, and set to work to establish legislation on school hygiene, his pioneer book on "Medical Inspection of Schools" (1909), which had a wide circulation, doing much to form public opinion. He then became the first medical officer of health for the county of Buckingham, where he had special care for all health matters throughout the countryside, particularly in attention to dental care for children, to infancy and maternity nursing, and later to schemes for venereal disease control.

Whilst an Oxford undergraduate Hogarth served through the Boer War with his regiment, the Queen's Own Oxfordshire Hussars, and gained the D.C.M. On the outbreak of the recent war he rejoined his regiment and went to France as regimental surgeon, and after the armistice he was again sent out, this time by the Air Ministry, on a special mission to the Eastern Mediterranean, where he worked among the influenza-stricken camps in the Levant. On his return voyage an attack of Vincent's angina lowered a constitution at no time robust, and he never regained his strength.

Hogarth was a tremendous worker and inspired with something of his own zeal those who worked with him. No one who saw the organisation of public health work in Buckinghamshire could have guessed that its organiser was living in London and riding most of his old hobbies there. Whatever he was at, he collected his information and examined questions with thorough and scientific method; he had a great contempt for all shams or pretence, and, drawing his own conclusions, went forward in a strenuous and impetuous way. He thus accomplished much and always, whether in peace or war, fought the good fight. His writings resembled his actions, and from the time when he edited his hospital journal to his latest works on administrative health problems, the same eager note was characteristic of them and a freshness which his official position did nothing to spoil.

Of Hogarth's attitude to public health administration something should be said, for he breathed a spirit in which generous rivalry flourished while controversy faded. A whole-time officer himself, he fully recognised the claims of part-time service. He saw that reconstruction of medical work



in rural areas must be to a large extent organised on a part-time basis. The likely solution of efficient rural hygiene was not to him the parcelling out of the country into areas conveniently worked by whole-time officers on Whitehall lines, but rather a happy combination of part-time medical service under local sanitary committees, with administrative control by whole-time county council officials. In a memorandum which he drew up for the Labour Party's Advisory Committee on Public Health, he proposed the delegation by county and county borough councils of their powers and duties to six statutory committees, dealing respectively with asylums and mental deficiency; sanitation and housing; maternity and child welfare; industry, social welfare, and pensions; sanatoriums and hospitals; insurance and domiciliary treatment; each with the duty laid upon it of appointing an independent and responsible whole-time medical officer. It is lamentable that death should have prevented him seeing the further working-out of this attractive scheme in his own county, where already the Public Health and Insurance Committees were acting in complete unison.

Dr. Hogarth married Margaret MacDonald, M.B. Aberd., formerly London County Council medical inspector of schools, and leaves one son.

FREDERICK WALTER LOWNDES, M.R.C.S. ENG., L.S.A.,  
CONSULTING SURGEON, LIVERPOOL LOCK HOSPITAL.

WE regret to announce the death of Mr. Frederick Walter Lowndes at the advanced age of 81. Born in Liverpool, where his family had for many years held a prominent position, Lowndes spent his whole life in the city of his birth, working hard there as doctor, philanthropist, and official. He did not intend in the first instance to adopt a medical career, but at the age of 23 he gave up a clerkship in a commercial house and went to Edinburgh to study what he rightly felt to be his vocation. In 1865, having obtained his qualifications, he returned to his native city to practise, and during the greater part of his early career he was frankly a poor man's doctor. The experience which he thus gained, as well as the insight which he obtained of the exact way in which the poor live, made him a zealous worker for all medical charities, and especially was he one of the earliest champions of the Hospital Sunday Fund. In this connexion he became the close ally of Dr. James Wakley, at that time Editor of THE LANCET and one of the founders of the Fund, and the result of their meeting was that Lowndes became for a long period of years a member of the editorial staff of this paper. In our columns and in those of the *Liverpool Courier* he wrote many forcible articles on the position of the voluntary hospitals, and the need for concerted effort among the public in support of these charities unless their voluntary character was to be exchanged for the position of the rate-aided institutions.

Other questions of a medico-public nature in which he was particularly interested were burial reform and the medical conduct of inquests. A pamphlet which he wrote setting out the reasons why the office of coroner should be held by a member of the medical profession ran through several editions, and is an admirable piece of pleading. But Lowndes was not a bigot in his views. He held that the appointment of coroner rightly belonged to his profession because the medical element in the evidence, so frequently the most important one, was very hard for a layman to explain to a lay jury; but he always granted that the lawyer's method of procedure might smooth the course of justice. And he had considerable legal knowledge. He was for many years medical officer to the Liverpool Constabulary, gave evidence in various important trials, and had an intimate acquaintance with criminology. He was a walking encyclopædia of information concerning famous cases.

DR. G. A. BATCHELOR, OF PRETORIA.—Dr. George Arthur Batchelor, Government district surgeon, of Rayton, Transvaal, who recently died at Pretoria Hospital, was born in India 64 years ago. He studied medicine at Aberdeen and the London Hospital, taking the M.R.C.S. in 1877, the M.B., C.M. Aberd. in 1879, and M.D. in 1895. He also took a D.P.H. and was awarded the M.D. Cape University. Before settling in the Transvaal he practised for a time at Cradock, Burgersdorp, Alwal North, and Sea Point, in Cape Colony. He leaves a son of the same name in practice at Dogies, Transvaal.

## Correspondence.

"Audi alteram partem."

### THE UNIFICATION OF THE ARMY MEDICAL SERVICE AND ITS RELATION TO "TEAM PRACTICE" IN CIVIL LIFE.

To the Editor of THE LANCET.

SIR,—When I entered the A.M.S. some 53 years ago it represented individual and personal practice in a very definite way, and "team practice," as the coöperation of medical men is now called, was practically unknown. The unification of the A.M.S., which I helped to achieve, is a definite model to-day of "team practice," but no doubt much remains to be done to tighten the bonds of the unification idea. Thirty years of stress and strain will pave the way to better conditions, and in 1949 the civil medical profession will have taken definite form as a "team" organisation. To-day we have made the physician a tradesman selling cures; in 1949 he will be a scientific official guarding life. Army medical unification was not achieved even in its present incomplete condition without personal discomfort and at times actual suffering, hence the need of care and anxious study and investigation of proposed schemes of medical reform.

The primary function of the State in helping on medical unity will be the provision of increased local educational facilities, brought to the very thresholds of the medical men of the new era. Large sums of money will be needed to achieve this end, and not a farthing of the money will go to the individual medical man as a bribe or *personal* benefit. A central library, a central laboratory, facilities to spread broadcast the diplomas in public health, and leave of absence for rest and leisure guaranteed by the State, together with sick leave with State pay in case of illness—by these tempting boons we may draw into "union" the highly individualised medical profession of to-day. Grants in aid for retiring pensions will gradually creep in, and age retirement with pension may follow on our Army lines. The central municipal dispensary, selling medicine at cost price, will no doubt be a feature in the new organisation of public health in its wisest sense, and that boon will relieve many anxieties that exist to-day in private practice. The presence of State-paid "district consultants," who will be available for consultative work at quite moderate fees to patients, will gradually appear, and any interferences with the routine of private practice by these consultants will be forbidden by definite rules.

Just as we grant forage and horse allowance to medical officers in large districts, so grants in aid for the transport of the medical man will be quite usual. The life of the medical student and his facilities for complete study will be aided in a degree to-day undreamed of, and this alone would be a real boon. The wretchedly defective literary and scientific examination that admits badly educated men into colleges as medical students will be sure to be dealt with, and a General Medical Council full of progressive ideas will replace the antiquated machine which now blocks the pathway of progress.

The reforms to be made will creep on with such almost imperceptible steps that it will appear as if nothing was doing, but at the end of every decade progress will be completely visible, and in a generation victory will be evident. During the whole of these years of stress and strain that are to come men will appear who "want all at once." Such men appear in all movements of progress, but they have to be borne with, and eventually they find their place in the column of march. What makes me sad is that splendid men with whom I worked, the latchet of whose shoes I was unworthy to let loose, and who hoped and dreamed of progress in all its splendour, perished by the roadside and never even saw the Promised Land. When I think of these splendid men, who never lived into the sunshine, then, indeed, I feel regret. Civil reformers will have to endure the same sorrows and will have to hope for the same joys of success.

I say now, as I said to others then, "Fight the good fight; victory is sure to come." The man, the woman, and the child, constituting as they do "the Trinity of Humanity," will surely come into their own as civilisation advances. The pity of it all is that Edmund Parkes, with his beautiful face,



charming ways, and splendid science, is no longer with us; that Florence Nightingale, a veritable tower of strength in health matters, and hidden and concealed by her nurse's dress, has "gone West"; that Sir William Muir, the lion of unification, is at rest; that William Johnston, the brilliant organiser who looked down into the valley of unification but never sat by the waters and rested—all these have passed away. We must never forget the names of these brilliant workers in the new work that is now coming on.

I am, Sir, yours faithfully,

GEORGE EVATT, M.D.,  
Major-General (retired), A.M.S.

Junior United Service Club, London, Sept. 8th, 1919.

## CRYPTOPODIA—DIFFUSE FIBROMATA OF THE FEET.

To the Editor of THE LANCET.

SIR,—On Oct. 2nd, 1906, I made an exploratory incision into the dorsum of a child's foot, which was the seat of a condition probably similar to that of Dr. E. C. Bousfield's patient, described in THE LANCET of August 23rd last. The following are the brief notes of the case, written at the time:—

R. H., aged 15 months, had a diffuse symmetrical fibroma on the whole of the dorsum of each foot. The condition was congenital, but the swellings had grown and formed large pads which overhung the toes. Another child of the same parents, and now aged 3 years, has one foot similarly affected, and these two are the only children of the family. An incision was made into the dorsum of one foot, and showed dense smooth fibrous tissue, from which oozed much clear fluid. The fibrous layer of the skin was continuous with the tumour (i.e., there was no subcutaneous fat). An X ray examination showed the bones of the feet to be normal, and a microscopic examination of a piece of the tissue removed showed it to be composed of fibrous tissue containing blood-vessels with thickened walls.

I know nothing of the subsequent history of the children, and I have seen no other case like it.

I am, Sir, yours faithfully,

WM. ROBINSON, M.S., F.R.C.S. Eng.,  
Sept. 6th, 1919. Senior Surgeon, Royal Infirmary, Sunderland.

## THE TERRITORIAL FORCE MEDICAL OFFICERS' ASSOCIATION.

To the Editor of THE LANCET.

SIR,—As it is not possible to send notices to individual officers, I shall be obliged if you will allow me to announce in THE LANCET that the dinner of the Territorial Force Medical Officers' Association will take place on Thursday, Oct. 30th, at 7.30 P.M., at the Holborn Restaurant.

The charge for tickets is 12s. 6d., not including wine. All Territorial medical officers can attend and bring guests. Application for tickets should be made to me at this address, the office of the association.—I am, Sir, yours faithfully,

D. L. HAMILTON,  
Lieutenant-Colonel, Honorary Secretary.  
37, Russell-square, London, W.C.1, Sept. 8th, 1919.

## ANTIVIVISECTION SHOPS.

To the Editor of THE LANCET.

SIR,—One of the antivivisection societies lately opened a shop, for three weeks, in Oxford, and will probably open it elsewhere, moving it from place to place. There were many of these shops in the years before the war, and I shall be grateful if anybody in whose neighbourhood the shop appears will immediately let me know of it, so that arrangements may be made for the distribution of leaflets to counteract its influences.

I am, Sir, yours faithfully,

STEPHEN PAGET,  
Hon. Sec., Research Defence Society.  
11, Chandos-street, Cavendish-square, London, W.1,  
Sept. 8th, 1919.

## INDUSTRIAL WELFARE WORK.

To the Editor of THE LANCET.

SIR,—During the last three years, inspired by the efforts of far-seeing firms, the welfare movement has made very rapid strides in this country, and the wide recognition now being given to it by employers, workers, and public men

leaves little doubt but that within a few years it will occupy a very prominent position in the industrial world. So far no real attempt has been made either by State or voluntary agencies to collate information regarding various phases of the work; in fact, the names of firms interested in the movement are not even recorded in any place. The Industrial Welfare Society is anxious, for the benefit of industry generally, to collect from the pioneers of this movement information regarding their doings in connexion with welfare work. I shall therefore be grateful if those firms who are willing to assist in this way will apply for particulars of the information desired to the Industrial Welfare Society, 33, Tothill-street, Westminster, S.W.1.

I am, Sir, yours faithfully,

ROBERT R. HYDE,  
Director.  
Sept. 9th, 1919.

## KERATODERMIA BLENNORRHAGICA.

To the Editor of THE LANCET.

SIR,—The case recorded by Dr. S. C. Dyke in THE LANCET of August 23rd presents points of great interest. Keratoderma blennorrhagica is generally considered a somewhat rare disease, having been first described in 1893 by Vidal and first in England by Sequeira<sup>1</sup> in 1910. Possibly cases would be more often observed, as McDonagh<sup>2</sup> suggests, if the soles of the feet were examined in all cases of gonorrhoea—for he says that three cases a year are seen at the London Lock Hospital. Histologically, the growth resembles gonorrhoeal warts. It is thought that the gonococcus possibly invades the skin, and in support of this view the case recorded by Dr. W. E. M. Armstrong in THE LANCET of May 17th, 1913, is of interest. Here wart-like growths appeared on the face in a man who had before previously an acute conjunctivitis secondary to gonorrhoea. The secretion had overflowed on to his cheeks, and he had also rubbed them to improve his colour, as he thought he looked pale. This condition, as in Dr. Dyke's case, was rapidly cured by vaccines. Further, Armstrong determined the opsonic index of the blood for the gonococcus before and after inducing congestion in the face, and found a swing indicating an active gonococcal infection. Keratoderma plantæ is known to be associated with niritis in cases of arsenic poisoning; gonorrhoea may cause peripheral neuritis, the sciatic nerve being most often affected.

These cases are probably due to the gonotoxin and not to direct invasion by the gonococcus. It would be interesting to know whether there were signs of peripheral neuritis in Dr. Dyke's case, for if so possibly keratoderma blennorrhagica may fall into line with arsenical keratoderma, and both be secondary to a toxic neuritis affecting especially the trophic nerves of the skin.

I am, Sir, yours faithfully,

Avonmore-road, W., Sept. 1st, 1919. G. E. BEAUMONT.

<sup>1</sup> Sequeira: Brit. Journ. of Dermatology, 1910, p. 139.

<sup>2</sup> McDonagh: Biol. and Treatment of Venereal Diseases, 1915.

VITAL STATISTICS OF SCOTLAND.—A remarkably high marriage-rate, together with low birth- and death-rates form the most notable features of the statistics published for Scotland for the second quarter of the year 1919. The marriage-rate, 9.5, is the highest quarterly rate on record, while the birth- and death-rates are the lowest recorded for the corresponding quarter of any year.

NATIONAL ASSOCIATION FOR THE PREVENTION OF INFANT MORTALITY.—A course of elementary lectures on infant care, for teachers, infant welfare workers, and others, will be held at 1, Wimpole-street, London, W., on Mondays, 5.30 to 6.30 P.M., from Sept. 29th to Dec. 15th inclusive, in preparation for the elementary certificate of the association. The examination is open to all students who attend eight or more out of the 12 lectures. The fee for the whole course is 5s.—A course of elementary lectures on infant care, especially intended for creche nurses and probationers, will be held at the Essex Hall, Essex-street, London, W.C., on Thursdays, 7.30 to 8.30 P.M., from Sept. 25th to Dec. 11th, inclusive, in preparation for the Creche Nurses' Certificate, now instituted by the Association and the National Society of Day Nurseries. The fee for this course is 10s.—Tickets for either course can be obtained from Miss Halford, Secretary, National Association for the Prevention of Infant Mortality, 4, Tavistock-square, London, W.C.1.



## The Services.

### R.A.M.C. TEMPORARY OFFICERS.

THE War Office is prepared to accept the services of medical practitioners, including those who have been demobilised, who are desirous of undertaking duty with the Army.

Candidates who have served before will be commissioned in their previous rank. Lieutenants who have completed one year's satisfactory service as such will be commissioned as Captains. Those who have not served previously will be commissioned as Lieutenants.

The period of engagement will be for six months, and the contract will not be terminable by either party prior to the expiration of that period, except for misconduct, inefficiency, or medical unfitness.

Pay to be at the rate of—Lieutenants £600 per annum, Captains £650 per annum, and in addition the following will be issuable:—

(1) Pay at the rate of £50 per annum when serving elsewhere than in Europe.

(2) Rations or an allowance in lieu thereof (present rate 2s. 1d. per diem).

(3) Specialist's, or charge pay, when holding a position for which the issue of such is authorised.

(4) Officers holding higher acting or substantive rank than that of Captain will, if desirous, be granted the pay and allowances of their rank.

Kit and outfit allowance will be issued to candidates who have not previously received such allowance.

All candidates must be fit for general service or garrison duty abroad, and will require to undergo a medical examination prior to being accepted.

Applications should be addressed to the Secretary, War Office, Cornwall House, Stamford-street, London, S.E. 1.

### ROYAL NAVAL MEDICAL SERVICE.

Surgeon Lieutenants (temp.): A. Ritchie to *Valiant*; A. McCallum to *Malaya*; H. A. L. Guthrie to *Prince George*; and T. H. R. McKiernan to *Pekin*. Temporary Surgeon Lieutenants transferred to permanent list of Surgeon Lieutenants: W. P. Vicary, H. Hurst, H. Morrison. Surg. Lieut. Omdr. R. Willan to *Renown*. Surg. Lieut. Omdr. R. A. Rankins, O.B.E., has been allowed to withdraw from the R.N. Medical Service with a gratuity.

### ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lieut. (temp.) W. C. Murray to *Victory*.

### ARMY MEDICAL SERVICE.

Col. A. W. Bewley, C.M.G., retires on retired pay. Temp. Col. W. A. Turner, C.B., M.D. (Major, R.A.M.C., T.F.), relinquishes his temporary commission on re-posting.

### ROYAL ARMY MEDICAL CORPS.

Major C. M. Drew, D.S.O., to be acting Lieutenant-Colonel whilst commanding a Medical Unit.

The undermentioned to be acting Majors: Capts. E. Catford, J. Biggam, C. F. Burton; Temp. Capts. C. C. Harrison, C. C. Chance, A. Brown, O.B.E., R. Brown, W. H. D. Smith, E. R. C. Cooke, J. S. Lloyd, S. J. W. Donald, R. Thomson, R. H. Alexander, W. Montgomery, W. L. Hay, H. L. Mann, W. A. Todd, G. W. Rea.

To be Captains: Capts. W. Fotheringham, M.C. (from Special Reserve), W. H. Elliott, M.B.E. (from Special Reserve); Temp. Capt. (acting Major) W. S. Martin, M.C.; Temp. Capts. H. Mitchell, P. Carney, M.C., R. H. Alexander, M.C.

The undermentioned Lieutenants (temporary Captains) to be Captains: C. H. C. Byrne, G. C. Robinson, C. A. Slaughter, W. L. A. Harrison, T. P. Buist, P. H. Wells.

Late temporary Captains to be temporary Captains: J. G. Garson, B. Duke, J. Cameron, W. Gartou, C. E. Dolling, P. S. MacLaren, J. Cunningham, R. Stephens, E. S. Hall, J. A. Marsden.

To be temporary Captains: A. E. Wood and M. F. D. Graham.

H. J. Brink to be temporary Lieutenant.

Capt. E. N. P. Martland (from Special Reserve) to be temporary Captain.

The undermentioned temporary Lieutenants to be temporary Captains: (Acting Major) T. E. Coulson, T. M. Richardson, H. J. Cundell, L. Milburn, R. Lawrence, A. Leigh, W. K. Anderson.

G. A. Fothergill, late temporary Lieutenant, to be temporary Lieutenant.

The undermentioned temporary Captains, from the Home Hospitals Reserve, to be temporary Captains: A. G. Price, G. A. Skinner.

Lieut.-Col. G. A. T. Bray, D.S.O., relinquishes the temporary rank of Colonel on ceasing to be specially employed.

Major and Brevet Lieut.-Col. A. McMuun, O.B.E., relinquishes the temporary rank of Lieutenant-Colonel on re-posting.

Captain A. J. Hickey, M.C., relinquishes the acting rank of Lieutenant-Colonel on re-posting.

Capt. F. R. H. Mollan, M.C., relinquishes the acting rank of Major on re-posting.

Capt. K. P. Mackenzie relinquishes the acting rank of Major on ceasing to be specially employed.

The undermentioned relinquish the acting rank of Major:—Capts. C. Kelly, P. A. Ople.

Temporary Captains relinquishing the acting rank of Major: C. S. Dodson, H. M. Grey (on ceasing to be specially employed), A. H. Coleman, O.B.E., A. C. Macay, D. Cowin, L. T. Giles, C. O. Cbance, R. S. Barker, E. B. Smith, J. N. Wheeler, E. R. C. Cooke, R. Brown, F. W. Matheson.

Lieut.-Col. K. B. Barnett retires on retired pay.

Capt. C. Robbretires, receiving a gratuity.

Major D. F. Mackenzie, D.S.O., relinquishes the acting rank of Lieutenant-Colonel on ceasing to command a Medical Unit.

Temp. Hon. Lieut.-Col. Sir John Bland-Sutton, Kt. (Major, R.A.M.C., T.F.), relinquishes his temporary honorary commission on re-posting.

Officers relinquishing their commissions: Temp. Lieut.-Col. H. J. Shirley (retains the rank of Lieutenant-Colonel); Temp. Majors T. W. Buckley, D. B. King, and W. E. N. Dunn (retain the rank of Major); Temp. Hon. Majors T. G. M. Hine and A. G. Paterson (retain the honorary rank of Major); Temp. Major and Bt. Lieut.-Col. A. W. Robertson (retains the Bt. rank of Lieutenant-Colonel); Temp. Capt. J. O. Egan (granted the rank of Lieutenant-Colonel); Temporary Captains granted the rank of Major: L. G. McCune, C. A. Weller, W. A. Wheelton, J. A. W. Watts, C. G. McAdam, R. V. Dolbey, H. L. Neil, B. W. Armstrong, Temp. Capt. (acting Major) A. O. Hancock (relinquishes the pay and allowances of his acting rank), D. K. Henderson, R. M. Fenn; Temporary Captains retaining the rank of Captain: W. M. McDonald, W. B. Knobel, W. Thomas, H. O. H. May, S. E. Denyer, C. W. Cunningham, D. H. Derry, J. E. S. Sheppard-Jones, J. Gilchrist, A. Buchanan, M.C., J. A. M. Bilgh, H. M. Jackson, J. A. Clarke, N. V. Mitton, J. W. McDonald (on account of ill-health contracted on active service), B. J. Mullins, M.C. (on account of ill-health caused by wounds), V. M. Fisher, E. Marjoribank, Marcar, J. E. Rutherford, M.C. (on account of ill-health contracted on active service), L. A. Moran, C. N. Vaisey, T. H. Holroyd, G. E. Beaumont, A. R. Fraser, H. O. Lucey, W. H. D. Smith, J. M. Rishworth, T. M. Newton, D. Cowin, G. R. Wilson, V. C. Martyn, G. D. McLean, R. F. Young, W. Dawson, D.S.O., C. J. Armstrong-Dash, R. O. Monnington, B. R. G. Russell (on account of ill-health), W. E. M. Armstrong, H. P. Gibb, W. H. A. Elliott, F. P. Montgomery, H. D. Wyatt, J. Young, E. O. Hughes, A. M. Bell, P. Savill, J. Leach, D. H. Huton, M. J. T. Wallis, A. R. M. Brennan, J. G. S. Mennie, G. H. Dart, J. P. Lowson, F. Heatherley, A. McEwan, L. F. West, J. Hepburn, R. A. H. Fulton, A. G. Ritchie, W. W. Allison, J. G. Slade (on account of ill-health), T. M. Johnstone (on ceasing to serve with the South African Native Labour Corps), W. Parsons, H. Goodale, W. G. Ridgway, R. C. Phelps, T. S. Smith, D. Renton, G. L. Thornton, A. Verling, H. Kirkland-Whittaker, M. L. Loveless, C. P. Charles, H. E. H. Tracey, J. R. T. Jones, G. W. Anderson, A. J. Partridge, H. B. Wilkinson, H. L. Shelton, C. M. Smith, L. M. Smith, J. S. Buchanan, D. S. Jones, J. E. P. Sbera, J. J. Hughes, J. C. Jones, W. D. A. King, F. H. Nixey, W. Tudhope (on account of ill-health contracted on active service), A. B. S. Todd, F. R. Wilson, C. M. Stubbs, E. G. von B. Bergh, J. P. Jones, L. R. H. P. Marshall, O.B.E., A. F. Potter, A. H. Davidson, H. North, D. Clark, G. C. Gaynor, H. F. Bodvel-Roberts, H. M. Gray, J. B. Wilkie, R. J. Lalle, L. J. Lock, J. A. Glover, M. R. Mackey, J. R. Burnett, J. Glaister, D. Y. Buchanan, W. H. Hart (on account of ill-health caused by wounds), H. Stipe, L. B. Cane; Temp. Lieut. G. E. Froggatt (granted the rank of Major).

Temp. Lieut. J. B. McGranahan relinquishes his commission and retains the rank of Lieutenant.

Lieut.-Col. L. A. Mitchell is placed temporarily on the half-pay list on account of ill-health.

### Canadian Army Medical Corps.

Temp. Major (acting Lieut.-Col.) F. E. Watts to be temporary Lieutenant-Colonel.

The undermentioned temporary Captains (acting Majors) relinquish the acting rank of Major: C. W. Johnston, D. A. Morrison, C. Kerr, F. A. Brokenshire, A. N. Aitken.

The undermentioned retire in the British Isles: Temp. Capts. W. A. McClelland, A. N. Aitken, A. R. Campbell, Hon. Capt. J. C. McClure.

### SPECIAL RESERVE OF OFFICERS.

Capt. W. McN. Walker relinquishes his commission on account of ill-health contracted on active service, and is granted the rank of Major.

The undermentioned Captains relinquish their commissions on account of ill-health, and retain the rank of Captain: R. G. Waddy, H. Chadwick, G. T. Roche.

Capt. M. F. Murphy relinquishes his commission.

The undermentioned Captains relinquish the acting rank of Major: R. P. A. Kirkland, W. B. Cathcart, D. G. Stoute.

Capt. (acting Major) W. McM. Chesney relinquishes the pay and allowances of his acting rank.

The undermentioned Captains to be acting Majors: R. F. Fagan, R. P. Starkie, W. McM. Chesney.

The undermentioned Lieutenants to be Captains: E. J. S. Bonnett, T. Patterson, S. A. Withers, A. M. Dugan, F. R. G. Helf, C. Simpson, D. C. Lamont, E. D. D. Dickson, G. R. Ross.

### TERRITORIAL FORCE.

Officers relinquishing their acting rank on ceasing to be specially employed:—

Major (Bt. Lieut.-Col.) (acting Col.) D. Rorle, D.S.O., relinquishes the acting rank of Colonel on vacating the appointment as Assistant Director of Medical Services.

Major (Bt. Lieut.-Col.) (acting Lieut.-Col.) J. Wilson relinquishes the acting rank of Lieutenant-Colonel.

Majors (acting Lieut.-Cols.) T. Donovan and A. R. Hinchley, D.S.O., relinquish the acting rank of Lieutenant-Colonel.

Capt. A. C. Herne, O.B.E., relinquishes his commission on ceasing to be employed, and is granted the rank of Lieutenant-Colonel.

Capt. (acting Lieut.-Col.) J. Young, D.S.O., A. G. Hendley, J. H. Thomas, D.S.O., relinquish the acting rank of Lieutenant-Colonel.

Capt. (acting Major) G. T. Willan, D.S.O., G. H. H. Manfield, C. D. Law, J. J. E. Biggs, O.B.E., L. H. Wootton, M.C., P. B. Spurgin, H. T. Jones, R. W. Aitken, W. N. P. Williams.

Capt. G. E. Martin, H. W. Browne, M.C., and A. G. Hendley to be acting Majors whilst specially employed.

2nd London General Hospital: Major (Bt. Lieut.-Col.) T. D. Aoland is seconded for duty with the Special Military Surgical Hospital, Shepherd's Bush.

3rd Northern General Hospital: Capt. F. A. Hepworth is restored to the establishment on ceasing to hold a temporary commission in the R.A.M.C.

4th Northern General Hospital: Capt. (acting Major) J. J. Rainforth relinquishes the acting rank of Major on ceasing to be specially employed, and is restored to the establishment.

1st Southern General Hospital: Lieut.-Col. F. W. Ellis is seconded for duty with the 2/1st Southern General Hospital.

2nd Southern General Hospital: Capt. (Bt. Major) E. W. H. Groves is restored to the establishment.

3rd Southern General Hospital: Capt. J. A. Gunn and Major A. T. Waterhouse are restored to the establishment.



3rd Western General Hospital: Major (Bt. Lieut.-Col.) (acting Lieut.-Col.) E. J. Maclean relinquishes the acting rank of Lieutenant-Colonel on ceasing to be specially employed. Lieut.-Col. (Hon. Surg.-Col.) D. Hepburn, C.M.G., V.D., relinquishes his commission on account of ill health and retains his rank.

2nd South Midland Mounted Brigade Field Ambulance: Capt. A. G. Hendley to be acting Lieutenant-Colonel whilst specially employed.

3rd East Anglian Field Ambulance: Lieut.-Col. H. T. Cballis to be an Assistant Director of Medical Services, and to be temporary Colonel whilst so employed.

#### TERRITORIAL FORCE RESERVE.

Lieut.-Col. (temp. Col.) H. T. Cballis, from 3rd East Anglian Field Ambulance, to be Lieutenant-Colonel on vacating appointment as Assistant Director of Medical Services.

#### ROYAL AIR FORCE.

Medical Branch.—Major G. D. Bateman, O.B.E., to be Lieutenant-Colonel.

Capt. (acting Major) A. P. Bowdler to be acting Lieutenant-Colonel whilst so employed.

Temp. Capt. A. E. Panter is granted the acting rank of Major whilst specially employed.

The undermentioned Lieutenants to be Captains: H. F. Squire, J. J. O'Mullane, E. H. L. Le Clezio, N. Rumbold, V. A. T. Spong, H. B. B. Green, S. A. Neill-Faulkner.

R. W. Ryan is granted a temporary commission as Captain.

The undermentioned are transferred to unemployable list:—Major W. G. Mitchell, Capt. P. O. Moffat, A. Leitch, Lieuts. G. H. Johnston, G. Bourne, J. G. Bird, G. H. W. Randal, Flying Officer Hughes.

The undermentioned Captains relinquish their commissions on account of ill-health, and are permitted to retain their rank: T. E. Mulvany, E. H. Hogg, C. P. Strong.

Capt. A. Gleeson (Captain, R.A.M.C.) relinquishes his commission on account of ill-health contracted on active service.

The initial of Capt. O. Gleeson (Captain, R.A.M.C.) is as now described, and not "A."

Dental Branch.—Lieut. L. G. Smith to be Captain.

T. H. Jones is granted a temporary commission as Flying Officer.

#### INDIAN MEDICAL SERVICE.

Temporary Lieutenants to be Temporary Captains: Richard Ronald Htoon Oo Tha, Vasant Dinnath Madgavakar, Kbudu Baksh Awan, Durgadas Sanyal, Mool Singh Bazaz, Roshan Lal Khara, Narayan Raghunath Shahane, Ajit Kumar Sen, Dwijendra Nath Bbaduri, H. H. Colwell, Thakurdas Parmanand Vaswani, Vatackal Thomas Ninan, Kunjuni Tbrupod, Govinda Sankaran Tampl, Gopal Gangadhar Limaye.

Major A. E. Grisewood to be acting Lieutenant-Colonel while holding command of an Indian Clearing Hospital from March 7th, 1916, to Jan. 4th, 1917.

The King has approved the grant of the temporary rank of Lieutenant in the Indian Medical Service to Rahmat Ullah Qureshi.

The King has approved the relinquishment of temporary rank in the Indian Medical Service and Indian Defence Force by Capt. Villupuram Rajaratna Nateson.

## Medical News.

WE call the attention of our readers to a letter on p. 502 from Mr. Stephen Paget, the honorary secretary of the Research Defence Society. Mr. Paget asks for early warning as to the opening of antivivisection shops, so that he may counteract, through the Research Defence Society, the mischievous misrepresentations to which these places give concrete form.

Dr. John Cahill, who died on Saturday last, was a member of the Egyptian Government Medical Commission, and during the war had been acting as assistant physician to St. George's Hospital.

Dr. Charles Cameron Slorach, of Dumbarton, was killed last week in the Mount Vernon district, near Glasgow, through the motor-car in which he was riding coming into collision with a traction engine. His wife and son, who accompanied him, were injured.

THE St. Thomas's Hospital Old Students' dinner will take place at the Connaught Rooms, Great Queen-street, W.C., on Wednesday, Oct. 1st, at 7 o'clock for 7.30. The chair will be taken by Sir George Makins, President of the Royal College of Surgeons of England.

THE LUNACY BOARD OF CONTROL: FIFTH ANNUAL REPORT.—The report shows a continued decrease in the number of notified persons under care in England and Wales. The total was, last New Year's day, 116,703, and the actual decrease from year to year: 1918-19, 9138; 1917-18, 8188; 1916-17, 3159. In the 80 asylums which continued to receive patients throughout the year the death-rate was: males 25.2 per cent., and females 16.4 per cent., being a further increase of 3.7 and 2.4 per cent. respectively on the high mortality of the previous year, and attributed in the main to influenza and tuberculosis. 6577 mental defectives were resident in certified institutions. The total expenditure for the year on the upkeep of county and borough asylums was £4,062,752, being an increase on the year of £295,717. The average weekly cost of maintenance per head was 14s. 5d., a rise of 1s. 9d. on the cost of the previous year.

ROYAL DENTAL HOSPITAL OF LONDON.—The annual dinner of the staff and past and present students of the hospital will be held at the Connaught Rooms, Great Queen-street, W.C., on Saturday, Nov. 22nd, at 7 P.M., Sir Harry Baldwin in the chair. This being the first post-war reunion, it is hoped a large number of those interested will find it convenient to be present.

FAILURE OF LONDONDERRY WATER-SUPPLY.—An Irish Correspondent writes: The authorities of such an old and important Irish city as Londonderry cannot be congratulated that, owing to their continued procrastination, the water-supply has practically failed. On Sept. 2nd bakeries were carried on with difficulty, picture-houses had to be closed, and no public and only two private houses had electric light. The citizens have been warned to use what remains of the water-supply only for cooking and washing, as it is now in their hands to prevent a famine. On Sept. 2nd the thousands of shipyard and factory workers who turned out in the morning as usual for work had to be sent home again because it was discovered that no water was coming into the tanks at the electric station from the reservoir from which the station draws its supply, with the result that the shipyard engineer had no other alternative but to cut off the supply to the industries, as there was an absence of electric power. A gallon of water per head each day would enable the engineer to provide the necessary power. Until the corporation make up their minds what is to be done in the serious crisis that has arisen, all supplies of water for industrial and business purposes are discontinued, and establishments found using water are to be prosecuted. A similar crisis arose in 1911 in Londonderry, but in the interval the population has increased by 8000, and the shipyard has to be considered. At a meeting of the corporation on Sept. 4th a deplorable situation, as regards the water-supply, was revealed by the city engineer, who said that "if they kept the water they had for domestic purposes only, they could maintain about five weeks' supply at the very outside, provided the citizens exercised the most rigid economy and used only the very minimum." He was prepared to supply the electric station with the necessary water (to begin on Sept. 8th) to enable the necessary power to be provided to carry on industry, although he would be taking considerable risks in doing so, but he could not supply water for trade purposes or for laundries, and he could only give water to factories for sanitary purposes, and even that could not be guaranteed at any particular time; and on the above recited conditions he was prepared to resume a ten days' trial of supplying water for electric power. No wonder the daily press regard such a condition of affairs as a grave crisis for an old city whose population at the last census was 40,779. In Belfast, as reported on Sept. 4th to a meeting of the Water Commissioners, the water in store on August 28th was 1103 million gallons, which is 501 million gallons less than the quantity in store on the corresponding date of 1918. The city has been put on a diminished supply, none flowing into the cisterns at night, a practice of little use, as people simply fill their baths and other receptacles during the day. Unless rain comes in large quantity a serious crisis may also arise in Belfast from the deficient water-supply.

## Appointments.

CHISHOLM, JOHN, M.B., Ch.B. Edin., has been appointed Registrar to the Jessop Hospital for Women, Sheffield.

Sussex Throat and Ear Hospital: HUTCHISON, A. J., Honorary Consulting Surgeon; RIGBY, MORRIS, and CROW, DOUGLAS A., Assistant Honorary Surgeons.

## Vacancies.

For further information refer to the advertisement columns.

Alexandra Hospital for Crippled Children, Queen-square, Bloomsbury, W.C.—Res. Med. Supt. at Country Hospital near Reading. £400.

Aylesbury, Royal Buckinghamshire Hospital.—H.S.

Barbados General Hospital.—Sen. Res. S. £300.

Birkenhead Borough Hospital.—Jun. H.S. £170.

Birkenhead Union Infirmary.—Res. Asst. M.O. £300.

Brentwood Mental Hospital, Essex.—Loc. Tenens Asst. M.O. £77s. p.w.

Bridgend Urban District Council, Penybont Rural District Council.—Joint M.O.H. £600.

Brighton, Royal Sussex County Hospital.—Asst. H.S. £80.

Cancer Hospital (Free), Fulham-road 4, S.W.—Two H.S.'s. £150.

Central London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.—H.S. £50.

Charlham, near Canterbury, Kent County Mental Hospital.—Jun. Third Asst. M.O. £300.

Cheltenham Eye, Ear, and Throat Free Hospital.—Asst. S. £400.

Chester, Cheshire County Council.—Dist. Tuberc. O. £400.

Chester Royal Infirmary.—H.P. £150.



Derbyshire Royal Infirmary.—H.S. and H.P. £200 each.  
 Durban, Government Hospital.—Asst. M.O. £400.  
 East Riding Education Authority.—Female Asst. Sch. M.O. £350.  
 Glamorgan County Asylum, Bridgend.—Fourth Asst. M.O. £400.  
 Hackney and Stoke Newington, Metropolitan Boroughs of.—Tuberc. O. £500.

Hyde Borough.—M.O.H. and Female Asst. M.O. £700 and £400 respectively.

Lambeth Metropolitan Borough.—Tuberc. O. £600.

Leeds General Infirmary.—Res. M.O. £150. Res. Obstet. O. £50.  
 Also Res. M.O. at Ida and Robert Arthington Hospitals. £60.  
 Two H.P.'s and Two H.S.'s.

Leeds Indoor Institutions, Beckett-street.—Sec. Asst. M.O. £300.

Leeds Public Dispensary, North-street.—Res. M.O. £200.

Lincoln County Hospital.—Jun. H.S. £150.

Liverpool City Infectious Diseases Hospital.—Two Asst. Res. M.O.'s. £200.

Liverpool Infirmary for Children.—Two Res. H. P. and Res. H. S. £90.  
 Liverpool, Royal Southern Hospital.—Two H.P.'s and Three H.S.'s. £100.

Liverpool Stanley Hospital.—H. P. and H. S. £150.

Maidstone, Kent Education Committee.—School Med. Inspector. £300.

Maidstone, West Kent General Hospital.—Jun. H.S. £150.

Manchester, Ancoats Hospital.—Res. Surg. O. £200. Also H.S. £100.

Manchester Northern Hospital for Women and Children, Park-place, Cheetham Hill-road.—H.S. £150.

Manchester Royal Infirmary.—Path. and Med. Registrars. £350 and £75 respectively.

Manchester, St. Mary's Hospitals for Women and Children.—Two H.S.'s. £100.

Melbourne University.—Lecturer in Pathology. £600.

Mothers' Hospital, 155-163, Lower Clapton-road, E.—Res. M.O.

Newport Borough Asylum, Caerleon, Mon.—Asst. M.O. £400.

New South Wales, Department of Public Instruction.—Prinpl. M.O. £900.

Norwich, Jenny Lind Hospital for Children.—Female Res. M.O. £150.

Nottingham General Hospital.—Two H.P.'s. Also Two H.S.'s. £150.

Queen Mary's Hospital for the East End, Stratford, E.—H.S. £150.

Rotherham Hospital.—Jun. H.S. £150.

Royal London Ophthalmic Hospital, City-road, E.C.—Curator and Librarian. £200.

Royal Westminster Ophthalmic Hospital, King William-street, West Strand, W.C.—Asst. H.S. £40.

St. Mary's Hospital for Women and Children, Plaistow, E.—Res. M.O. £200. Also Hon. Gynaecologist.

St. Mary's Hospital, Paddington, W.—Asst. Surg. for Diseases of the Ear, Nose, and Throat. Also Hon. Anesth.

St. Peter's Hospital for Stone, &c., Henrietta-street, Covent-garden, W.C.—Jun. H.S. £75.

Salford Royal Hospital.—Hon. Dent. S. Also Res. Surg. O., H.P., H.S., and Jun. H.S. £250, £200, £150, and £125 respectively.

Salisbury General Infirmary.—H.S. and Asst. H.S. £200 and £150 respectively.

Scarborough Hospital and Dispensary.—Two H.S.'s. £150.

Seamen's Hospital, Greenwich.—House appointments.

Serbian Relief Fund, 6, Cromwell-road, S.W.—Female Doctor for Hospital or Out-station work in Serbia.

Sheffield Royal Infirmary.—H.S. for Ear, Nose, and Throat. £150.

Southampton, Free Eye Hospital.—H.S. £150 to £200.

Swansea General and Eye Hospital.—H.S. £250.

Triuro, Royal Cornwall Infirmary.—H.S. £170.

Wakefield, West Riding Asylum.—Asst. M.O. £400.

Wolverhampton and Staffordshire General Hospital.—H.S. £200.

Wrexham, Borough and Rural District of.—Temp. M.O. £550.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Inspectors under the Factory and Workshop Acts at Belper (Derby), Birmingham (East) and Erdington (Warwick), Hailsham (Sussex), Hanley (Stafford), and Ulceby (Lincoln).

## Births, Marriages, and Deaths.

### BIRTHS.

DICKINSON.—On Sept. 6th, at Newcastle-upon-Tyne, the wife of W. H. Dickinson, M.B., D.P.H., of a son.

FULLER.—On Sept. 4th, at Priory Cottage, Freshwater, I.W., the wife of Capt. R. Annesley Fuller, M.C., R.A.M.C., of a son.

MACALPINE.—On Sept. 10th, at Cranbrook, Prestwich, Manchester, the wife of Jas. B. Macalpine, F.R.C.S., of a daughter.

### MARRIAGES.

DUNN—JACKSON.—On Sept. 3rd, at St. James' Church, Edgbaston, Major Naughton Dunn, R.A.M.C., to Ethel Violet, daughter of Mr. and Mrs. George Jackson, of Glewstone Court, Herefordshire.

PHILLIPS—MORGAN.—On Sept. 9th, in London, Hugh Richard Phillips, M.D., of 2, Cavendish Court, Cavendish-square, to Phyllis Morgan.

### DEATHS.

CAHILL.—On Sept. 6th, at Pinkneys Lodge, Pinkneys Green, the residence of his brother-in-law, Mr. Stanley Keith, John Cahill, M.D., F.R.C.S. Eng., of Seville-street, Lowndes-square, S.W., aged 62.

PICK.—On Sept. 6th, at The Nook, Great Bookham, Surrey, Thomas Pickering Pick, F.R.C.S., consulting surgeon to St. George's Hospital, London.

N.B.—A fee of 6s. 4s. charged for the insertion of Notices of Births, Marriages, and Deaths.

LAST week an announcement appeared in this column of the marriage of Captain W. E. Elliot, M.C., R.A.M.C., Member of Parliament for Lanark, and Miss Helen Jamfion. The tragic sequel has been widely noted in the daily press. Mrs. Elliot fell some hundreds of feet while mountaineering in Skye, dragging her husband down with her. She was killed on the spot and Captain Elliot somewhat severely injured.

## Medical Diary for the ensuing Week.

### LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

LONDON HOSPITAL MEDICAL COLLEGE, in the Clinical Theatre of the Hospital.

A Special Course of Instruction in the Surgical Dyspepsias will be given by Mr. A. J. Walton and others:—

WEDNESDAY, Sept. 17th.—4.30 P.M., Lecture XIII.—Aetiology and Pathology of Carcinoma and Sarcoma of the Stomach.

FRIDAY.—4.30 P.M., Lecture XIV.—Symptoms and Treatment of Carcinoma and Sarcoma of the Stomach.

### Communications, Letters, &c., to the Editor have been received from—

A.—Dr. F. P. Atkinson, Bexhill-on-Sea.

B.—Messrs. J. Bibby and Sons, Liverpool; British Red Cross Society, Lond.; British Association for the Advancement of Science, Lond.; Mrs. C. Brereton, Lond.; Dr. A. Balfour, C.M.G., Lond.; Sir John Bland-Sutton, Lond.; Col. E. J. Blackham; Mr. C. K. Bond, Brighton; Prof. D. T. Barry, Cork; Dr. G. Blacker, Lond.

C.—Dr. E. L. Collis, Lissiemouth; Dr. E. R. T. Clarkson, Petersfield; Colonial Office, Lond.; Mr. A. Cooke, Lond.

D.—Dr. A. Distaso, Whitechurch; Mr. C. Dewdney, Chingford; Dr. O. T. Dinnick, Lond.

E.—Mr. R. Rager, Exminster.

F.—Dr. E. R. Fothergill, Hove; Factories, Chief Inspector of, Lond.

G.—Dr. P. C. Gibson, Lond.; Lieut. Col. E. Goodall, R.A.M.C.; Dr. H. E. Gibson, Lond.

H.—Mr. J. T. Henderson, Pietermaritzburg; Lieut. Col. A. F. Hurst, R.A.M.C.; Dr. C. T. W. Hirsch, Lond.; Mr. F. Hubbard, Lond.; Capt. H. A. Haig, R.A.M.C.; Lieut. Col. D. L. Hamilton, R.A.M.C.; Mr. R. S. Hopkins, Lond.

I.—Industrial Fatigue Research Board, Lond.; Industrial Welfare Society, Lond.; Director of.

K.—Dr. A. Kidd, Kilrea; Dr. E. H. Kettle, Lond.; Dr. J. Kerr,

Lond.; Dr. H. C. Kidd, Bromsgrove.

L.—Corporation of London, Town Clerk of; League of Red Cross Societies, Geneva; Dr. G. C. Low, Lond.; Mr. E. B. Loebe, Manchester; Mr. H. Lacombe, Paris.

M.—Mr. O. F. MacLagan, Rugby; Ministry of Health, Lond.; Dr. H. Martel, Paris; Dr. J. B. Mennell, Lond.

N.—Newspaper Proprietors' Association, Lond.; National Association for the Prevention of Infant Mortality; National Party, Lond., Sec. of.

P.—Dr. R. H. A. Plimmer, Lond.

R.—Dr. J. W. Roberts, Thirsk; Dr. J. D. Rolleston, Lond.; Dr. W. C. Rivers, Worsboro' Dale; Mr. W. Robinson, Sunderland; Royal Institute of Public Health, Lond.; Research Defence Society, Lond.; Hon. Sec. of.

S.—Mr. A. C. Schnelle, Lond.; Prof. E. G. Slesinger, Lond.; Dr. K. Simpson, Hounslow; Miss M. Sheepshanks, Lond.; Dr. H. K. V. Soltan, Bletchingley.

T.—Dr. O. T. Todd, O.B.E., Llanberis; Dr. W. W. C. Topley, Lond.

U.—United Water Softeners, Lond.

W.—War Work Council, Y.W.C.A., New York; Mr. R. Warren, Lond.; Mr. H. G. Watkins, Chesham; Dr. R. C. Watts, Cairo; Sir G. Sims Woodhead, K.B.E., Conway; Dr. F. J. Waldo, Lond.

Communications relating to editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C. 2.

### MANAGER'S NOTICE.

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Advertisements (to ensure insertion the same week; should be delivered at the Office not later than Wednesday, accompanied by a remittance.



## Notes, Short Comments, and Answers to Correspondents.

### PLAGUE AND INFLUENZA IN INDIA.

FOR more than half a century the Government of India have issued annually a Blue-book entitled "Statement Exhibiting the Moral and Material Progress and Condition of India." The fifty-fourth of these statements, dealing with the year 1917-18, has recently been presented to Parliament, and included in its various contents are the following remarks on local self-government tested by disease and scarcity:—

As a symptom of the vitality of the institutions of local self-government in India, it may be mentioned that they rendered excellent service in seconding the efforts of the central and provincial governments in grappling with two of the most important administrative problems which occurred during the period under review—namely, the incidence of epidemics and the high prices of commodities.

#### Plague.

The monsoon of 1917 was exceptionally abundant and, partly perhaps in consequence of this, plague made its appearance in serious degree during the year. Between July, 1917, and June, 1918, the total number of deaths from plague was over 800,000. Although, fortunately, there is reason to believe that the incidence of the disease in India is on the wane, the distress and dislocation caused by this mortality was very great. In addition to the influence of the plague epidemic the year as a whole was very unhealthy, and a high death-rate occurred both from cholera and malaria. Relief measures were undertaken by the local administrations, the provincial sanitary and medical officers laboured with the utmost zeal, and the number of hospitals and travelling dispensaries was everywhere increased. Preventive measures in the way of evacuation of infected areas were undertaken in many places, and inoculations were carried out on a larger scale than was previously known.

#### Influenza.

Bad as were the general conditions of public health in India during the year 1917, those of 1918 were infinitely worse. In the month of June, 1918, came the first intimation that influenza in a virulent form was attacking India. In the city of Bombay towards the end of that month many employees of offices, banks, and so forth were incapacitated by fever. The disease began to spread over India, and before long the mortality, at first low, began to rise in an alarming degree. In the city of Bombay itself the mortality reached its maximum on Oct. 6th, on which day 768 deaths were recorded. The full force of the outbreak was felt by the central, northern, and western portions of India, in comparison with which Bengal, Burma, Bihar, and Orissa, Madras, and Assam suffered but lightly. During the last quarter of 1918 India seemed to have suffered more severely than any other country in the world; and influenza was responsible in British India alone for a death roll of approximately 5 millions. Detailed information with regard to the incidence of the disease in the Indian States is not available, but it is unlikely that the influenza mortality therein fell short of 1 million. Within the space of four or five months influenza was thus responsible for the deaths of 2 per cent. of the total population of British India. In some places—the Central Provinces for example—two months of influenza caused twice as many deaths as 22 years of plague. In Bombay, between Sept. 10th and Nov. 10th, the total average mortality was 326 deaths a day. Had mortality continued at this rate throughout the year the death-rate of the country would have been over 120 per 1000 of the Census population. The Punjab also suffered very severely.

#### Efforts to Cope with the Disease.

The provincial administrations and the local bodies to whom is mainly entrusted the maintenance of sanitation and public health made whole-hearted endeavours to ameliorate the sickness and suffering occasioned by the outbreak. The epidemic struck India at a time when she was least prepared to cope with a calamity of such magnitude. War demands had depleted her sanitary and medical personnel, which at best is inadequate when considered in relation to the size of her population and of the tenacity with which the population clings to domestic customs injurious to public health. The overworked staff that remained was struck down in large numbers. Still more serious were the effects of the almost total failure of the monsoon, which exercised a disastrous influence practically throughout the country. The staple food grains were at famine prices, and the scarcity of fodder reduced the quantity of milk available. Although there is no reason to suppose that the epidemic originated in malnutrition, it was particularly unfortunate that the price of nourishing food, and also of such comforts as blankets and warm clothing was extremely high. In all the larger towns, where severe epidemics occurred, many additional dispensaries were opened by the local authorities, and numerous agencies were employed for the free distribution of drugs and milk. In some towns municipal grain shops were opened which supplied grain below the market rates. Endeavours were made by all administrations to instruct the people as to the nature of the malady, as to measures for its prevention, and as to measures to be adopted when it had set in. The efforts of official bodies, whether provincial or local, were nobly seconded by non-officials, by philanthropic societies, by educational establishments, and by a host of voluntary workers. Everything that could have been done with the agency available was done. But with a population as vast as is that of India to-day, with a relatively low standard of living, the control of so virulent an epidemic is completely outside the present scope of human endeavours.

The magnitude of the task which the administration was called upon to face may be gauged from the fact that, according to the report, it has been estimated that from 50 to 80 per cent. of the total population

of India has recently suffered from influenza. It is undeniable that the catastrophe was rendered more complete by the generally insanitary conditions under which the major portion of the population of India live their lives; and the necessity of redoubling the efforts of the administration, both central and provincial, to secure the improvement of those conditions, has become more than ever apparent.

### MEDICAL WOMEN IN CONFERENCE ON SOCIAL PROBLEMS.

AN International Conference of Women Physicians, promoted by the War Work Council of the Y.W.C.A., is to be opened in New York on Sept. 15th, and will sit for six weeks. Some 30 representative medical women from various parts of Europe have accepted the invitation to the Conference; doctors from India and China, South America and Canada, are also expected, and delegates from the United States themselves will doubtless be numerous. The general purpose is to learn the attitude towards social education in health and sex problems taken up by the various countries of the more or less civilised world, and to discuss individual national problems. After the more technical aspects of these problems have been dealt with by the Conference, selected members of the lay public will be invited to join the medical women during the last week of their session. The object of this general conference will be to reach a common ground of understanding upon which to base coöperative methods in dealing with social problems affecting the women of the world. The tentative programme submitted to us suggests that the proceedings of this gathering are likely to be of great interest.

### THE ETHICS OF ADVERTISING.

AN editorial article in the *Journal of the American Medical Association* of August 9th contains some shrewd remarks on this subject. What is there about advertising having a medical "slant" that so often causes the advertiser to abandon the principle of honesty and common sense? Products which are sufficiently good to stand on their own merits and which, when advertised in a non-medical way, are described truthfully, when they enter the medical or quasimedical field are presented to the public in such a way as to cast discredit on the whole field of advertising. "These thoughts are provoked," says our contemporary, "by an advertisement that has recently appeared in certain medical journals on 'Adams Chewing Gum.' The product itself is one that certainly needs no misstatements or quibbling to stimulate its sale. The advertisement in question is entitled 'The Care of the Mouth,' and is made up largely of what purports to be a quotation from an article by a 'pediatrician.' There are two things wrong with the advertisement. First, the reader is given the impression that the quoted article has appeared comparatively recently; it appeared about eight years ago. Second, the quotation has been garbled and the writer is made to say things that he never said. The parallel indicates the liberties that have been taken:

#### Original Article.

'The child naturally rebels against THE CLEANSING PROCESS while it is VERY ill and therefore if some more attractive and efficient way can be found to accomplish the same result, we ought to take advantage of it. THE USE OF CHEWING GUM seems to offer the best relief. It is attractive to the child .....,' etc.

#### As Quoted in Advertisement.

'A child naturally rebels against MOUTH cleansing while it is ill or peevish, and therefore if some more attractive and efficient way can be found to accomplish the same result, we ought to take advantage of it. 'ADAMS PEPIN CHEWING GUM seems to offer the best relief. It is attractive to the child .....,' etc.

The portions that fail to coincide have been put in small capitals. Aside, altogether, from the medical aspects of the case, and aside from the morality or ethics of the matter, the liberties which the Adams Chewing Gum concern have taken with the article have weakened rather than strengthened the 'copy.' These advertisements were for medical journals. The average physician, in reading the advertisement as it appeared, would immediately have his suspicion aroused. This in itself is bad advertising. The reader, knowing that the average physician does not, in scientific articles appearing in medical journals, generally recommend proprietary products, would jump to the conclusion that, if such an article was written, it probably had a venal origin, or else it was probably written by a man of little repute. The chewing gum concern would have made a stronger appeal had they quoted from the article verbatim, and then added their own comment to the effect that if the profession wanted a chewing gum here was one the manufacturers could recommend."

The editor of the *Journal of the American Medical Association* will find it impossible to make his would-be advertisers believe the plain truth of his words.

F. ST. J. S.—The condition can hardly be prescribed for on so brief a description; can more particulars be given?



THE  
**Chadwick Lectures**

ON

## THE PROBLEM OF HYGIENE IN EGYPT.

*Being Three Lectures delivered at the Summer Session, 1919,*

BY ANDREW BALFOUR, C.B., C.M.G., M.D.,

DIRECTOR-IN-CHIEF, WELLCOME BUREAU OF SCIENTIFIC RESEARCH;  
LATE PRESIDENT, EGYPTIAN PUBLIC HEALTH COMMISSION.LECTURE III.—THE SOLUTION OF THE PROBLEM:  
PRESENT AND FUTURE.

In our first lecture we considered the more obvious causes which produce the problem of hygiene in Egypt; in our second we discussed those which are more obscure and which, being intimately bound up with the form of central administration that is in vogue, led to a review of the latter. We will now turn our attention to the provincial organisation and see not only what problems it furnishes but how it meets the needs of health in the towns, in the villages, and in the rural parts of the Mudiriya, as the provinces are termed in the Arabic of Egypt.

## PROVINCIAL ORGANISATION IN THE PRESENT.

It is usually a relief to leave a city like Cairo or Alexandria and fare forth into the green of the Delta. The air is fresh, the sky is, as a rule, blue and cloudless, and though the scenery is monotonous the rural life is interesting and there are many spots which are eminently picturesque. In Upper Egypt one is not often far from the Nile and the Father of Waters rarely fails to please the eye and quicken the imagination.

If there is not very much to entrance the botanist and the zoologist, at least compared with some other Eastern lands, there is always something in Egypt to catch the sanitary eye and too often something also to titillate the sanitarian nose. The sanitarian views a reedy water channel, and while he thinks of it turning the black alluvial soil into the richest of muds and benefiting the patient cultivator, he knows that as a source of drinking water it is, to say the least, doubtful; for may it not in parts be full of cercariae or constitute a medium wherein typhoid or dysentery bacilli lurk, or, given the opportunity, may it not harbour the cholera vibrio? He notes the rich mud and the fellaheen ankle-deep at work in it and wonders whether or not the larvae of ankylostomes are busy finding their way through the skin of the peasant farmers. A grove of stately date palms confronts him, and while he admires them for their beauty and their fruitfulness he cannot forget the filthy manner in which agwa is prepared. His eye roves over the picturesque, nondescript village huddling on its little mound hard by the birka with its green scum and countless frogs, and though he admits it has a beauty of its own, he cannot but recall its flies and their breeding places, its rats and their fleas, its inhabitants and their lice, and instinctively he thinks of dysentery, of plague, of typhus, and relapsing fever. And so on and so forth. You will doubtless say what a very unpleasant mind your sanitarian must have! It is one thing to find sermons in stones and books in the running brooks, but surely to conjure up parasites and disease in well-nigh every feature of the landscape is a dismal form of mental recreation, a morbid type of fancy. I grant you such is in some measure the case, but the pity is that there is good cause for these imaginings. And yet the sanitarian is, as a rule, no pessimist. He knows these evils exist, but he also knows that they are one and all preventable, and his ambition is to remedy them so far as it lies within his power to do so. Their presence arouses, or should arouse, the fighting spirit in him, and, believe me, there is something stimulating and satisfying, as well as disheartening, in waging war against the forces of disease and death in such a country as Egypt.

*Divisional Inspectors.*

That is one reason why we are always likely to find able young men eager to take up the work of divisional inspectors

who, as you will see from the graph (Graph 1, Lecture II.), head the list of those who fight the battle of health in the Egyptian provinces.

One reason why the contest has not been so victorious as might have been hoped is to be found in the paucity of the numbers of these divisional inspectors. There are 14 provinces in Egypt, many of them large, most of them exceedingly populous. The number of inspectors has in the past been woefully few, and during the war it diminished almost to vanishing point. Furthermore, the inspectors were not resident in their districts. As a rule, they were constantly on the move, and so were not in the best position for getting into close touch with the populace and the prevailing conditions. Their duties also were far from being merely sanitary, as they had to exercise a supervision over the provincial hospitals, the medico-legal work of the Markaz doctors, and all the hundred and one matters which are intimately bound up with health problems in the provinces.

*Provincial Hospitals.*

A glance at Graph 1 shows that the provincial work is divided into that concerned with hospitals and that which is directly under the charge of the Markaz and outpost doctors and which is a regular *olla-podrida* of widely differing duties. The question of provincial hospitals need not detain us. In discussing Section II. of the Central Administration we saw the problems they present. It is time to turn to the Mudiriya health inspectors, who are, for the most part, stout, worthy, and elderly Egyptians who form the link between the English divisional inspectors and the Markaz doctors, and are virtually the medical officers of health of the provinces. Being as a rule advanced in years, they are not generally energetic, they are not sufficiently well paid, and few of them do much in the way of private practice. Their chances of promotion are very small, and they tend to become inactive and to concern themselves chiefly with office work. Here and there you will find a keen and able man, but, for the most part, the Mudiriya health inspectors may be described as genial anachronisms.

*The Markaz Doctor.*

And now we come to one of the most important props of the health fabric in Egypt—the Markaz doctor—a Markaz being a section or district of a province. It may be a populous and prosperous district, so much so that one solitary medical officer may have as many as 100,000 people nominally under his charge. In such a case the majority die what the old Highlander called “natural deaths,” for the doctor cannot get anywhere near them when they are ill. All the same he probably enjoys a most lucrative private practice to which his government duties may or may not play second fiddle. On the other hand, the Markaz may be poor and sparsely peopled, no great catch for the young and pushing graduate from the Kasr-el-Aini School of Medicine who finds himself in such a district with very poor official pay, say £E.12 a month, and but little opportunity of supplementing it in any way.

Whether his Markaz is good or bad, however, he is expected to perform the manifold duties set forth on the list shown in Graph 1. One has only to read the long column to realise that in the great majority of cases the Markaz doctor is set an impossible task, at least while his numbers remain as limited as they are at present. He is supposed to deal with infectious diseases both from the clinical and the preventive aspects, much of his time is occupied with medico-legal work, of which there is a superabundance in Egypt, and which often proves remunerative in several directions, and he is expected to control general sanitation. Consider what this means in a large district studded with villages and seamed by canals and irrigation channels. On an ambling ass the Markaz doctor, surmounted by his red tarboosh, jogs hither and thither, often covering many miles a day. He may have to see that a birka is filled up, he may have to inspect a school. The water-supply of a mosque requires his attention, he has to furnish a report on the sanitary condition of a Government building. Questions of the regulation of water intakes fall to his share, as do those of street cleaning, slaughtering places, the enclosure of waste lands, and the selection of sites on which town refuse and fosse contents can be dumped.



*His Multifarious Duties.*

As if all this were not enough, he has still to keep an eye on offensive trades in his district, see to the registration of births and deaths, superintend the vaccination of the community, attend to the dispensary, examine prostitutes in places where there are no hospitals, carry out various duties connected with cemeteries, in one or other of which he must surely sometimes wish he were quietly at rest. Moreover, he attends the meetings of the local commission as public health delegate, he investigates contraventions against the law regarding the practice of medicine, he looks after pilgrims, and keeps an eye on such incomers to his district as are under the passenger control regulations. He is responsible for the sanitary state of fairs, he examines and reports on sick Government employees, he also examines the village police, and finally inspects the bodies of those who die uncertified. In addition, he usually earns his living by private practice, and presumably he eats, drinks, and sleeps!

But you will say, "The poor man must have a large staff under him to aid him in these multifarious duties." Not at all. Look at the graph. It is true that the Omdahs and Sarrafs, head-men of the villages, register the births and deaths, but I fear they often give the conscientious Markas doctor more trouble than assistance. It is true the barber, if he happens to be efficient, may render considerable aid; but, after all, who is the barber? He is merely an unqualified person who in all probability has inherited his office, and though he may be highly intelligent and carry out his own minor duties of vaccination, cupping, and so forth, in a satisfactory manner, he cannot, in the nature of things, take much of the load off the shoulders of the Markaz doctor. There is no one else, for the Daya, as we have seen, if not negligible, is usually dangerous. It is only when epidemics occur that our harassed friend gets special help and even that is only in one particular. In the strict sense of the term there is no sanitary staff whatever and rural Egypt lies largely at the mercy of the microbe, the helminth, and the fly.

*Administration in the Governorates.*

You will note that under the heading Provincial Organisation mention is made of the health administration in the Governorates—that is to say, in Cairo, Port Said, Suez, and Damietta. Cairo and Port Said have medical officers of health; Suez and Damietta so-called health inspectors.

We considered the conditions in Cairo in our first lecture and need not recapitulate. Of late years things have altered greatly for the better in certain localities, thanks to hard work on the part of a very capable medical officer of health and to the partial completion of the great drainage scheme, the sewers of which cast their contents upon the desert far from the city and cause it to blossom, if not like the rose, at least like a nosegay, for the trees and verdure of the sewage farm now form a feature of the landscape, and there was never yet a sewage farm without an aroma.

Recently, also, the Public Works Department has been erecting public conveniences in the streets, and these, well-designed and with the latest sanitary improvements, must be regarded as a very considerable hygienic advance. There still remains, however, a great necessity for public drinking-fountains supplying pure water. The latter is available, for there is a large installation of mechanical filters, but it is not to any extent at the service of the poorer parts of the populace.

*Cairo, Port Said, and Alexandria.*

The Qism medical officers whom you see mentioned on Graph 1 are really analogous to the Markaz doctors of the provinces so far as their work is concerned. Each looks after a division or district of the city, and though he has not to traverse great distances like his country confrère, he has more or less the same cheerful variety of duties and has very little leisure to devote himself to what we may call pure sanitation. At the same time he has assistance which the Markaz doctor lacks, for there are properly organised disinfecting gangs and the rudiments of a sanitary staff. Cairo, indeed, has really made a start in the right direction, though it is still a very long way from a hygienic millennium.

Port Said is also somewhat progressive, for under the British medical officer of health there is a senior medical man who devotes himself almost entirely to sanitary work, while his junior is entrusted with purely medical duties.

Very different is the state of matters in Alexandria, which, as we have stated, is a municipality and hitherto has been almost entirely a law unto itself. In other words, it has not been controlled by the Public Health Department. The latter has merely had the power to intervene when some epidemic raging in the city threatens danger to other places, a fine example of shutting the stable-door when the steed has been stolen. The Qism doctors who are supposed to safeguard the public health in Alexandria are not trained sanitarians and are permitted to engage in private practice. Though there is a medical officer of health, there is no expert control. There are no qualified sanitary inspectors. Indeed, the whole health administration of this wealthy port is radically wrong, and it is no wonder that the insanitary conditions we described in our first lecture have been the subject of adverse comment in the press, and that repeated outbreaks of typhus fever have evoked well-merited criticism and a clamour for reform.

*FUTURE SANITARY ORGANISATION.*

Our review of existing health problems in Egypt is now at an end, and we turn to the future. Shortly after the retirement of the last Director-General of the Public Health Department, the High Commissioner appointed a Commission to inquire into the future organisation and work of that department. Very nearly a year ago the Commission began its sittings, examined many witnesses, studied much documentary evidence, carried out numerous inspections, and in the fullness of time was delivered of a report, with the salient features of which we shall now deal. Whether or not the problem of hygiene in Egypt will be solved if the recommendations of the Commission are adopted and carried into effect no one can say. Egypt being Egypt, it is quite possible, nay probable indeed, that the proviso will never be forthcoming, at least in toto. Still, it may be said that the council of four<sup>1</sup> constituting the Commission found themselves in complete unanimity and that what public opinion exists in Egypt, generally speaking, approves their findings.

*A MINISTRY OF HEALTH.*

What are the findings? I direct your attention to a new graph (No. 2) and you will note at once the words "Ministry of Health." Despite some evidence to the contrary, the Commissioners were persuaded that the establishment of such a Ministry was essential. The reasons for this belief have already been recorded in the weighty words of Dr. Cyril Goodman, who further states:—

"The reorganisation of Egypt on constitutional lines, rendered necessary by the Protectorate, offers a peculiarly favourable opportunity of giving public health a place in the constitution commensurate with its importance to the country. Public order, finance, irrigation, agriculture, education and public health constitute the six principal interests of Egypt and the six principal duties of Great Britain towards its Protectorate. The present scheme of government includes in its governing body representatives of each of these interests, with the exception of public health. If the policy of Great Britain towards Egypt is to be placed on the broadest basis of material, mental, and physical advancement of the people then public health must be given without delay representation on the Council of Ministers, on the Council of Advisers, and it must be recognised as the direct adviser of the High Commissioner on matters of public health.

It must be frankly stated that those who, while expressing sympathy with the idea, urge delay in its execution must be considered as inimical to the movement itself, for a successful public health policy must grow with the fundamental institutions of the country. It must be built into, not be grafted on, the constitution. If, therefore, the importance of public health in Egypt is sufficiently great to justify its inclusion as a Ministry amongst those which direct the policy of the country, then it is clear that during and not after the remodelling of the institutions of the country is the proper time for that inclusion."

<sup>1</sup> The Commission was composed as follows:—President: Lieutenant-Colonel Andrew Balfour, C.B., C.M.G., R.A.M.C. Members: Lieutenant-Colonel G. E. F. Stammers, R.A.M.C.; Mr. E. S. Crispin, Director, Medical Department, Sudan Government; and Dr. Charles Todd, O.B.E., Director of Laboratories, Department of Public Health Secretary: Mr. H. Sheridan.



MINISTRY OF HEALTH.

MINISTER OF HEALTH.

GRAPH No. 2.

AS RECOMMENDED BY

THE PUBLIC HEALTH COMMISSION, 1918.

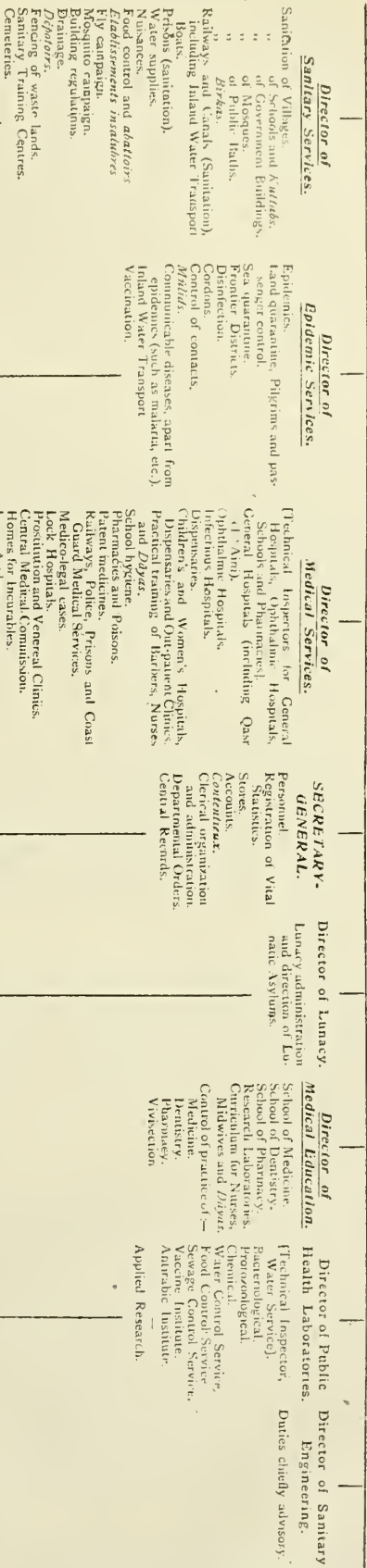
UNDER-SECRETARY OF STATE.

DIRECTOR-GENERAL

TECHNICAL ADVISER and DIRECTOR OF MEDICAL INTELLIGENCE.

Bureau of Information and Library.  
Museum of Medicine and Hygiene.

CENTRAL ORGANIZATION.



(Divisional Inspectors) (qualified sanitary inspectors.)

Mudirya Health Inspectors.

Hospital Medical Officers.

Markaz, Bandar, and Outpost Medical Officers } duties:-  
Special Epidemic Staff.  
Disinfectors.  
Kut-catchers.

INSPECTORS OF NUISANCES.

Sanitary Barbers and *Dikeys*.

CONSERVANCY STAFF.

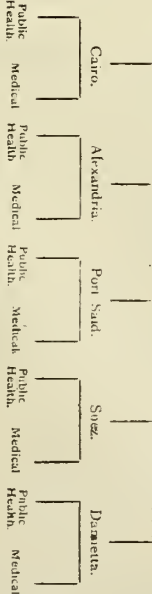
General sanitation.  
*Effluents and mudders*.  
Communicable diseases.  
Vaccination and vaccination inspection.  
Medico-legal examinations and reports.  
Pilgrims.  
Quarantine.  
Passenger control.  
Dispensary.  
Middles.  
Schools and *Kutubs*.  
Prisons and Lock-ups.  
Cemeteries.  
Registration of births and deaths.  
Medical Commission work:-  
Examination of *Dikeys*.  
Public Health and Sanitary Commission.  
Public Health representative on the Markaz Sanitary Commission.  
Contraventions against Public Health Laws and Regulations.

REFERENCE:-

New posts are shown thus in *ITALICS*.

Posts in which there is a change of function are shown in *italics underlined*.

Posts shown in brackets indicate that the holders are not necessary links in the chain of administration.



Provincial and Quarantine Laboratories.

PROVINCIAL ORGANIZATION.



*The Head of the Ministry.*

It remains to be seen how such a Ministry should be constituted. At its head there must, of course, be a Minister—an Egyptian—and he must be an official thoroughly versed in public affairs, interested in the welfare of the people, in social problems, and in scientific progress. It is not impossible to find such a man in Egypt, and, once found, his words would carry great weight in the Council Chamber. He need not of necessity be a medical man. Indeed, the appointment of a layman would possess certain advantages, as it would ensure that the Minister of Health was on the same footing as other Ministers, was appointed for the same political reasons, and would be interchangeable with them if a Ministerial rearrangement was required. In immediate command it is essential to have a British Under-Secretary of State, a medical man, who must needs possess a long and intimate knowledge of health matters in Egypt and be conversant with the intricacies of governmental machinery in that country. He will control the sanitary, epidemic, and medical work of the Ministry. As a glance at the graph shows, there will be a Department of Medical Education under him, a new departure and one necessitated by the present state of Egyptian affairs. His duty will be to frame future policy and indicate how health legislation should best be carried out, to see that the work is conducted upon a sound scientific basis and that scientific research, which alone can point the way to reform, receives due encouragement. He must also be capable of taking that broad view on which so much depends and possess those qualities of tact and firmness which count for so much in Eastern lands. Finally, as the Commission reported, "it is essential that he should have direct access to the High Commissioner, so that, armed with the weapons of an expert, he may be able to plead his cause to good effect."

The main driving force of the Ministry will, however, undoubtedly be the Director-General, who should not be too old a man. Public health work is a campaign against Field-Marshal Death and his redoubtable generals—to wit, Dirt, Destitution, Disease, Ignorance, Superstition, and, by no means the least doughty, the fighter with the double-barrelled name, General Vested-Interests! Hence, as in war, the commander must unite a certain degree of youthful energy and vigour with the experience and powers of judgment which are so necessary. Not only must he be a capable organiser, but he must combine strength and sympathy in his work, for, lacking sympathy, he will probably fail in a land like Egypt.

*The Technical Adviser.*

The next post is a new one, though it exists unofficially. It is that of Technical Adviser and Director of Medical Intelligence. I am not sure but that it is the most important of all, and though the duties of the post would be chiefly advisory, its holder would not be wholly divorced from administrative work, for, as you will observe, he would control the scientific side of the Health Ministry in so far as hygiene is concerned. Here is what the Commission say about this appointment:—

"We consider a post of this nature to be of the very greatest importance. The Technical Adviser would not only act in that capacity to both the Under Secretary and the Director-General, but he would conduct a Bureau of Information. Controlling the main library, keeping himself closely in touch with what goes on in other countries, studying the vast literature, corresponding with similar departments of other Governments, he would be in a position to furnish invaluable information to the chiefs of the various Sections, and, by issuing instructive pamphlets and circulars both to Public Health officials and to the medical profession in Egypt, he might speedily make the Ministry of Health a real power in the land. Moreover, he would collect and collate information from local sources, so that at any time he would be in a position to advise on problems arising in Egypt itself. The lack of a bureau of this kind in the Medical Department of the British War Office has made itself severely felt in the various tropical and subtropical areas of hostilities. Such work, properly carried out, effects great saving in both time and money, and possibly does more than anything else towards making a Government Department really efficient and up-to-date."

*A Museum of Medicine and Hygiene.*

A further proposal of the Commission is the establishment of an Egyptian Museum of Medicine and Hygiene, which

would be of an educational nature, and, under the guidance of the Technical Adviser to the Health Ministry, should prove itself a stimulus towards sanitary reform. It is not suggested that this should be a Government undertaking. So truly national a project may well find support amongst the wealthy and influential of Egypt. As the Commissioners remark:—

"There is undoubtedly a need for some such institution in Egypt, where, in a graphic manner, information will be furnished, both to officials and to the populace generally, as regards the diseases of Egypt, the insanitary conditions prevailing in the country, methods of dealing with epidemics, and means of rendering towns and villages clean and healthy. The work of hospitals and dispensaries would be illustrated, the rôle of insects in disease explained, the danger from faulty and deficient dietaries set forth, together with measures of prevention and cure. In fact, a great centre of instruction would be established—a school where one might learn with little effort, where interest would be excited and sympathy aroused."

*SECTIONS OF THE CENTRAL ADMINISTRATION.*

At this point I may mention that the Commission recommended a Board of Health for Egypt, a body which undoubtedly would be of benefit in many directions. The results of its deliberations, as suggested by Dr. Goodman, should be published for the information of the public. We need not here enter into the question of its constitution, but will continue our consideration of the Central Administration under the new scheme. Three of the sections we previously discussed become departments and one disappears, the ophthalmic section being, for purposes of economy and facility in administration, attached to the Department of Medical Services, which is the old hospital section.

The new Department of Sanitary Services will require a director intimately acquainted with Egyptian conditions. His duties have been set out in rather more detail than were those of the director of Section I., and the only one of them to which reference need now be made is that indicated by the term sanitary training centres. As will in due course be seen, these are intended as schools of sanitation for training certain inspectors of nuisances whom it is proposed to create for the purpose of dealing with village sanitation. The latter, which, as you will see, heads the list, is perhaps best considered under the proposals for provincial administration.

The Department of Epidemic Services shows little change from Section IV., save that the suggestion is made to bring sea quarantine under it. This is a difficult matter, for it involves complex international questions, and no one can say how it will yet be settled. Inland water transport is mentioned, as it plays, or may play, an important part in the spread of plague and cholera when these diseases are epidemic in Egypt.

The Hospital Section becomes the Department of Medical Services, and the shortcomings which have been mentioned indicate the measures required for their remedy. In addition to an increase in general and infectious hospitals and a new policy as regards the treatment of prostitutes in the former, it is essential that technical inspectors be appointed to visit periodically the 23 general Government hospitals and to reside in them from time to time for limited periods. In some of these hospitals, also, post-graduate courses might with advantage be instituted.

*Absorption of Other Medical Services.*

The medical service of the Ministry of Education might with advantage be brought under the control of the Ministry of Health. The medical inspection of school children in Egypt is of the highest importance and requires to be developed with the help of technical inspectors. It will be seen that those medical services which have been outside the fold or have strayed from it are to be shepherded into it, so that the whole health work of the country may be properly coördinated, while the medico-legal work no longer figures under general sanitation, but is brought into this department. It would, indeed, be well if some of the burden of this class of work could be borne by the Ministry of Justice, but the question is a difficult one, and the Commission had to content itself with expressing some pious hopes in that direction. Certainly a great deal of the time of the Markaz doctors is taken up with duties which are nearly as much legal as medical.



The medical control of prostitution and venereal diseases has been relegated to this department, and only those who have carefully studied the problem in other countries can appreciate all that it involves. More lock hospitals are required, clinics for the treatment of venereal diseases must be established, the populace must be instructed, and facilities for preventive treatment provided. The whole question bristles with difficulties, but we know that these exist to be overcome, and money and determination, and above all things common-sense, can work wonders.

#### *Provision for Incurables and Lepers.*

As regards provision for incurables and lepers, I cannot do better than quote again from the Commission's report:—

"Homes for incurables would meet a great need in Egypt. The country is full of crippled and debilitated mendicants, for whom little or nothing is done. The *tekiyas* of the Ministry of Waqfs deal with a few incurable cases, but the number of these establishments is quite inadequate. These unfortunate individuals are often beggars, are liable to become foci of infection, and present a problem which can only be solved by making provision for them. Even then, only a certain proportion of them can be housed, but this will help in some measure. So far as Cairo and its neighbourhood is concerned, the proposed transference of Qasr el 'Aini hospital from its present site would leave vacant a suitable building for a hospital for incurables; others, however, are required in various parts of Egypt. This is not the work for the Ministry of Health, except as a controlling and inspecting body.

"It would appear to be the privilege of the Waqfs Medical Services to make such provision. Amongst charities, that which benefits the aged, the infirm, and those who are beyond the skill of the physician and surgeon surely holds a high place. It is true that some waqfs are allotted by their donors for definite purposes, but we are assured that there are ample funds on which there is no reservation and which might well be devoted to this good cause.

"Closely associated with the question of incurables is that of lepers. We have been unable to obtain any reliable statistics as regards the present prevalence of leprosy in Egypt, but there are undoubtedly a number of lepers in certain places—for example, Damietta. There is nothing to prevent them from handling foodstuffs intended for sale; and though leprosy does not appear to spread much in Egypt, and though the channels of communication from the sick to the sound are not fully known, such risks should certainly not be permitted. Even if, from the public health point of view, it may not seem very necessary to segregate lepers in Egypt, there is the humanitarian aspect of the case to be considered, and an asylum is undoubtedly required for maimed and helpless lepers, as well as for those who are probably an active source of infection. A leper colony in which work could to some extent be carried out on the land would be a wise provision, and the attention of the Ministry of Waqfs might well be drawn to this charitable object.

It will be seen that the lunatic asylums should form a section of the Health Ministry under a Director of Lunacy. This is in accord with the modern trend of thought as regards the work of the alienist. Lunatic asylums are, however, so specialised that they cannot be grouped with other hospitals, but must form a separate department.

#### *MEDICAL EDUCATION IN EGYPT.*

And now we reach a very important subject—that of medical education in Egypt, which, however, can only be very briefly considered. We saw that the Kasr-el-Aini School of Medicine owed its foundation to Clot Bey. It has proved, especially of late years, a most useful institution both in the way of teaching and of research, and its professoriate has included men of European reputation. Unfortunately, the school is now too small to meet the needs of the country, and though it attracts the intellectual élite from the secondary schools the Ministry of Education has to refuse many applications owing to lack of accommodation. The vast majority of the students who pass through the school find employment in the Public Health Service, and in the absence of any University system in Egypt it is deemed advisable to bring medical education into the Ministry of Health, there to be placed under the control of a director, who must of necessity be given a free hand not only as regards medical education, but with respect to the training of dentists, pharmacists, nurses, midwives, and dayas. Medical research work, demanding access to clinical material and requiring the calm of academic surroundings for proper development, would be conducted in

the laboratories of the school of medicine and would be distinct from the applied research work of the public health laboratories, which is of a different type though equally important.

The curriculum of the school can be improved in certain directions, as by establishing instruction in diseases of children and in protozoology. A chair of hygiene should undoubtedly be instituted and a diploma granted, either in public health alone or in tropical medicine and hygiene. Like the medical school, the great teaching hospital of Kasr-el-Aini requires extension and improvement. Indeed, a new building on a new site has long figured on a programme which has never been fulfilled. Facilities for dispensary work might prove valuable, and the question of training Egyptian women doctors is one meriting serious consideration.

In Egypt there is also great need for a powerful board to control the practice of medicine, dentistry, and pharmacy, and to deal with all questions of malpraxis and vivisection.

It will be seen from the graph (No. 2) that it is proposed in certain respects to expand the work of those public health laboratories. Protozoology requires more attention than hitherto, and food control and sewage control services must be established. As will be noticed, there is a plan to decentralise the work in some measure by means of provincial laboratories, while the existing quarantine laboratories should be brought under the sway of the Director of Medical Intelligence. The chief sanitary engineer of the old graph becomes a Director of Sanitary Engineering, a subject which will undoubtedly become increasingly important as schemes for drainage, water-supply, disinfection, and so forth develop.

#### *THE SOLUTION OF PROVINCIAL ADMINISTRATION.*

Such are the main recommendations of the Commission as regards central organisation. Let us see how it proposes to solve the problem in the provinces. Recognising that there are far too few divisional inspectors, it recommends an ample increase in their numbers and insists that they should live in their districts, be housed, well paid, and given every facility for getting about rapidly. Opportunities should also be afforded them for seeing in rotation something of the Central Administration and gaining an insight into the work of those departments of the Ministry, the chief posts in which some of them will one day fill.

#### *Introduction of the Sanitary Inspector.*

There is nothing very novel in these recommendations, but an entirely new idea, so far as Egypt goes, is voiced by the suggestion to introduce qualified British sanitary inspectors, one of whom would be attached to each divisional inspector to aid him in his work and, under certain conditions, to train those inspectors of nuisances whom we have mentioned and who figure in the graph. There can be no doubt that intermediaries of this kind are greatly needed. If the right class of man is obtained—and he should be forthcoming in greater numbers now the war is at an end—he should go a long way towards solving some of the problems I have mentioned, for efficient inspection means everything in this kind of sanitary work. Qualified sanitary inspectors of this type have proved their value in the Sudan. They are employed under the Colonial Office administration in various parts of Africa, and I hope to see the day when it will be possible to train them in the rudiments of tropical hygiene before they leave this country for their posts abroad. Their ordinary training is excellent so far as it goes, but at present time is wasted after they reach the tropics in giving them instruction in antimosquito measures, in native habits and customs, in conservancy methods in vogue in hot countries, in new aspects of the fly question, in those improvisations which form so great a part of the sanitarian's outfit abroad, and in all those *minutiae* which mean so much and which can perfectly well be imparted to them by one having experience. It is true that many have become *au fait* with these matters during the war, but we have to think of the future, and the sooner this training is instituted the better for the Empire. It has been too long delayed.

We need not again consider the strictly medical work in the provinces, but from what has been already said it is clear that the Mudiriya health inspectors should be better paid and have better prospects. The posts should be filled by



younger and more energetic men who may be expected to take an active interest in their duties, especially if they are diplomates in public health.

#### *Two Categories of Markaz Doctor.*

And now we come again to our friend the Markaz doctor. What is to be done about him and his manifold perplexities? Two courses may be followed. The ideal scheme, and one which eventually must be adopted, is to divide the Markaz doctors into two categories according to the work, sanitary and medical, as shown in the subjoined table:—

Markaz Doctor in charge of Public Health Work (excluded from private practice).	Markaz Doctor in charge of medical work (allowed private practice).
General sanitation.	Communicable diseases (clinical).
<i>Établissements insalubres.</i>	Medico-legal examinations and reports.
Communicable diseases (public health aspect).	Dispensary.
Vaccination and vaccination inspections.	Prostitutes.
Pilgrims.	Medical Commission work:—
Quarantine.	Examination of sick Government employees.
Passenger control.	Examination of <i>ghafirs</i> .
<i>Mûlêds.</i>	Prisons (in certain places).
Schools and <i>kuttabs</i> (sanitation).	Schools (medical).
Prison lock-ups (sanitation).	
Cemeteries.	
Registration of births and deaths.	
Public health delegate on Local Commission.	
Public health representative on the Markaz Sanitary Commission.	
Contraventions against public health laws and regulations.	

The Markaz doctor engaged on sanitation would not be allowed private practice, would be freed from medico-legal work, and would have an initial salary of £E.25-30 a month. He would also be pensionable. From this category the Mudiriya health inspectors would be chosen.

The Markaz doctor engaged on medical work would be paid as at present, would carry out the official duties listed in the above table, and would be on contract until found satisfactory. He could then be placed on the cadre. As at present, his chief prospects would be in the direction of private practice.

#### *Provisional Measures.*

Unfortunately, at present this scheme cannot be carried into effect, for there are not enough Markaz doctors in Egypt, there are not enough private practitioners, there are not sufficient medical graduates. Still, it might be tried on a small scale in certain districts, a course the Commission recommended.

The second plan is to multiply the number of doctors in each Markaz, strictly defining their respective areas, and making no change in the nature of their work or in their pay. Even this simple solution of the problem will be difficult of realisation until the medical school is enlarged and is able to cope with the medical needs of the country. How true is the old proverb, "Things move slowly in the Nile Valley!" "Haste," however, we know, "is begotten of the devil," and if we can only combine the slowness with sureness no great harm will be done, provided that slowness does not degenerate into sluggishness, a very different affair.

#### *The Inspector of Nuisances and Sanitary Barber.*

Inspectors of nuisances may be recruited from the ranks of the better educated sanitary barbers or from men of the artisan or mechanic class, or possibly even from ex-non-commissioned officers of the Egyptian Army. Trained by the sanitary inspectors, paid out of local funds, in close touch with the people, the inspector of nuisances would supervise the scavenging and cleansing of villages, and, if village latrines and incinerators prove feasible, he would see that they are properly used and kept in repair. He would inspect water-supplies, markets, *birkas*, and other mosquito-breeding places. He would endeavour to show the people how their villages could be improved and how they could live in more cleanly and also more comfortable surroundings. He should have some knowledge of building construction, and of the rôle of flies in the spread of disease.

The sanitary barber, who should also be paid, would, in addition to his present duties, furnish information on matters of public health interest occurring in the village, while a conservancy staff would represent the lowest rung in the sanitary ladder.

#### *The Working-out of the Scheme.*

Here, then, is a definite system, providing, apparently, for all contingencies, costly no doubt but not unduly so, and

avoiding too heavy a strain upon the central treasury. It remains to be seen if it will be adopted in its entirety and, if adopted, how it will serve the medical needs of Egypt. It has been said that the report of the Commission afforded cause for complaint by the Egyptian Nationalists inasmuch that, save in the case of the Minister, all the higher posts in the Health Ministry were allotted to Britishers. The statement is doubtless true, but requires to be qualified, for, owing to the lack of technical training which has been mentioned, there are at present no Egyptian doctors capable of holding these posts. Furthermore, I would like to point out that the Commission expressly recommended an improvement in the status and pay of the Egyptian Mudiriya health inspectors and advocated their advance to divisional inspectorships as soon as possible. Their report also provides for a large increase of Markaz doctors and the creation of a new class of Egyptian employees—namely, the inspectors of nuisances. The national aspect of the question was duly and sympathetically considered and, as has been stated, recommendations were made which, if carried into effect, will create a body of Egyptian hygienists capable of serving their country to the best advantage in the interests of the public health.

#### *Application to Urban Areas.*

In the case of the individual towns measures closely resembling those just detailed must be applied. Cairo requires qualified sanitary inspectors and inspectors of nuisances. So does Alexandria. The latter city must no longer be permitted to act as a law unto itself in public health matters. The Commission recommend that a Controller be appointed by the Ministry of Health, which itself should approve all public health appointments. The Qism doctors should not be allowed private practice and should devote their whole time to public health duties, in which they should be specially trained. In short, a radical change is needed if the stigma now resting on the city is to be removed and the health of its populace safeguarded. At the same time, it is only fair to state that the chief engineer of the municipality has been busy with schemes for replacing the *echêches* of which I spoke in the first lecture, by model dwellings. Building regulations have also been framed and a town plan introduced, so that the outlook is distinctly more hopeful. As regards other towns, the method in vogue at Port Said may be followed with advantage until such time as each is able to work out its own sanitary salvation on a sound basis of local self-government.

Time does not permit a discussion of other points considered by the Commission, such as the future of the medical services of the Ministry of Waqfs, that department which controls large funds earmarked for charitable purposes, the amendment and progress of public health legislation, the dissemination of information, and the great desirability of lay officials taking a real interest in sanitary reform and keeping themselves acquainted with what is happening in the hygienic world of Egypt.

#### THE REMOVAL OF A REPROACH.

It all sounds very simple, but in reality how hard it is to make headway against ignorance, inertia, and prejudice! Let us, however, hope for the best.

Along with this reform, or rather advance, in public health administration an active campaign should be instituted against these three deadly enemies of the fellaheen—bilharziasis, ankylostomiasis, and pellagra. Leiper and his colleagues have already thrown much light on the first-named, we know a great deal about the second, the third alone remains a mystery. Given money and research on sound lines, the mystery will assuredly vanish, and given funds and a progressive sanitary policy the people of Egypt will be freed from the burden of all three diseases.

I have spoken in vain if it is not apparent that the sanitary condition of Egypt still remains in many respects a byword and a reproach. Great Britain has declared that ancient land a Protectorate, and has protected it from the Teuton and the Turk on the east and the Senussi and the Turk on the west. There are, however, other foes of its own household, and unless this country realises its responsibilities and undertakes to rout the forces of disease which hold Egypt in thrall, it will have failed in its duty, and one day there will be written of it, as there was of Belshazzar of Babylon, "Mene, mene, tekel, upharsin"—Thou art weighed in the balances and art found wanting.



## A STUDY OF HYPER-ADRENALISM:

ITS INFLUENCE IN PRODUCING CONGENITAL PYLORIC HYPERTROPHY AND SUBSEQUENT OBSTRUCTION.

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FROM the time, over 20 years ago, when John Thomson and Finkelstein began to associate specific signs and symptoms in babies with a large thickened pylorus (until then recognised only in the post-mortem room), there have been several theories advanced and much discussion has taken place as to the pathogenesis of this condition.

In the typical case there is undoubted true hypertrophy. There is an increase in both the number and size of the circular muscle fibres, as has been repeatedly demonstrated. It is concerning the cause of this hypertrophy that there has been so much speculation. The explanation most commonly offered has been that the hyperplasia of the musculature of the pylorus is caused by an error in its development. Apart from the fact that it is very difficult to conceive of any error in development resulting directly in true hypertrophy, there is neither corroborative evidence nor any analogous condition to substantiate this theory. The natural explanation of hypertrophy is overaction or spasm. Still and Thompson were inclined to attribute it to spasm induced by a lack of coördinate action between stomach and pylorus.

*Hyper-adrenalism before Birth as the Chief Cause of the Spasm.*

It is the purpose of this paper to suggest that the spasm inducing hypertrophy is primarily due to hyper-adrenalism before birth, and that other subsidiary post-natal causes determine the persistence or recurrence of the spasm. This condition is due to a lack of balance between the secretions of the various endocrine organs in the process of their development and involution, which may result either in a relative or an absolute hyper-adrenalism.

Whether this condition is congenital or not is also a much discussed point. The balance of evidence seems to indicate that it must be congenital. It is true that the majority of cases first show symptoms at about the third week. It is equally true that, in many instances, the child forcibly ejects the first and every subsequent feed. Moreover, at operation, the hypertrophy is usually found to be so marked that it is difficult to believe that it could have arisen during extra-uterine life. Further, many babies are presented for examination and treatment exhibiting gastric peristalsis and projectile vomiting. In the absence of a palpable tumour, congenital pyloric stenosis should not be the diagnosis. A careful history and observation will show that varying amounts of food pass through the pylorus, inasmuch as there are occasional periods without vomiting and with normal stools. The symptoms are due to improper feeding, gastritis, or phimosi among many other causes. The child is treated empirically, by regulation of its feeding, proper management of the gastritis, or the performance of circumcision. Thus the symptoms are relieved without any apparent permanent change having taken place in the muscle of the pylorus. If the spasm persisted for a long time, as it does in many instances, hypertrophy sufficient to warrant surgical intervention might result. This never happens in practice. Therefore it must take a great deal longer for spasm to produce hypertrophy than many have hitherto thought.

From these considerations, then, one is forced to the conclusion that the hypertrophy in the cases under consideration exists from before birth, and that whatever influence has been at work to produce this change must have existed for a long time. This being so, one must look for some ante-natal force which is capable through its prolonged action of producing this change. It is not, then, the occurrence of hypertrophy some time after birth which determines the onset of symptoms. This may exist in widely varying degrees, and it is the degree of added spasm from one of many causes which will determine the time of appearance and severity of the symptoms in those cases where the amount of hypertrophy at birth is not excessive.

Swale Vincent, Sharpey Schafer, Priestly, Elliott, and many others have shown how important from a developmental point of view are the endocrine organs and how finely adjusted is the balance between their hormones.

Medical literature is full of reports as to the breaking down of this balance in adult life. If this is so, how much more readily may one accept the possibility of a lack of balance at birth and before, when developmental requirements are urgent and physiological processes so active. If this disturbance in balance results in a relative or absolute excess of the suprarenal medullary hormone, spasm of any non-striated muscle may result. Keith has shown that both the pylorus and the medulla of the suprarenal gland become differentiated at about the third month of intrauterine life. Since excessive suprarenal secretion produces spasm in non-striated muscles, this would allow plenty of time for spasm induced by any excessive suprarenal secretion to bring about hypertrophy. He also states that before birth the gland is larger than the kidney, and at birth may be the same size. After that it rapidly reaches its normal relative size.

Sharpey Schafer, in his blood pressure experiments with adrenalin, noted that spasm of the pylorus was produced when he injected the secretion into the suprarenal vein. It is not claimed for a moment that adrenalin has a selective action on the muscle of the pylorus. The same experiments showed that spasm was produced at many places in the gastro-intestinal tract—e.g., the ileo-caecal valve and the junction of the pelvic with the rectal colon. The fact that untoward results of this spasm are noted so rarely in situations other than the pylorus is explained by the peculiar anatomical and secretory relations existing between the stomach, pylorus, and duodenum. This relationship favours the establishment of secondary vicious circles which would determine the persistence or recurrence of spasm. The objection might be raised that if hyper-adrenalism can exist in the ante-natal condition we should see more frequent evidence of its effects after birth. The reason that we do not is that the degree of hyper-adrenalism can never be constant, and only those cases would show symptoms where it is marked. In the post-mortem room one has noted many times slight thickening of the pyloric muscle in the bodies of babies who have died without any clinical evidence of obstruction at the outlet of the stomach. This thickening is quite apart from the apparent hypertrophy which sometimes occurs just at death, and is noted in bodies from which rigor mortis has passed off. Whether this thickening is congenital or not is, of course, pure conjecture. It may have been due to prolonged spasm from one of the several causes mentioned elsewhere. Both in these cases, and in those dying with true hypertrophic stenosis, has vain search been made for any abnormal or unusual appearance of the suprarenal gland. If the assumption of ante-natal hyper-adrenalism is correct, there need be no abnormality of the gland apparent after birth. As most of the examinations are made when the infant is at least several weeks old, the process of involution would be complete and only the effects of the plus secretion before birth would remain. Moreover, a gland which undergoes such marked changes in its development and involution may easily have had its balance with the other glands of internal secretion upset a long time before birth, with resulting hyper-adrenalism. This may exist in widely varying degrees and would determine the amount of hypertrophy present at birth. It cannot be claimed that in all cases the hyper-secretion is controlled by changes in the gland itself. The ready response of its secretion to stimuli from the semilunar ganglion would lead one to expect that in some cases there is hyper-adrenalism following excessive stimulation of the splanchnics. Tyrrell Gray and Parsons have shown the effect of excessive stimuli passing to the sympathetics. Their work gives a possible explanation of the added pyloric spasm in the frequently associated condition of phimosi. If the development of the suprarenal gland may be excessive or its involution unduly delayed, one would expect sooner or later to find an abnormally large gland associated with hypertrophy of the pylorus or other non-striated muscle.

Recently there was admitted to Dr. G. F. Still's ward at the Great Ormond Street Hospital a boy aged 8 weeks. Although the mother was ill throughout her pregnancy, the child was born at full term and was apparently healthy. He was breast fed and never gained. He was constipated and had vomited at irregular intervals practically from birth. The mother brought him to hospital because of the vomiting and wasting, and also because of a very distended abdomen. Examination on admission showed marked wasting. The abdomen was too distended to permit of any satisfactory examination, and dilated coils of intestine bulged through the abdominal wall like the rungs of a



ladder. There was stenosis of the urinary meatus and marked phimosis of the type described below—that is, a well-developed penis with the prepuce stretched tightly over the glans. Before the clinical investigation could be completed the child died. At the post-mortem examination rigor mortis had passed off, and the external features as noted above were confirmed. There was stenosis of the œsophageal and pyloric openings of the stomach, and a slight hour-glass constriction about the middle of the viscus. The stenosis was not extreme, but there was definite thickening of the muscle at the pyloric orifice and to a lesser degree at the œsophageal opening. The duodenum and the upper part of the jejunum were contracted and small. From this point down there was a gradual increase in the calibre of the gut, which was considerably dilated in the lower part of the ileum, and the whole colon as far as the junction of the pelvis with the rectal portions. At this point there was another definite constriction. Below this point the bowel again bulged out, to end in a narrowed and constricted anus. The ureters as they entered the bladder appeared small, but the upper two-thirds of both, as well as the pelvis of both kidneys, were dilated. This was obviously a case of early hydronephrosis secondary to a narrowed and constricted urinary outlet. The right suprarenal gland appeared normal, but the left was enlarged to about one-third the size of the kidney.

Sections of the enlarged suprarenal gland were made, and Dr. T. R. Elliott expressed an opinion upon them. He thought the enlargement was entirely confined to accessory cortical cells, and was not of any importance.

The significant feature of this case is that there was stenosis at points in the gastro-intestinal tract other than the pylorus. This would indicate that the influence at work did not emanate from the immediate vicinity of any one of these points, and that the spasm producing the stenosis must have been the result of some general physiological disturbance affecting all the orifices. The only influence we know of from experimental investigation which will cause spasm of the above nature is hyper-adrenalism. There was nothing in the appearance of the gland with which these changes could be associated. The gland evidently proceeded along its normal course of involution, leaving only the results of ante-natal hyper-secretion. It is unjustifiable to insist that hyper-adrenalism is the cause of congenital pyloric hypertrophy, because it cannot be proved. There is, however, sufficient evidence to justify one in holding it to be the most reasonable explanation.

#### *Contributory Causes of Spasm.*

As has been suggested above, the amount of hypertrophy present at birth is insufficient, except in rare instances, to cause symptoms of obstruction. This is clearly evident from the clinical history of the great majority of cases. But there are certain conditions which will cause spasm after birth sufficient to complete the obstruction in an already stenosed orifice. This combination determines the onset and severity of the symptoms. That some of these cases recover without surgical intervention is due to the fact that the subsidiary conditions are amenable to palliative treatment, and are of greater moment in producing obstruction by added spasm than the congenital stenosis itself. And there is sufficient evidence to justify the opinion that the two chief contributory causes of spasm, phimosis and secretory inhibition, are directly associated with the congenital hypertrophy.

1. *Phimosis.*—The association of phimosis is very interesting. That phimosis in itself may cause spasm we know.

In 1914 there were admitted to Dr. W. S. Colman's ward at Great Ormond-street, three baby boys who showed gastric peristalsis and projectile vomiting. No tumour was palpable, therefore no diagnosis of congenital stenosis was made. They were all markedly phimosed, and circumcision permanently relieved the symptoms in all three.

Moreover, in cases of true congenital stenosis circumcision without any other form of treatment has relieved the symptoms immediately for varying periods of time. Further, an analysis of the last 84 cases admitted at Great Ormond-street showed only 13 girls and not one Jew. This in itself is an observation of marked significance as to the association of phimosis with congenital stenosis of the pylorus. Whether it is an associated condition, or the cause of the added spasm, or both, is difficult to say. Certainly it may be a potent cause of spasm. A large majority of boys in this series of cases showed phimosis of a definite character. There is not, as a rule, a long prepuce with a narrow opening covering a small penis, but a prepuce stretched tightly over the glans of a particularly well-developed penis. In other

words, "the penis is too large for the prepuce." Up to the present investigators consider that it is the cortex of the suprarenal gland with which is connected development of the sexual organs. The association of precocious sexual development with malignant hyper-nephromata is in itself significant. It may well be that there is a definite relation between a slow involution of the suprarenal gland and phimosis of this particular type. The way in which phimosis may produce pyloric spasm has been shown by Tyrrell Gray and Parsons, and will be referred to more fully in the joint paper which follows this article.

2. *Secretory inhibition.*—The most important factor in producing added spasm at the pyloric orifice is a secretory disturbance directly attributable to the obstruction. Under normal conditions the acid content of the stomach, passing through the pylorus and over the duodenal mucous membrane, stimulates the formation of secretin. This is absorbed into the blood and is carried to the pancreas, stimulating the formation of the external secretion of this gland. This phenomenon had been investigated by many physiologists, and the correctness of the observation was finally demonstrated by Bayliss and Starling. They also determined that the amount of pancreatic secretion exhibited varied directly with the amount of acid chyme passing through the pylorus. Normally, acid chyme in the stomach opens the pylorus and in the duodenum closes it. In the absence of a sufficient supply of the alkaline pancreatic secretion, the acid chyme is much longer being neutralised. During this time the pylorus remains closed. Given an already stenosed orifice, there is, in the absence of any other cause, a diminished supply of pancreatic secretion. This very lack in secretion will keep the orifice closed, with still less room for stomach contents to escape, and thus still less pancreatic secretion. In this way a vicious circle is set up which effectively obstructs the already narrow stomach outlet. There are several reasons for thinking that there is pancreatic insufficiency. Even under ordinary circumstances clinicians know that babies cannot digest the more complex forms of starches. From this one deduces diminution or absence of certain starch-splitting ferments in the pancreatic secretion. Again, it is a noteworthy fact that babies with congenital pyloric stenosis do better on a diet of pancreatinised milk than on any other food. Moreover, after relief from obstruction either by palliative or by surgical treatment, the child, though fed on peptonised milk, has loose, frequent, greasy stools for several days. This has been noted by several observers, and Still has pointed out the grave danger of "diarrhœa," in the early post-operative period, in those cases where surgical intervention became necessary. These loose, frequent, greasy stools are not the result of any inflammatory charge in the mucosa, but are due to the presence of incompletely digested fats. Still has also noted in these cases that babies tolerate fats in their diet very badly. Even when the obstruction is relieved the child will still do better on a diet of peptonised milk low in fats for the first couple of weeks. The reason suggests itself. A gland like the pancreas, whose function has been inhibited for any length of time by pyloric obstruction, will not resume its maximum function the moment the obstruction is relieved, but will take a corresponding length of time before it secretes sufficient ferments to digest the proteids and fats. Then, again, the small, hard, dry stool so characteristic in these cases is due as much to the lack of secretions as to the small quantity of food passing through the pylorus. Thus there is clinical evidence to show that there is pancreatic insufficiency in cases of congenital stenosis. Add to this the evidence of Sharpey Schafer that the suprarenal gland is antagonistic to the pancreas, and it would seem that hyper-adrenalism, relative or absolute, would inhibit pancreatic secretion. There is then good reason for justifying the assumption of pancreatic insufficiency, which we know is a powerful factor in producing pyloric spasm. Given hyper-adrenalism, there is at once sufficient cause for the primary hypertrophy induced by spasm and for the perpetuation or reinduction of this spasm by pancreatic insufficiency.

#### *Effect of Changes in the Stomach.*

Nothing has been mentioned about the effect on the stenosed pyloric orifice of changes in the stomach itself. Any local irritative conditions or inflammatory changes will, of course, produce swelling of the mucosa. In many of the cases, perhaps all, there is some change of the nature produced by the undue retention, and thus fermentation, of



food. Ordinarily these changes would not cause obstruction, but added to congenital pyloric stenosis, they hasten the formation of the vicious circle, and the perpetuation of the obstruction is due to the more rapid secretory arrest. It is also likely that phimosis, while in itself an important cause of spasm, hastens the appearance of symptoms of obstruction in the same way.

#### *Relation to Treatment.*

The recognition of these phenomena has a most important bearing upon treatment, palliative or surgical. In my joint paper with Mr. H. Tyrrell Gray we have studied the application of this theory to the treatment and indications for operation. The results obtained and the observations we have been able to make justify one in thinking that this theory of the pathogenesis of congenital pyloric stenosis as outlined above is based on sound deductions.

#### *Importance of Internal Secreting Glands in the Study of Diseases of Children.*

The experimental evidence available shows that only one condition will produce spasm of unstriated muscle, and that is hyper-adrenalism. An effort has been made to present to the profession the application of this condition—the result of an ante-natal lack of balance between the internal secretory glands—to the pathogenesis of congenital hypertrophic pyloric stenosis. This study, of course, opens up a very wide field for investigation. If hyper-adrenalism may exist, why not hypo-adrenalism? One may yet have to reconsider the aetiology of the whole question of intestinal stasis from this point of view. Again, Rachford has reported the post-mortem examinations of six children who died from pyloric stenosis where no possible cause of death could be found other than an abnormally large thymus gland. Experimental physiologists have shown that in extirpation of the thyroid gland hypertrophy of the thymus ensues. The thyroid secretion is antagonised by the suprarenal secretion. How far may one go in one's deduction? This fact is clear, we must not study children as young adults. Their physiology is entirely different, and their symptoms should not be measured by similar symptoms in adults. Many of the problems they exhibit must be studied from the developmental point of view, and in this connexion none of their organs are more important, or so easily upset by faulty interaction during the course of their development and involution, than the internal secreting glands.

## CONGENITAL HYPERTROPHIC STENOSIS OF THE PYLORUS:

### ITS DIAGNOSIS AND TREATMENT.

#### A CLINICAL STUDY.

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#### I.—*Diagnosis.*

There are very few diseases of infants in which opinions as to the diagnosis and treatment differ so widely as in congenital hypertrophic stenosis of the pylorus. The mortality is generally so high, indeed so amazingly high, in undoubted cases, that it has led the writers to make a special joint study of this condition for the past few years. One of the first conclusions to which we have been led is that the unsatisfactory results obtained from various lines of treatment advocated are largely to be attributed to the fact that such treatment has been empirical rather than based on a full appreciation of the aetiology; while the extraordinary variability of the figures published by competent authorities is explained by the difficulty of certain diagnosis in doubtful cases, and therefore by the different standards adopted in establishing such a diagnosis in any given case. Thus some observers do not consider the presence or absence of a

palpable tumour an important point in diagnosis, though we place this first and foremost as the most important diagnostic feature.

It must be clear, we think, that the repudiation of such an important point must of necessity lead, in any series, to the inclusion among true and undoubted cases of congenital hypertrophic stenosis of mild or doubtful ones; or even of cases which only resemble the condition under discussion in their clinical manifestations and do not really come into the same category. Such figures are not only useless but misleading. The first point, therefore, to be made quite clear in such a study is the clinical picture on which the diagnosis of congenital hypertrophic stenosis is based. The signs and symptoms upon which such a diagnosis is to be founded are: 1. The presence of a palpable tumour in the region of the pylorus. 2. Visible gastric peristalsis. 3. Projectile vomiting. Associated with these are nearly always varying degrees of: 4. Constipation. 5. Phimosis. As the symptoms in the great majority of cases first appear at a fairly constant period in the child's life some consideration in making a diagnosis must be given to: 6. The age of onset. The general appearance of the child in long-standing cases is characteristic of marasmic children whatever the cause of wasting, and will not be discussed.

1. *A palpable pyloric tumour.*—First in importance in making a diagnosis of true congenital hypertrophic pyloric stenosis is the detection of the tumour. It is the one certain sign. Failure to find the tumour must always leave the diagnosis in grave doubt. It is said that it cannot be demonstrated in every case, but we believe that repeated examinations, with the child under favourable conditions, should reveal its presence. It is usually found just outside the outer border of the right rectus muscle in the trans-pyloric plane. Deep palpation is necessary as it may lie well back, often tucked in beside the vertebræ. Occasionally it is higher, when care must be exercised to exclude Riedl's or an enlarged quadrate lobe of the liver. Sometimes also it is situated lower in the abdomen, in cases where there is extreme gastric dilatation. Often a clue to its situation may be obtained by locating the right limit of the peristaltic waves. When found it gives a very characteristic sensation; it feels like a marble which rolls away from the examining finger as it is touched. Examination of the tumour in the operating and post-mortem rooms has shown that there is considerable variation in its size and appearance. The majority, however, fall into two groups:

(1) *A large hard avascular type.*—At operation this kind appears as a hard, smooth, glistening, oval or cylindrical, white, and almost bloodless, swelling about the size of a large acorn.

(2) *A small hard vascular type.*—In this instance the size is less than the preceding; there are more blood-vessels evident, but otherwise it presents almost the same appearance. This variation in size sometimes accounts for the difficulty in finding it, the smaller ones naturally presenting the greater difficulty. Other reasons for missing it may be:

(a) *Dilatation of the stomach.*—In this case the dilated stomach overlaps the pylorus and makes its detection impossible until the dilatation has been somewhat relieved by palliative treatment.

(b) There is often difficulty in getting the examining finger behind the lower border of the liver and in palpating deeply enough.

(c) *The age of the child.*—In older children of 2 or 3 months the better-developed abdominal muscles increase the difficulty of palpation. Moreover, the coils of intestine are somewhat distended, as they have been functioning longer.

The most favourable time for examination is while the child is being fed. The food when it reaches the stomach drags on the fundus and uncovers the pylorus. Moreover, the peristalsis induced by the presence of food in the stomach makes it more apparent. Sometimes it is necessary to postpone the examination until after repeated lavage, when the dilatation is sufficiently relieved to permit of easier palpation. Where difficulty with the liver or a deeply-placed pylorus is encountered it is a good plan to turn the baby on its face, allowing the slightly flexed body to rest on the palm of the hand. In this position the abdominal walls are more relaxed, and the child cannot resist examination as much. The viscera fall forward, and the fingers can be more easily pressed behind the liver and explore the whole region. The examination should always be made with the thoroughly warmed left hand from the left side of the patient.



2. *Visible gastric peristalsis.*—This is evidence that the tumour, palpated as above, is sufficient to cause a marked degree of obstruction at the outlet of the stomach. By itself it is not of paramount importance. In Case 14 no peristalsis was seen until the child was on the operating table under deep anaesthesia, although it was believed that the tumour had previously been palpated. On the other hand, pure spasm without congenital hypertrophy may cause gastric peristalsis and projectile vomiting. The following case illustrates the point:—

A boy (Case 18), age nine weeks, was admitted to the hospital. Visible gastric peristalsis and projectile vomiting were demonstrated, and the child was markedly wasted. There was also a very tight phimosi. No tumour was palpated, therefore no diagnosis of congenital stenosis was made. The only treatment carried out was that of circumcision. Subsequent to this operation there was no more peristalsis seen, nor did the child vomit again. Some 60 hours later he suddenly collapsed and died. Post-mortem examination showed considerable dilatation of the stomach, but no abnormal thickening of the pyloric muscle whatever.

The three cases admitted under Dr. Colman, mentioned in the previous paper (G.R.P.), also show that gastric peristalsis may be visible without congenital stenosis. If this sign is not obvious it can often be elicited by gently stroking the epigastrium or by giving a feed.

3. *Projectile vomiting.*—This symptom is of similar diagnostic importance to visible gastric peristalsis. When characteristic, the food is forcibly ejected across the cot on to the floor, and will also appear streaming from the nostrils. Usually the baby is not otherwise disturbed, and appears quite happy about it. It may occur after every feed, or at infrequent intervals. Sometimes the food is returned before the child has finished suckling, and at other times one or two hours later. The character of the vomits will, of course, depend on how long the food has remained in the stomach, but it is never bile-stained. Infrequent vomiting must not always be regarded favourably, because, with increasing dilatation of the stomach, two or more feeds may be retained before the whole is ejected. This will account for the frequent history that the child "vomits more than it takes." The vomiting is not always projectile. Under palliative treatment it may become much less forcible if no less frequent. As has been shown above, it may occur also where there is no congenital stenosis.

These are the three cardinal features to be considered in making a diagnosis. Taken together, their presence will indicate congenital hypertrophic stenosis with a high degree of obstruction. Taken separately, the first only is of paramount importance. There is sufficient evidence to show that the other two may occur where pylorospasm exists alone. There is a great variation in the published statistics of this condition. Many observers have reported brilliant results in long series of cases under medical treatment. From the above conclusions we consider that, in many such instances, the diagnosis has been made on entirely insufficient grounds, and that the number of cases of true congenital pyloric stenosis is but a fraction of those reported. A positive diagnosis may never be made without finding the pyloric tumour.

4. *Constipation.*—This is usually marked. In typical instances the motions are small, hard, and infrequent. Its relation to the primary condition is evident. If very little food passes the pylorus there will remain even less to be evacuated. Reference has been made in the previous paper to the associated secretory inhibition. This lack of secretion explains the hard consistence of the stool. The diagnostic importance rests on the fact that the size of the stool will, in a measure, indicate the degree of obstruction at the outlet of the stomach, while its consistence will indicate the degree of secretory inhibition.

5. *Phimosi.*—In males phimosi, or an adherent prepuce, is constantly associated with congenital pyloric stenosis. Its frequency, character, and possible relation to the primary condition have been dealt with in the previous paper. That marked phimosi may be sufficient to produce pylorospasm reflexly is evident from the cases reported above and subsequently.

It has been shown<sup>1</sup> how definitely a powerful afferent stimulus, in its efferent response, not only involves the sympathetic system as a whole, but does so particularly in

the splanchnic system, and that such an efferent response in the splanchnic system not only involves the vascular distribution of the sympathetic, but also its intestinal muscular supply. Thus, it was pointed out that a reflex, acting both through the higher centres and also through the segments involved, might induce a powerful stimulus resulting in an inhibition of the intestinal muscle. The sphincters in the intestinal tract, however (i.e., pyloric and ileo-caecal), appear to have an inverse innervation, so that a stimulus which inhibits the bowel musculature causes a contraction of the sphincters. The powerful afferent stimulus arising from the prepuce is well known, and it is not difficult to appreciate that the constant series of small stimuli arising from the prepuce in a subject of phimosi may well induce, in this way, a spasm of the pylorus. It is possible that such a spasm may arise either from direct nerve stimulation or from excessive stimulation of the suprarenal hormone, or from both of these.

6. *Age of onset.*—The age at which these babies are usually brought for advice is from four to eight weeks. We are then told that the vomiting and wasting have gone on for from one to five weeks. So that the symptoms, in the great majority of cases, appear about the third week. Occasionally one does not see the child until, perhaps, the third month, and true cases have been reported as showing symptoms from the third month only. These cases are sometimes not easy to diagnose because of the difficulties in physical examination mentioned above.

On rare occasions examination under an anaesthetic may be necessary before a diagnosis can be made.

A history of projectile vomiting beginning about the third week, which is unrelieved by the ordinary methods of treatment, is highly suggestive, and should lead to a detailed examination in respect of the above signs and symptoms. Then an opinion can be formed as to whether the condition is one of pylorospasm or congenital hypertrophic pyloric stenosis.

## II.—Sex Incidence.

It is a remarkable fact that all published statistics show a very large preponderance of boys. In the series we quote, of 84 cases, there were only 13 girls. The male, being vagotonic, might be expected to show spasm sufficient to cause hypertrophy more often than the sympathetico-tonic female. But this cannot account for the total difference. Certainly girls do suffer from congenital stenosis, but we are able to show their behaviour to be different. They are slower developing the characteristic symptoms of obstruction, and therefore usually come under observation at a somewhat later age. (Vide Cases 4, 14, and 15.) That they will also show a correspondingly slower recovery than boys is particularly well illustrated by Cases 14 and 15. These cases will be referred to again in more detail, when these factors will be emphasised.

As has been stated previously, thickening of the pylorus has been noted in many post-mortem examinations of children, both male and female, who showed no symptoms of obstruction during life. It was also shown that the incidence of these symptoms depended upon the relationship existing between the degree of congenital hypertrophy and the severity of the added spasm. In girls the more urgent cause of spasm—phimosi—does not exist.

We are thus led to believe that many children, boys and girls, are born with some degree of pyloric hypertrophy who never develop pyloric obstruction. And we conclude that the sex difference is more apparent than real. That is to say, apart from the slight excess in the number of males, possibly due to their vago-tonicity, the sex incidence is about equal.

It would be interesting to know the relative number of boys and girls in Jewish children who develop pyloric obstruction. Our deductions from the present study would lead us to expect that, in Jewish subjects of pyloric hypertrophy, clinical symptoms of obstruction would be manifested in as many girls as boys. Further, that progress would be identical in both sexes under palliative or operative treatment.

## III.—Operative Treatment.

*Criticism of operative procedures.*—In estimating at their value the effects of different forms of treatment in a particular disease there are several factors which are essential to a sound judgment. Foremost amongst these is the necessity for every case to be studied under conditions of

<sup>1</sup> Tyrrell Gray and Parsons, Arris and Gale Lectures, Roy. Coll. Surg., 1912.



medical attention, after treatment, nursing, housing, temperature, &c., as nearly constant as possible. Only under such conditions can the vitiation of results by outside influences be excluded, and the intrinsic value of any operation be accurately estimated. For this reason the value of this study would be much diminished if it included cases seen in a number of other hospitals as well as in private practice, since such a lack of uniformity would prejudice the value of observations intended to support or disprove a definite hypothesis. It is well known that, up to the present, the results of surgical treatment of congenital hypertrophic stenosis are markedly inferior in hospital to private practice, whatever operation may be performed. Thus we can record successes both with Loreta's operation (divulsion), and with gastro-enterostomy in apparently hopeless cases, in private practice, when undivided individual attention and every possible facility were available. But at Great Ormond-street, up to April, 1918, when we first initiated the Rammstedt operation as a routine procedure, there had never been a single instance of recovery after surgical intervention. A second feature of importance in ascertaining the best surgical procedure, and the indications for its adoption, is that different methods should be given a trial by the same surgeon; for the fact that one surgeon obtains the best results with one particular operation, while another similarly perfects himself by practice with a different one, from which he deduces his figures, is of limited value in helping the profession to judge which method is to be generally adopted as the most hopeful. In order, therefore, to arrive at impartial results we have practised for the last few years three kinds of operation: (1) gastro-enterostomy, (2) Loreta's operation, (3) Rammstedt's operation. It is feared that the number of cases available is not large, because surgical results have been so unsatisfactory that it has been difficult to get physicians to allow cases to be operated upon; while, on other occasions, when the surgeon has been called in, their condition has been such that surgery has rarely been afforded a fair trial.

However, since the same disadvantages obtained when the operation of Rammstedt was first practised, the comparison of results in these three procedures is tolerably fair. The first point of importance, then, is the decision as to which variety of operation is the best and based on the soundest principles.

Pyloroplasty will not be discussed, because, though it may be possible to do this operation successfully in a limited number of cases, it is only necessary to see and feel some of the hard, almost cartilaginous, tumours so often met with, to appreciate the fact that the adoption of any plastic method is impossible with any degree of certainty or security.

The operation of Loreta, though it has been attended with such a great measure of success in the hands of Mr. F. F. Burghard, has disadvantages which cannot be ignored. In the first place, this procedure is unsound in principle because it lacks precision. Thus the object is to rupture the hypertrophied and spastic circular fibres without damage to the mucous membrane, and, if possible, without rupturing the peritoneal coat. That this object is attained only by violent measures is true, however carefully and slowly the dilators are introduced, and whatever length of time is allowed to elapse while each dilator rests in the pylorus before the next size is employed. Secondly, it is not always a simple matter to gauge the exact amount of dilatation required to rupture the muscular coat, though, when rupture has occurred, the gap can usually be felt with the fingers of the left hand as they grasp the pylorus during these manipulations. It is easy to avoid damage to the mucous membrane; indeed, with the most ordinary precautions, it is impossible to do harm in this way. There is no certainty at any time that the peritoneum will not split when the muscular coat gives way, for it is so thin, friable, and adherent to the tumour that, in many instances, the rupture of both may take place simultaneously. Thirdly, this very lack of precision leads to overstretching or to insufficient stretching, leaving to the surgeon's instinct and experience alone the estimation of the amount required. Recurrences of obstruction in the latter eventuality are to be expected. In the absence of full statistics no estimate of the percentage of recurrences can be given, but it does undoubtedly occur. Fourthly, such an operation on an obstructed stomach is more liable to be a septic one on account of the retained contents and consequent changes in the gastric

mucosa, since the stomach has to be opened in order to introduce dilators; and a certain amount of infection, however mild, must add to the severity of the operation in so small a subject, in spite of every care to avoid soiling. Fifthly, the operation cannot be performed carefully and gently in less than 15 minutes, most of the time being consumed in allowing each dilator to rest a short time in the pylorus as larger sizes are used. Such a length of time in an operation of violence on a young subject, together with the addition of the necessary sepsis entailed by opening the stomach, combine to make the operation a severe one. Sixthly, the exact site of the rupture can never be predicted with certainty.

It follows naturally that Loreta's operation is only available for early cases, when the nature of the condition is established soon after the onset of symptoms, and before the baby is markedly wasted. In later cases, when the subject is wizened and marantic, or almost moribund from loss of fluid, this operation is doomed to failure and cannot be advocated generally as a means of saving life. Now we submit that any operation of the severity and risk entailed in the surgical treatment of so dangerous a condition should, if the immediate operation risks are survived, at least be one that offers a certain cure with no risk of recurrence. This cannot be claimed, we believe, from Loreta's operation. Further, it must be practised on early cases of fair physique to offer a reasonable chance of success. If this principle be adopted as a routine, we believe that, though a definite proportion of cases will be operated upon successfully, in accordance with ordinary surgical risks, even favourable cases will sometimes succumb to Loreta's operation. Amongst these will be numbered a certain proportion who would have recovered by palliative measures alone. For these reasons we are of opinion that the ideal operation to be advocated generally is one which offers the chance of a certain cure, while being applicable to cases in which palliative treatment has been given a trial and failed. It is from this standpoint that we have made a study of congenital pyloric stenosis. In following this study we would ask our readers to bear in mind that, in every instance, operations have been performed only on infants with whom palliative measures had definitely failed and the child was losing ground. In no instances have operations been performed without giving such preliminary measures a fair chance. Further, we emphasise the fact that, had we been aiming at good statistics alone, many cases would not have been operated upon; and still further, that in no single instance has operation been declined owing to the feebleness of the subject. As a result life has been saved on more than one occasion in an apparently hopeless case, though naturally our actual figures suffer.

(1) *Gastro-enterostomy*.—The obvious drawbacks in Loreta's operation led us to try gastro-enterostomy as an alternative method. Successful gastro-enterostomy has, at least, the merit of certain cure. This operation was attended in the past with such a high mortality that, by common consent, it had been abandoned as a routine method. But we wished to try this method under spinal anaesthesia. The number of cases is too small to allow of statistical deductions, but the reasons for the abandonment of this procedure are of importance. Briefly, gastro-enterostomy has been performed on four cases; three were operated upon under spinal anaesthesia and one under warm ether anaesthesia. The posterior no-loop operation was performed on all the cases. Two were operated on at Great Ormond-street and both died within 48 hours. Two were operated on elsewhere and both recovered. One of these, in excellent condition, with no adverse symptoms after the operation, developed a fatal pneumococcal meningitis, by extension from the middle ear, about a fortnight later. The other was alive and well some few months ago, three and a half years after operation. There can be no doubt that spinal anaesthesia improves the outlook from this operation, which can be performed easily and securely in a total time of 15-20 minutes. With figures showing 50 per cent. recoveries in all cases, it might appear that there was no justification for abandoning this procedure. The figures, however, do not represent the whole case, and the reasons for discarding gastro-enterostomy are as follows.

The two most favourable cases were those at Great Ormond-street, where everything appeared in favour of recovery, yet both died. Of the two babies who recovered, one appeared practically moribund, the other seemed



hopelessly wasted and feeble; both owe their recovery to the most constant devotion and attention of doctor and nurse, and even so their condition was quite critical for some days. Again, though the operation can be quietly and gently performed under favourable conditions in 15 minutes, this end will only be attained by perfect team work between anaesthetist, sister, assistant, and surgeon, and allows no margin for surgical accidents, small delays, &c., and the hundred-and-one small events which contribute towards, or militate against, a smooth and rapid operation. Finally, even when everything has gone perfectly, without a hitch, the child's condition immediately afterwards is always bound to be critical; while, in the presence of any adverse circumstances, a fatal result is almost sure. It was concluded, therefore, that though many recoveries might be obtained with gastro-enterostomy, even in late cases, there would always be too great an element of "luck," and the prognosis must always be too doubtful to justify its routine adoption. There is another point which deserves mention. It has been shown in a post-mortem performed on one of these cases many months after gastro-enterostomy (death had occurred from other causes) that, though symptoms are definitely cured and the child is apparently normal in every respect, the pyloric tumour remains. In other words, gastro-enterostomy does not cure the congenital hypertrophy of the pylorus, but only short-circuits the site of obstruction. (Vide Rammstedt's operation (3).) Finally, since the aim of any operation should be, if possible, directed primarily at the cause of the evil, we trust that our study will show that gastro-enterostomy is a measure which aims only at circumventing the gastric obstruction, and does not attack the origin of such obstruction. It is a little difficult to account for the inferior immediate results obtained by gastro-enterostomy compared with those following Loreta's operation, for the time taken by this operation is no longer (indeed, it is often shorter); while the operation itself is of a gentler nature involving less manipulation. Nevertheless, it seemed clear that, in spite of the apparent certainty of cure, gastro-enterostomy ought to be abandoned as a routine method. Loreta's operation was therefore reverted to in cases where palliative treatment had definitely failed.

(2) *Loreta's operation.*—This operation has been performed on four occasions at Great Ormond-street; all were fatal. We record a total of 7 cases with one recovery. In all cases a feed was introduced into the duodenum as recommended by Mr. Burghard. The first two cases were operated upon under spinal anaesthesia, one male and one female; both were 6 weeks old; both died. In one of them the child did well for 11 days and gained 4 ounces in weight, and then commenced to go downhill and began to vomit. Subsequent to operation visible peristalsis was never seen. In the other case no cause of death is stated in the notes; but it may be stated that spinal anaesthesia was abandoned in these very wasted and feeble infants, owing to the frequency of massive collapse of the lungs to which there is a great liability. Of the other two infants who died after Loreta's operation, one is of special interest.

The child was a male of 4 months, in whom vomiting commenced at 2½ months. It was a weakly infant of 6½ lb. Loreta's operation was performed under open ether anaesthesia and lasted under 15 minutes. The muscular coat was ruptured by a No. 10 Hegar's dilator, which was left in situ for a few seconds. The pulse remained excellent throughout, but breathing became spasmodic during the dilatation, and continued so for some time after returning to the ward. There was an occasional vomit during the first few days, but the child's condition improved for the first 13 days, with a gratifying gain in weight. (Chart 1.) Diarrhoea and vomiting supervened, and though this was controlled at times the child gradually sank and died one month after the operation.

The two features to be noted in connexion with this case are:

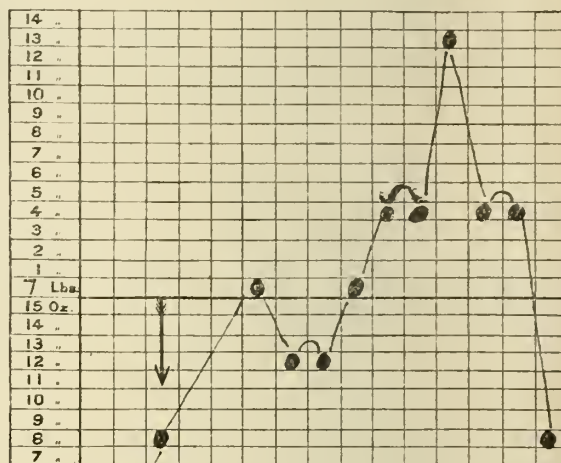
(a) The spasmodic breathing inaugurated by the dilatation of the pylorus. (b) The occurrence of vomiting after the operation.

(a) The first of these two has been noted by us on several occasions during Loreta's operation, and is attributable, we think, to a violent afferent vagus stimulus initiated by the violent stretching (and persisting for some time afterwards), which inhibits inspiration in much the same way as a "blow in the wind."

(b) The occurrence of vomiting after Loreta's operation was noted in all three cases which recovered from the

operation. Four cases definitely died from the operation, while two died within a month, as already detailed. One case recovered and is alive to-day. In the last three cases vomiting was noted after operation; it was not forcible in character, and visible peristalsis was not present. This feature is, we think, to be explained by the fact that, though the circular muscular coat is completely ruptured by the

CHART 1.



The arrow indicates the day of operation.

passage of the dilators, this manipulation induces a swelling and hyperaemia of the mucosa which partially closes the pylorus until this new factor subsides. It is not due to insufficient dilatation, for in each case the split in the muscle was definitely felt, and there were no signs of gastric obstruction such as could be observed before operation, while the vomiting was in no instance of a projectile character. We have, of course, too few cases to allow us to say how often this feature is to be noted after Loreta's operation; but, in view of our small experience, we should expect it to be fairly common.

The one case which recovered was of considerable interest in that it was due to this experience that Loreta's was abandoned in favour of Rammstedt's operation. In this case, during the final dilatation, the muscular and peritoneal coats were both split over a distance of about half an inch. The gap was closed by a catgut stitch, since any attempt at invagination was out of the question, owing to the hard and cartilaginous nature of the tumour. Contrary to expectation, the child made a good recovery, and it was this fact which overcame a natural disinclination to divide these two coats of the pylorus deliberately from the outside and leave them open with the mucous membrane exposed.

(3) *Rammstedt's operation.*—This operation aims at the relief of the pyloric obstruction without at any time opening the gastric mucous membrane. This procedure seems to have been adopted with success by Rammstedt, whose name is attached to the operation, in 1913. The credit, however, for devising a method of relieving the obstruction without opening the gastric mucosa must, we think, be given to an Englishman, Mr. Russell Coombe, of Exeter. This surgeon published a recovery in 1911 (Annals of Surgery) by an extra-mucous pyloroplasty, and in the same paper suggested a modification (which has since been practised with success) designed to facilitate the introduction of the necessary sutures. Rammstedt's operation surpasses in speed, simplicity, and certainty every other operation for the relief of hypertrophic pyloric stenosis, by eliminating every unessential detail. The essential principle of the operation is the recognition of the fact that the mucous membrane of the pylorus is sufficiently thick and redundant to provide by itself adequate protection for the peritoneum against leakage and infection from the gastric contents. The realisation of this all-important fact naturally suggests the simplest of all measures for the relief of the obstruction—namely, the longitudinal division of the hypertrophied

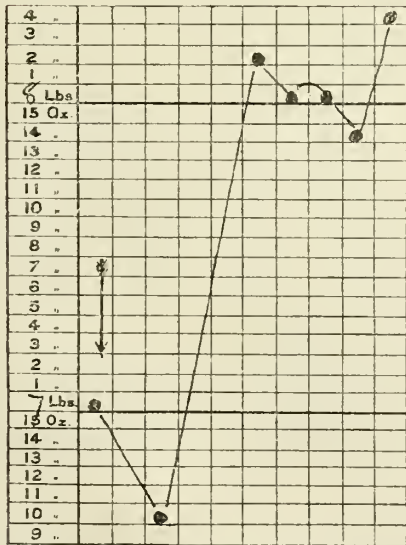


pylorus down to mucous membrane; this constitutes Rammstedt's operation. It might appear that such a simple operation offers, in its actual performance, little for the surgeon to learn; but experience has shown that this is not the case, and this study will serve a more useful purpose if we briefly describe some of the points of interest in the cases on which this operation has been performed. We have performed Rammstedt's operation on 17 occasions at Great Ormond-street, with seven deaths and ten recoveries, giving a mortality of 41.1 per cent. Two facts must be noted:—

- 1. Pre- and post-operative treatment has been practically identical in all cases.
- 2. In no instance have we declined operation on account of the bad condition of the patient, whatever the reason. In other words, every case, without exception, when palliative measures definitely failed, was afforded the chance of a cure by operation.

CASE 1.—M. Age 9 weeks. Symptoms present for four weeks. The child rapidly went downhill, and vomiting increased until at the time of admission the description is that of a very wasted baby, with drawn face, lying with eyes and mouth half open, fontanelle depressed, presenting classical symptoms and signs of hypertrophic pyloric stenosis. In spite of infusion, the child when first seen was grey and semi-conscious, with slow intermittent gasping respirations, for which it was placed in a mustard bath. Operation was temporarily declined unless improvement took place with subcutaneous infusion of saline and 2 per cent. glucose. This was continued for 36 hours, when it was considered that operation offered a faint chance of recovery. As it was thought that any of the more recognised operations offered little hope of success, Rammstedt's operation was performed for the first time. At the first incision the skin and subcutaneous tissues were oedematous with saline which oozed as if a local anæsthetic had been given, while, on opening the peritoneum, fluid poured out as in a case of ascites. The pylorus was brought up into the wound and an incision rapidly made through the hypertrophied area through all coats down to the mucosa. The pylorus was then returned to the abdominal cavity and the wound closed in layers. Temperature rose to 105° F. the same evening, but commenced to fall rapidly the following day. This child, though apparently quite a hopeless case, made an uninterrupted recovery. There was no post-operative vomiting. Loose motions were noted for a short time after operation. (Chart 2.)

CHART 2.



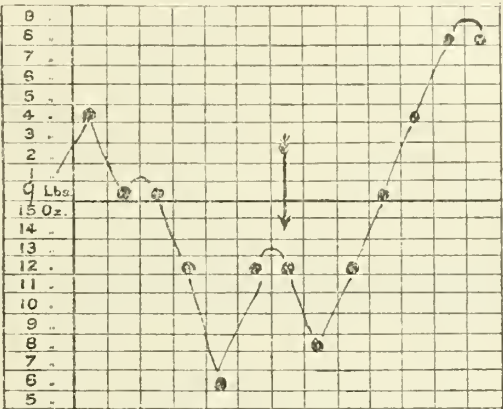
The arrow indicates the day of operation.

CASE 2.—M. Age 8 weeks. Symptoms started at 3 weeks. This case was booked for operation on the same afternoon as Case 1. Loreta's operation had been contemplated, but the simplicity and rapidity of the Rammstedt was so inviting that it was performed on this case also. In spite of the fact that medical treatment had been persisted in for over three weeks, with no relief of projectile vomits, the condition of the child was much better than in Case 1. The temperature rose to 104° the evening of the operation,

falling to 100° the following day. Recovery was uninterrupted and there was a small vomit on the ninth and another on the tenth day after operation. Loose motions were noted occasionally for the first 11 days.

CASE 3.—M. Age 8 weeks. Symptoms commenced at 5 weeks. Medical treatment for a fortnight, when vomiting became more frequent and 14 oz. in weight had been lost. Incidentally the temperature rose to 102° on the seventh day.

CHART 3.



The arrow indicates the day of operation.

or a week previous to operation. Rammstedt's operation was followed by an uninterrupted recovery. Temperature rose to 105° on the evening after operation. There was one vomit on the second day. Stools were formed on the tenth day, when there were seven loose motions, which improved with a rectal wash-out, and a steady gain in weight supervened. (Chart 3.)

CASE 4.—F. Age 8 weeks. Symptoms commenced at 5 weeks. Rammstedt's operation performed the day after admission. Uninterrupted recovery. The points to note in this case are the frequency of stools the two days before operation and the absence of "diarrhoea" after operation. This observation has a bearing on the different behaviour of girls, to which reference is made later. Post-operative temperature only rose to 101.4°, but it is worthy of remark that in this case the pre-operative temperature showed a variation of 97° to 98.8°. (Vide Case 3.)

CASE 5.—M. Age 8 weeks. Symptoms started at 5 weeks. Baby wasted and had lost much fluid; skin loose and inelastic. Rammstedt's operation was well borne and recovered from, and feeds were well taken. Gastric lavage the evening after operation showed a quantity of undigested milk and mucus. Forty-eight hours after operation the child developed some abdominal pain, and died suddenly an hour later. Post-mortem examination showed that the incision into the hypertrophied part of the pylorus had not been continued sufficiently far on the stomach side—in other words, the incision had been deep enough to sever all coats down to the mucosa, but had not completely divided all the hypertrophied portion in the most important situation. The lesson to be learned from this case, therefore, was that the hypertrophied portion must be divided throughout its whole length down to the mucous membrane. This seemed to be essential to the complete relief of the gastric obstruction; for, though the child was in good condition after the operation, the presence of mucus and undigested milk in the stomach shows that the obstruction was not completely relieved.

CASE 6.—M. Age 6 weeks. Symptoms dated from first week, becoming typical at 3 weeks, and culminating in frequent projectile vomits. Rammstedt's operation performed two days after admission, during which time the temperature varied from 97.4° to 99° and 101°. Recovery was uninterrupted and there was no vomiting. The temperature rose to 104° on the evening of operation, and to 105° on the following day, falling to normal three days later. "Diarrhoea" was noted on the second day. Steady gain in weight was noted from the fifteenth day.

CASE 7.—M. Age 6 weeks. Premature baby born at 7½ months and weighing 5½ lb. Child very feeble and weak. Symptoms dated from nine days ago, and were severe in character. Medical treatment for 17 days with no improvement. Rammstedt's operation was followed by death the same evening.



CASE 8.—This case is of special interest in view of the lesson learnt from a study of the result. M. Age 5 weeks. In good condition. Medical treatment for five days yielded no improvement in the vomiting, while the child steadily lost ground. Rammstedt's operation was performed on the seventh day after admission. The temperature rose to  $102.8^{\circ}$  on the day following operation, and showed from that time the usual steady fall up to the third morning. On the third afternoon the temperature rose again to  $102^{\circ}$ , and was accompanied by five vomits. Subsequent to this diarrhoea and rapid respirations developed; the temperature rose to  $104^{\circ}$ , and the child died at midnight, or nearly four days after operation.

*Commentary.*—Now the interest in, and instruction from, this case lie in the following facts: In Case 5 the obstruction was insufficiently relieved owing to the imperfect division of the pylorus on the stomach side. In the subsequent cases, therefore, special efforts were made to ensure that the division should be complete; and in this case (Case 8) the incision was carried too far down towards the first part of the duodenum. The mucous membrane was punctured at the lowest part of the incision, and had to be closed by sutures. The child did well for three days, when leakage occurred and was followed by death. Post-mortem examination showed that leakage and peritonitis were the cause of death. (At this point in our experience the same incident occurred in private practice. Fortunately, however, in this case the wound in the mucosa was more securely closed, no leakage occurred, and the child recovered.)

#### *Lessons Learned from Cases.*

The lessons we learned from these cases were as follows:—

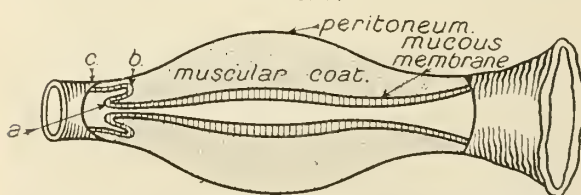
1. The mucous membrane beneath the hypertrophied pylorus is not only redundant, but is also very thick, and loosely connected with the muscular coat. It is this anatomical fact which renders it so easy to divide the two external coats without damaging the mucous coat over the obviously hypertrophied portion. The mucous membrane under the muscular coat of the stomach immediately adjoining the hypertrophied pylorus is also loosely attached; and it is easy, therefore, to divide well into normal stomach wall without fear of injury to the mucosa or of subsequent leakage. On the duodenal side, however, the mucosa is not only very thin, but it is firmly attached to the muscular coat, so that any prolongation of the incision below the hypertrophied portion is almost certain to wound the normal mucosa of the first part of the duodenum.

2. We also learned that the hypertrophy ends abruptly on the duodenal side in a peculiar manner, but on the gastric side it merges gently into the normal structures.

The peculiar configuration of the hypertrophied pylorus in the duodenal portion is of the highest importance. Thus, there are three features to be noted by the operator.

(1) The mucous membrane is firmly adherent to, and very thin and friable over, the terminal hypertrophied muscular coat at *a*. (Fig. 1.)

FIG. 1.



(2) This terminal hypertrophy projects into the lumen of the duodenum, and the adherent mucous membrane bends back with it towards the stomach to join the normal duodenal wall, where it is also firmly attached at *b*.

(3) It is clear that to divide the hypertrophy completely on the duodenal side as far as *a*, the incision must be carried as far as *c*. But it is equally evident that this cannot be done without just traversing the lumen of the duodenum. The impossibility of complete division of the hypertrophied portion of the pylorus by Rammstedt's operation might, at first sight, appear to constitute an important point in favour of Loreta's method; such a conclusion is unjustified. For not only is the final obstruction due to spasm at the gastric end (and not at the duodenal end) of the pylorus, but the thin and elastic duodenal wall in itself allows too much play for mechanical obstruction to occur at

this outlet. Thus the hypertrophied distal portion cannot and does not form an element in the obstruction, and there is no need for the division to be carried to its termination. The practical lesson, therefore, was that the incision must be carried well beyond the hypertrophied pylorus on the stomach side where the main responsibility for the obstruction lies; while, on the duodenal side, it does not matter very much if the division is a little incomplete, since the main obstruction is not at this situation. Moreover, in the post-mortem room it can be demonstrated that water can be forced from the duodenum through the hypertrophied pylorus into the stomach, but not in the reverse direction. In subsequent cases, therefore, the stomach side has been given special attention; and the landmark adopted for determining the upper limits of the incision was the point at which (1) the muscular coat becomes thin, (2) the muscular coat becomes vascular. In other words, we now make a point of ensuring that the incision stops exactly at a point where venous oozing commences. On the duodenal side we stop just short of the point where the white avascular coat merges into the normal vascular structures of the duodenum. In all subsequent cases these lessons, learned from disappointing experience, have been faithfully applied. The practical justification of these deductions becomes increasingly evident.

CASE 9.—M. Age 7 weeks. Symptoms commenced at 3 weeks. Medical treatment for five days produced some improvement in symptoms for a day or so, but subsequently the child became rapidly worse. Rammstedt's operation was followed by slow recovery, the delay being attributable to the sloughing of the skin at the site of one of the subcutaneous saline injections. Temperature rose to  $104^{\circ}$  in the evening of the operation, but fell to  $99^{\circ}$  the following morning. No vomiting from the day following operation, but "some diarrhoea" was noted for the first ten days.

CASES 10 and 11.—These two cases may be dismissed shortly as offering no basis for study. Both were submitted to Rammstedt's operation, as they were going downhill under medical treatment. Both were operated upon on the same day, during the persistence of influenzal bronchitis. It may be questioned whether these two children were given the best chance of recovery by operating under such adverse conditions, but after careful consideration we decided that the pyloric stenosis was the greater menace and acted accordingly. Had we been considering statistics only we should have refused to operate in both instances. Both cases ended fatally from purulent bronchitis, as evidenced by post-mortem examination, while the abdomen in each instance showed nothing abnormal. We propose, therefore (as we think we are justly entitled to do so), to exclude these two cases from our study.

CASE 12.—M. Age 4 weeks. Symptoms dated from 2 weeks. Medical treatment for eight days resulted in a steady loss of weight of 5 oz. Rammstedt's operation was performed on the eighth day after admission. The temperature rose to  $103.4^{\circ}$  on the day after operation, when the gradual fall was interrupted by repeated convulsions, cyanosis, and rigidity, ending in death three days after operation. There was no post-operative vomiting, while the child bore the operation excellently, and subsequently took its feeds well. Post-mortem examination revealed nothing abnormal. In fact, this case is one of the only two instances in our series in which a fatal result cannot be explained satisfactorily.

CASE 13.—M. Age 4 weeks. Symptoms dated from 3 weeks. Medical treatment persisted in for eight days without improvement. The child weighed 8 lb. at 3 weeks and 6 lb. 6 oz. at the time of operation. Rammstedt's operation was followed by uninterrupted recovery. Post-operative temperature rose to  $105.2^{\circ}$ , but fell gradually to normal on the third day. There was no vomiting after the first day.

CASE 14.—This case presented features of unusual interest. F. Age 3 months. Full-time child, weighing 8 lb. at birth. Vomits started a few days after birth and gradually got larger, more frequent, and more forcible. Child was admitted to Great Ormond-street at 3 months of age. The abdomen was always distended; the pylorus could never be felt with certainty, and we were never able to see gastric peristalsis. A series of X ray examinations after the taking of himuth, carried out on two occasions, showed that a small quantity of himuth escaped through the pylorus soon after it was taken, but that, after this small quantity had passed, the rest remained in the stomach for 48 hours (after which the examination ceased). Vomiting persisted in spite of medical treatment carried out for a month, during which time the child steadily lost ground. In spite of



almost daily infusions of saline and glucose the weight fell from 7 lb. 8 oz. to 6 lb. 4 oz. Rammstedt's operation was performed and was followed by immediate improvement in the symptoms, while a return to the normal and progressive gain of weight was slow and delayed for some weeks, and was characterised by fatty stools for a considerable time. The temperature after operation rose to 105.2° on the second day, falling to normal on the fourth day. There was no frequency of stools and no vomiting subsequent to operation. One point of interest in this case consists in the fact that, though under the most careful and constant supervision for a month previous to operation, the pylorus could never be felt with certainty and we never succeeded in seeing peristalsis, yet directly the child was anaesthetised for operation peristalsis was clearly present to a marked degree.

#### *Effect of Anaesthetic.*

We have already suggested that powerful or constantly recurring afferent stimuli evoke an efferent sympathetic response, and have pointed out that the splanchnic nerves share in this phenomenon to a marked extent. The result of such impulses is, therefore, a corresponding stimulation of the splanchnic nerves, with two main results so far as this study is concerned.

(a) Direct stimulation to contraction (i.e., spasm) of the pyloric sphincter.

(b) A corresponding excess of absorption of suprarenal secretion into the blood, with an accompanying increase in pyloric spasm. The increased contraction of the pylorus is not only accentuated with peristalsis, but such a contracted pylorus is rendered more easily palpable. In this case the stimulus of the anaesthetic, aided by the relaxation of the abdominal walls, seems to be the explanation of this phenomenon. Support is lent to this explanation by the frequency with which early anaesthesia induces visible gastric peristalsis.

CASE 15.—F. Age 11 weeks. Breast-fed, started vomiting at 2 weeks. Brought up to hospital at 4 weeks. Kept on the breast with daily lavage, and, as there was no improvement, supplementary feeds were given. Patient showed a steady but slow loss of weight for eight weeks on medical treatment. Rammstedt's operation performed on admission, pituitrin mxx. being administered previous to operation. Recovery uninterrupted, but progress slow. Temperature rose to 104° after operation, and fell to normal on the third day. No post-operative vomiting and no diarrhoea. This child was in excellent condition before operation and remained so afterwards. The subsequent history of this case is interesting. Peptonised milk was given until the twelfth day, during which time the weight fluctuated round a fairly even figure. Subsequently citrated milk was substituted, with the result that 5 oz. in weight was lost in four days. A steady increase in weight immediately followed the return to feeds of peptonised milk.

CASE 16.—M. Age 6 weeks. Brought to surgical out-patients because of difficulty in passing water, and sickness. Onset sudden at 4 weeks. Projectile vomiting, visible peristalsis, a palpable tumour, and constipation completed the picture; while phimosis (of the type referred to) was well exemplified. Circumcision two days later was followed by a cessation of projectile vomiting, and the passage of copious greasy stools. Loss of weight ceased on the fourth day, and symptoms continued to be relieved until the ninth day, when the recurrence of projectile vomiting demanded radical treatment. Rammstedt's operation was followed by immediate relief of all symptoms, and the passage again of copious fatty stools. There was no post-operative vomiting. Points worthy of comment are:—(1) This was the largest pylorus on which we have ever operated; (2) there was a gain in weight of 11 oz. in the first six days.

These points indicate:—(1) That the infant was born with a pyloric hypertrophy so excessive that the orifice was nearly closed; (2) the deciding factor in the final closure was the added spasm from phimosis which induced a very mild degree of secretory inhibition; (3) circumcision relieved the added spasm to some extent, but not sufficiently to re-establish normal conditions, owing to the excessive hypertrophy.

Briefly, the congenital hypertrophy was the preponderating feature, and therefore the case was only amenable to radical treatment. The fact that secretory inhibition played a small part is evidenced by the immediate post-operative gain in weight.

CASE 17.—M. Age 5 weeks. A very poor, weakly, wasted infant with classical symptoms. Vomiting began about the twenty-fifth day. Phimosis was well marked and of the usual type. Circumcision was followed by no improvement in the symptoms in three days. As the child had no reserve

power to draw upon, and added spasm was clearly playing a minor rôle in the obstruction, we did not wait longer, but decided on operation. Rammstedt's operation was followed by immediate relief of vomiting and the passage of the usual loose, fatty stools. The pylorus was exceedingly large. There was no post-operative vomiting after 12 hours, and the child's condition continued to improve daily. Sudden death from unexplained causes on the fifth day surprised everyone. Post-mortem examination of a most detailed character failed to show any cause of death. (Vide Cases 18 and 19.)

In addition to these cases on which Rammstedt's operation was performed, we have selected two cases in which circumcision so completely relieved the obstructive symptoms that they are worthy of note. If we do not report in detail all cases where the results of circumcision might support our contention that phimosis is the most important cause of added spasm, it is only because we do not wish unduly to labour the point.

CASE 18.—A male child, with symptoms of projectile vomiting, constipation, and wasting. Phimosis of the usual type was marked. Visible peristalsis was noted, but no tumour was felt. Circumcision was followed by immediate cessation of vomiting and the passage of copious greasy stools. This amelioration of symptoms continued until sudden death occurred 60 hours later. Post-mortem examination showed no pyloric hypertrophy, and the cause of death is unexplained.

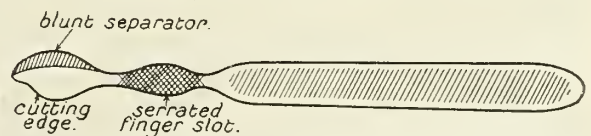
CASE 19.—This is of exceptional interest. A male infant, in whom visible peristalsis and a palpable tumour, added to the characteristic history, established the diagnosis. The usual type of phimosis indicated circumcision, which, with one relapse, gradually, but completely and permanently, relieved vomiting and constipation. Gain in weight commenced on the eighth day, and stools were becoming normal about the eleventh or twelfth day. On the thirteenth day, five loose, green, undigested stools were passed containing mucus. On the fourteenth day 7 oz. in weight were quickly lost, and the baby died quite suddenly.

In this case all the symptoms of pyloric obstruction were relieved by circumcision, and the definite improvement in the stools at about the eleventh or twelfth day (together with the preceding steady gain in weight) supports our experience—i.e., that pancreatic function begins to be re-established about this time after the relief of the pyloric obstruction. It is possible that this child, already weakened by starvation, could not withstand even the slight toxæmia which may have accompanied a mild infective diarrhoea. The stools were normal for the 24 hours preceding death.

#### *Details of Operation Performed.*

A study of these 17 cases teaches much in connexion with the actual performance of the operation, and as our experience has shown us that the success of the operation depends in no small measure on apparently insignificant details, the procedure, as we now practise it, should be described. The essence of the operation is its simplicity

FIG. 2.



and rapidity; and this, being the case, there is no necessity for hurry. It can be quietly and comfortably performed with care and deliberation in a minimum of five minutes and a maximum of seven minutes. If everything goes smoothly the latter figure need never be exceeded. A special knife has been made by Messrs. Allen and Hanburys in order to combine rapidity with safety. It is exceedingly simple and consists of semicircular cutting blade on one side with a blunt separator on the other, so designed that there are no sharp points in the cutting part which could inadvertently damage the gut. (Fig. 2.)

This knife is held like a pen, the cutting side being used first, and then the knife turned over and the blunt separator employed for completing the division. The abdomen is opened by an incision about 1½ in. long, about ½ in. below the costal margin, at about the junction of the outer and middle thirds of the right rectus. The incision is continued



through the rectus fascia and the muscle is split. The peritoneum is opened for about 1 in. in length and a pair of artery forceps clipped on it at either extremity. Such an incision usually exposes the liver in about the upper two-thirds of its length. The liver is gently rotated upwards and the stomach wall lifted out of the wound by picking it up with a pair of forceps. The stomach is caught with the finger and thumb of the right hand and lifted gently upwards and to the left. At this point there often may be experienced a little difficulty in presenting the pylorus in the wound. We have observed that any degree of traction influences (sometimes to a marked extent) the respirations, and so the child's general condition. In order, therefore, to avoid traction we find that the best manoeuvre is to hold the stomach wall near the pylorus out of the wound with the right hand, while with the left finger and thumb the abdominal wall is pressed back behind the pylorus rather than the pylorus brought up to the abdominal wall. There is much less disturbance to the respirations if this simple manoeuvre is remembered and practised. The left hand now holding the pylorus, the incision is made longitudinally with the cutting part of the knife in the whole length of the hypertrophied part, stopping just short of the normal bowel on the duodenal side, but carried well up into normal stomach wall. (In the white, large, avascular type the commencement of oozing is the indication that normal tissue is reached.)

The site of the incision deserves a word. This should be placed as far back as can be comfortably arranged, since it then falls into alignment with the plane of the lesser curvature. In the large avascular type this plane is easily recognised as an area short of which the termination of the circular vessels can be clearly seen, and therefore as the situation of choice for the incision. In the small vascular type this area can only be selected in a speculative way by placing the incision as nearly in a plane with the lesser curvature as possible; or, in other words, as far back as can be managed comfortably. The incision is deepened with the knife edge in the middle of the tumour until the pearly mucosa is seen, and when this is exposed, towards either extremity, just short of the termination of the hypertrophied area. The knife is now inverted and the remainder of the operation completed with the blunt separator. The division in the stomach side is carried by a cutting movement of the blunt separator until the mucosa is seen lying beneath the thin and normal stomach wall. Finally, when the mucosa has been exposed over the whole length of the original incision, the blunt separator, by a side-to-side movement, combined with a little pressure of the instrument and a little squeezing with the left finger and thumb grasping the pylorus, completely frees the mucosa from the muscular wall, and allows it to protrude a short distance into the severed outer coats. These manoeuvres take longer to describe than to practise. The pylorus and antrum are then returned to the abdomen and the abdominal wound sutured in layers. The whole operation can be performed quietly and comfortably in 5-7 minutes, and can always be guaranteed to last no longer than ten minutes. The simplicity and rapidity must appeal to every surgeon once it is recognised that such a wound in the gut can be left open with impunity. The most important point to remember is the adequate division of the sero-muscular coat on the stomach side; Case 5 illustrated the necessity for full division on the stomach side until normal stomach wall is reached. In confirmation of this may be quoted a case of Mr. L. E. Barrington-Ward's at Great Ormond-street. This child after operation had persistent vomiting, which was so characteristically of the obstructive type that Mr. Barrington-Ward operated a second time, completing the division of the hypertrophied portion on the stomach side. Vomiting ceased and the child recovered.

Mortality.

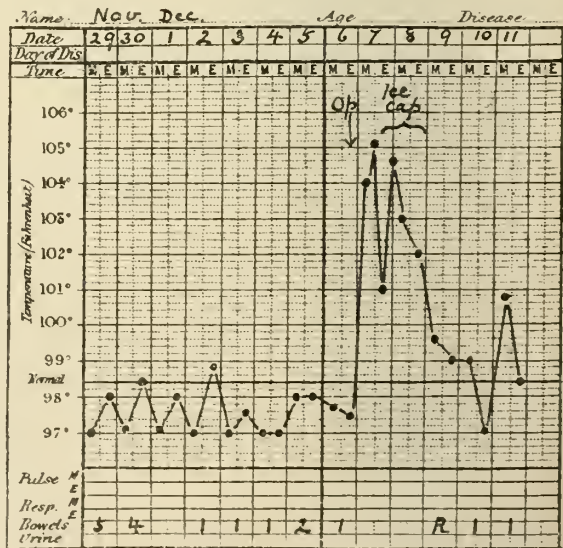
It will be evident that our first four cases gave high hopes of a safe operation with small risk. Subsequent experience was less fortunate so far as our figures were concerned, but very valuable for the purpose of establishing this operation as the method of choice in all cases. Our total mortality in all cases of Rammstedt's operation is 41.1 per cent., a marked improvement on the previous 100 per cent. Up to January, 1919, the total figure in hospital worked out at 38.8 per cent. In order, however, to ascertain the intrinsic value of this operation in uncomplicated cases, it is only fair that Cases 10

and 11 should be excluded, since they both died of purulent bronchitis after an operation performed (as offering, in our opinion, the only chance of recovery) during an attack of influenza and bronchitis then prevalent. This gives us 15 cases with 5 deaths, or a mortality of 33.3 per cent. Of the 4 remaining deaths, 2 (Cases 5 and 8) are attributable to lack of experience—i.e., to easily avoidable causes. For while Case 5 died from insufficient division, Case 8 died as the result of dividing too much. Any fair estimate of the intrinsic mortality of Rammstedt's operation, therefore, will be one which excludes deaths attributable to inexperience. Excluding these two cases, we have 13 cases with 3 deaths, or a mortality of 23 per cent. It will be seen that, with the operation conducted as we describe it (together with the indications for operation, palliative and post-operative treatment, which we shall shortly describe), the operative mortality of all uncomplicated cases (however poor their condition) works out at 23 per cent. We have only had two unexplained deaths in children operated on in good condition, for the other two remaining fatalities (Cases 7 and 17) were both very minute, sickly, and marantic infants. Therefore, while we estimate the mortality in all uncomplicated cases at 23 per cent., we feel justified in saying that mortality in favourable or early cases is represented in our series by 11 cases and 1 death, or a mortality of 9 per cent. A mortality of 9 per cent. in hospital practice, even with all unfavourable cases excluded, represents a striking plea for the adoption of this operation. Finally, we wish to lay stress on the fact that whereas the recovery of our first four cases was surely due in a large measure to good fortune, the lessons of our subsequent failures have, so far as in us lay, been turned to good account. Thus our results are improving steadily, as evidenced, not only by the recovery of seven out of the last eight consecutive cases, but by the rarity of post-operative vomiting in the later cases. We feel we can confidently predict a marked improvement in the figures in the near future.

Post-operative Temperature.

There is one point in connexion with this operation which is of great interest—namely, the post-operative temperature. We append a typical chart in one of our series where the child made an uninterrupted recovery. (Chart 4.) It will

CHART 4.



be seen that the temperature rose on the evening of operation to 105.2°, an ice-bag being applied to the head whenever the temperature rose above 104°. Finally, two of our series (Cases 12 and 17) died somewhat suddenly and unexpectedly (when their excellent progress had placed them out of obvious danger) three and four days respectively after operation. Progress had been eminently satisfactory and unaccompanied by vomiting. Post-mortem examination showed no obvious cause of death; and our view that these deaths



were independent of the operation is supported by a case (Case 18) of pyloric spasm where circumcision alone produced complete relief of symptoms. 60 hours later the baby died suddenly. Post mortem no cause of death could be found, and no hypertrophy of the pylorus was present. Case 19 is another similar instance in a case of hypertrophy, where circumcision relieved the obstruction. A study of nine cases which recovered shows that the highest temperatures reached were respectively 105°, 104°, 105°, 101·4, 105°, 104°, 103·4°, 105°, and 104°. Thus in only two instances did the chart fail to register 104° at least. The curious fact in this connexion is that the babies did not seem ill; and in several instances the observer would not have realised such an abnormal temperature from the child's appearance. The patients seemed to be none the worse, and the temperatures always fell to near normal on the second to the fourth day. We have been unable to find any satisfactory explanation of this phenomenon. It is not due to any infection at the site of the pyloric incision, for the post-mortem examinations never showed signs of peritonitis, with the exception of Case 8. Three of the cases showed a variable temperature previous to operation (from 97° to 101° or 102°), but this may have been influenced by saline and glucose infusion, and will not help to explain the abnormally high temperature after operation in practically all cases. The rise of temperature is of no importance, and we think it is probably central in origin. The application of an ice-bag to the head quickly reduces the hyperpyrexia. The other feature shown in this series is that vomiting only occurs exceptionally (and is not projectile in character) if the operation has been properly performed.

#### *Advantages of Rammstedt's Operation.*

From our study, up to the present, therefore, we do not hesitate to advocate Rammstedt's operation when surgical interference is necessary; and, in our opinion, it will in the near future take the place of every other surgical method devised for the cure of hypertrophic stenosis of the pylorus. In further support of this, Rachford also reports a post-mortem examination, six months after Rammstedt's operation, where the child had died from other causes. In this case, contrary to his experience after gastro-enterostomy (vide supra), no trace of the tumour could be found. Our own experience, both clinical and post mortem, has shown that after Rammstedt's operation the pyloric hypertrophy rapidly disappears. For in Case 17 five days after operation the hypertrophy had diminished by at least two-thirds of its former extent, and the mucous membrane lay almost smoothly round the incision. Further, so clearly and smoothly had the incision been sealed over by organised lymph, that it was difficult to reopen the wound in the sero-muscular coat.

#### IV.—Treatment.

It is a regrettable fact that the net results of treatment by all methods in all cases have not been good. During the years 1915-16-17 54 cases were admitted to Great Ormond-street. The majority of these were treated without operation, and in those where operation was performed various methods other than the Rammstedt's were employed. The total mortality was 80·5 per cent. The mortality of those operated upon was 100 per cent. There are three explanations of this fact:—

(a) The lack of an ideal operative technique where operation was indicated.

(b) The insufficient appreciation of any reasoned indications for operations owing to

(c) Failure to realise the true mechanism of the pyloric obstruction.

(a) A detailed analysis of the various operative procedures has been given, and it has been shown that Rammstedt's operation, by virtue of its simplicity and applicability to all cases (both early and late), is the only one to be advocated when palliative treatment has definitely failed and surgical intervention is indicated. Thus, at Great Ormond-street during the past year, when this operation was first performed, the mortality of our cases operated upon was 41·1 per cent. while the total mortality showed a proportionate decrease.

(b) and (c) Until the present no rational explanation has been offered of the nature of the pyloric obstruction. Thus, failing a sound basis for treatment, such treatment has been

largely empirical, or dependent only on individual judgment. In a previous communication on the pathogenesis of pyloric stenosis an explanation has been offered of the occurrence at birth of varying degrees of pyloric hypertrophy. It was shown that in the large majority of these cases certain subsidiary conditions added to the stenosis produced by antenatal hypertrophy, and initiated the symptoms of obstruction. These are:—

(1) Inhibition of pancreatic secretion dependent upon the original hypertrophy, or upon the superadded conditions of (2) gastritis, (3) spasm due to phimosis, (4) spasm from unknown causes.

(1) The normal sequence of events in which the amount of pancreatic secretion varies directly with the amount of acid chyme passing through the pylorus and over the duodenal mucosa has been shown by experimental physiologists. It has also been shown that, until such time as acid chyme has been neutralised by alkaline pancreatic secretion, the pylorus remains closed. We believe that the pancreatic function, antagonised originally by hyper-adrenalism, is at least diminished, so that the balance between these two fluids is disturbed. This results in a prolongation of the time during which the duodenal contents remain acid, and thus during which the pylorus remains closed. The function of the gland never can have been entirely abolished, but the formation of its external secretion would have to be stimulated indirectly by acid chyme in the duodenum. It follows that a diminishing amount of acid chyme passing through the pylorus results in the exhibition of still less alkaline secretion, and there is the increasing tendency of the pylorus to remain closed. So the vicious circle is established.

It must be conceded then that, when the amount of pyloric hypertrophy existing at birth is sufficient in itself to cause obstruction, the amount of pancreatic secretion exhibited will be the minimum. In this instance the vicious circle is established at once. Again, when there is a moderate degree of congenital hypertrophy the vicious circle will take longer to become established unless some other added cause results in a more rapid closure of the orifice. And, again, where there is only a slight degree of congenital hypertrophy there may be sufficient acid chyme passing through the pylorus to satisfy physiological requirements. In this instance the child would never show symptoms of obstruction unless there were added some other cause of spasm severe enough to complete the closure. And, finally, we must draw attention to those cases where there was no ante-natal hyper-adrenalism, and therefore no congenital hypertrophy, but where obstruction may result from severe pylorospasm alone. In this instance the obstruction is completely relieved by the removal of the cause of the spasm.

Such cases should never be considered in the same category with congenital hypertrophic pyloric stenosis.

(2) *Gastritis*.—Food remaining in the stomach an undue length of time will set up a retention gastritis, with consequent swelling and hyperæmia of the gastric mucosa. This clearly contributes towards the closure of an already stenosed pyloric orifice. The urgency of the symptoms will depend upon the relation between the degree of hypertrophy and the amount of gastritis.

(3) *Phimosis*.—It has already been shown how phimosis, or preputial adhesions, may produce spasm of the pylorus. We believe this to be the most potent cause of added spasm. This explains the fact that the great majority of babies presented for treatment on account of pyloric obstruction are boys.

It will be shown that these statements as to the relation of phimosis and gastritis with pyloric hypertrophy are amply borne out by the results of treatment.

(4) *Spasm from unknown causes*.—It cannot be claimed that gastritis and phimosis are the only causes contributing towards the complete closure of the pyloric orifice. John Thomson reports cases that have been cured by the administration of sedatives such as chloral hydrate; and we realise that there may be many unrecognised causes of pylorospasm, which, according to the relation between their severity and the amount of hypertrophy, might contribute towards closure of the outlet.

It will now be seen that, apart from extreme congenital hypertrophy, we are in a position to gauge the urgency of the



obstruction by the degree of secretory inhibition. This cannot be estimated accurately, but there are certain indications upon which conclusions may be based. Thus, when insufficient food for physiological requirements passes the pylorus, there are, in addition to the signs and symptoms upon which the original diagnosis rested, loss of weight and infrequent, hard, dry bowel motions. The consistence of the motion depends upon the absence of secretion, its size on the amount of food passing the pylorus. Soon after the obstruction is relieved, in addition to the cessation of vomiting and gastric peristalsis, the stools become more bulky, loose, greasy, and more frequent. The motious are of this character because, although the gastric secretion has a slight lipolytic action, pancreatic secretion is inhibited, and most of the fats are coming through incompletely changed. A reference to all our cases in which symptoms of obstruction were relieved with or without operation will support this statement. The digestion of the proteids we can accomplish, in a measure, by peptonising the milk, but the fats we cannot sufficiently modify. Emulsification and saponification cannot proceed in the absence of pancreatic secretion. As soon as this function has been re-established the stools will resume their normal consistence and the child will gain more rapidly in weight. It is against reason that the function of the pancreas, which has been inhibited for varying lengths of time, should be resumed the moment the obstruction is relieved. Accordingly we have found that the length of time necessary for the pancreatic secretion to be re-established is almost directly proportionate to the length of time it was in abeyance. Thus, children whose pyloric obstruction had been relieved by operative or palliative treatment ceased to vomit and began to gain in weight in from 10-14 days from the beginning of treatment. The stools in some still showed incompletely changed fat, and in them improvement, as evidenced by gain in weight, was not marked until the stools became normal. A reference to the charts of our cases will bear this out.

The only exception to this is in the case of girls. In them the onset of symptoms was more gradual, and the improvement consequently much slower. Reference in this connexion should be made to Cases 14 and 15. This, again, supports our contention that phimosis is the most potent cause of added spasm. Girls being exempt from this influence are much slower developing complete closure. In consequence of this the pancreatic gland, functioning incompletely for a long time, will take a proportionately long time in regaining its function. It is only after due appreciation of all the factors contributing to pyloric obstruction that we may now consider ourselves in a position to place the treatment on a rational basis. There are very definite indications as to the line of treatment to be advocated: (1) It must be *radical* when the secretory inhibition is established at once by a maximum amount of congenital hypertrophy at birth, and a minimum effect from added causes. (2) It will be *palliative* until we have determined, by treatment of the added causes of closure, whether their influence was the preponderating one or not. (3) We have a critical point in the progress of the treatment at which we know whether the obstruction has been relieved by the removal of one or more of these added causes. There are three general considerations in the treatment, common to all.

1. *Diet*.—In all cases the food given should be peptonised milk. This is not the place to establish the value of milk as the best artificial food, and we shall not labour the point. Breast-fed babies admitted to the hospital are given as many feeds from the breast as practicable and complementary feeds of peptonised milk. From the preceding observations it naturally follows that the milk should be peptonised. With one of the various media for pancreatisation we have the means of compensating for (at least as far as the proteids are concerned) the deprivation of pancreatic secretion. There is a 25 per cent. dilution of the milk in the process of peptonisation, and it is clearly superfluous to dilute further a milk whose proteid is already prepared for absorption. The fats and carbohydrates are well below 3 per cent. and require no further dilution. Although we know that fats are not well tolerated, it is not wise to eliminate them entirely, since their very presence in the duodenum may help to provoke the exhibition of lipolysins. We have not found it necessary to modify the quantity or the feeding interval. The usual amount for the weight and age of the child should be given, with no more than nine feedings in the 24 hours.

2. *Gastric lavage*.—In all cases gastric lavage should be employed. This treatment is based on the knowledge of the importance of gastritis as a contributory factor to completing pyloric obstruction. A mildly alkaline solution is used through a nasal or oesophageal tube. It should be carried out once or twice a day, depending upon the severity of the local symptoms. After operation it may be discontinued, since the obstruction has been relieved, and the re-establishment of normal drainage is all-sufficient. Otherwise, it is continued until the wash-out is free from mucus. Lavage is never stopped abruptly, but the intervals between the treatments are gradually lengthened until they can be dispensed with altogether.

3. *Constipation*.—Recognising the cause of constipation to be lack of bulk as well as of secretion due to pyloric obstruction, no cathartic should ever be given. A small oil enema or rectal lavage is all that is necessary. Apart from general considerations, the treatment will naturally fall into divisions: (1) Urgent treatment, (2) palliative treatment, (3) radical treatment.

(1) *Urgent treatment*.—Although we have demonstrated above that there is a critical point up to which we may safely pursue palliative treatment, there are two groups of cases which must be considered as presenting urgent indications for radical treatment.

(a) *Extreme congenital hypertrophy*.—In this small group the amount of hypertrophy present at birth is sufficient to cause obstruction. The babies forcibly eject the first and every subsequent feed, and gastric lavage with (in boys) circumcision fails to relieve the symptoms, even temporarily. These cases are to be considered as surgical emergencies, and should be operated upon as soon as the diagnosis is established.

(b) *Frail, puny babies*.—Some babies are not presented for treatment until the wasting, consequent upon the obstruction, is extreme. They have practically no reserve strength to face a possible operation. If their history is that of group (a) they are treated in the same way. If the symptoms date from later in life some factor has contributed to the closure of the pylorus. They are treated in the routine way with gastric lavage and fed with peptonised milk. Their strength is further fortified by the subcutaneous injection of 2 per cent. glucose in saline solution. In boys, if phimosis or preputial adhesions exist, circumcision is performed. Unless there is immediate (within two or three days) cessation of vomiting and the evacuation of larger, greasy stools operation takes place at once. If improvement is not obtained it may mean that the effect of hypertrophy preponderates over that of any added cause. These babies are so frail that we cannot afford to wait for the critical point—i.e., 10-12 days from the commencement of treatment. These, too, are to be regarded as surgical emergencies and operated upon immediately. In this connexion reference should be made to Case 17. It is thus seen that urgent treatment means operation upon certain cases within the tenth to twelfth day limit.

(2) *Palliative treatment*.—(a) *Secretory inhibition*.—It has been shown that the ultimate effect of stenosis of the pyloric outlet is suppression of the pancreatic secretion, which very suppression in itself contributes to the closure of the orifice. This condition can only be treated in one way. There must be sufficient acid chyme in the duodenum to stimulate the pancreas to normal activity. This can only be accomplished by relieving the pyloric obstruction. Thus, if by 10-12 days the routine treatment of eliminating any other cause of added spasm has not succeeded in securing a cessation of vomiting and the appearance of the characteristic stools, operation is indicated. We may say here, and this will also apply to any similar circumstance, we do not demand an *absolute* cessation of vomiting. There may be an occasional non-projectile vomit, but this is of no moment if the stools show that a fair amount of food is passing the pylorus and there is ever so slight a gain in weight. Our observations have taught us that all babies, in whom every contributory cause of closure has been eliminated and in whom symptoms of obstruction persist, come to operation. It has been shown that in no other way can the pancreas be stimulated to renewed function. Reference in this connexion should be made to Cases 16 and 17.

(b) *Gastritis*.—It is probable that in most cases of pyloric obstruction a certain amount of retention gastritis with



consequent swelling and hyperæmia of the mucosa is present. Where this is sufficient to complete the closure of the pyloric orifice its relief should result in the removal of the obstruction. Thus, in the case of a male infant recently admitted under Dr. Still the diagnosis was established in the usual way. There were neither phimosis nor preputial adhesions, therefore circumcision was not performed. He was fed on peptonised milk, and his stomach was washed out daily. About the twelfth day, the vomiting, which had been variable, ceased altogether; the stools, which had been occasionally loose, became more bulky, greasy, and more frequent, and he began to gain in weight. His improvement has been progressive ever since. In the case of Ivy M., the same procedure was followed, with similar results. Thus, gastritis in itself may be the determining factor in producing closure of the pylorus. If successful results are not obtained by this routine, and the possible effects of phimosis in boys have been eliminated, only one cause of obstruction remains—the preponderant element of hypertrophy with its attendant secretory suppression, for which operation is the only remedy.

We have referred elsewhere to the fact that girls do not behave in quite the same manner as boys. Uninfluenced by phimosis, the most potent cause of added spasm, they are slower developing symptoms of obstruction, and they will be correspondingly slower in showing improvement following relief from obstruction. For this reason we are disposed to wait longer than the 10–12 days before deciding that operation is indicated upon girls. We advocate this because the pancreas may be slower in regaining its function. Thus, if at the end of 10–12 days from the commencement of treatment there is still an occasional vomit with constipated motions, we do not operate unless there is marked or progressive loss in weight. We wait until a period of time has elapsed corresponding with that during which the symptoms of obstruction were developed.

(c) *Phimosis*.—We shall not again enter into a discussion of the relation of phimosis to pyloric stenosis. It is sufficient to repeat that we consider it the most potent cause of added spasm in boys. If babies in whom the diagnosis of congenital hypertrophic pyloric stenosis has been established show phimosis or preputial adhesions they should be circumcised, or the adherent prepuce separated at once. In Case 16 circumcision was immediately followed by complete cessation of vomiting, and the appearance of characteristic motions. Within a few days, however, the symptoms of obstruction began to reappear, and were well established by the tenth day. In this case phimosis was only a contributory cause of spasm, and was not the only one. Gastritis was eliminated by the failure of lavage to relieve the symptoms, since these reappeared. There remained the only cause of obstruction—hypertrophy plus secretory inhibition, for which operation was performed and gave relief. And in support we may again call attention to the fact that the child showed the largest pylorus we have ever seen.

Again, in Case 19, under Dr. Colman, circumcision was performed. There followed occasional vomits and loose motions. After the tenth day the patient did not vomit again. On the eleventh and twelfth days there were the frequent, bulky, greasy motions, and he began to gain. His improvement was progressive up to the time when sudden death occurred, as already reported.

There is also a child under the care of Dr. Colman who is now under similar treatment, and appears to be following a most satisfactory course. In these cases phimosis itself was the predominant factor in completing closure of the stenosed pylorus. On the other hand, Case 17, admitted under Dr. Poynton, was circumcised without any subsequent relief from the symptoms. As it came under Group I. operation was performed at once with immediate relief from the symptoms. In this instance phimosis had nothing to do with the closure of the pylorus.

(d) *Unknown causes of spasm*.—We must admit that there may be a very small group of cases where some unrecognised cause of spasm determines the closure of the stenosed pyloric orifice. We cannot satisfy ourselves that we have found any in our experience. But such good observers as John Thomson have had success, in some cases, by the administration of sedatives such as chloral hydrate. Such cases must be very few in number, and only the results of treatment such as we are advocating could differentiate them.

(3) *Radical treatment*.—The treatment becomes radical—that is, the pylorus is operated upon—when palliative treatment definitely fails to relieve the symptoms of obstruction by the twelfth day. This failure would mean that all causes of obstruction, other than the hypertrophy itself, had been removed; the only relief now is operation. During the twelfth day interval the symptoms may fluctuate. The vomiting may be non-projectile and less frequent. Gastric peristalsis is seen only occasionally. The stools are sometimes constipated and sometimes loose. The weight will vary between small gains and losses. The subcutaneous injections of saline and glucose will prevent any marked wasting. These fluctuations are of no moment before the twelfth day, but after this point they would indicate the inability of the pylorus to relax permanently. We do not say that all babies left longer than 12 days will not recover, but we do think that there is sufficient evidence to show that if they are to recover under palliative treatment they should usually indicate definite evidence of doing so by the end of the twelfth day. (We make an exception, as mentioned above, in the case of girls.) We consider that, after this point, the risk from operation is much less than the risk from a more or less permanent inhibition of pancreatic function becoming established, owing to prolonged pyloric obstruction. If this happened, even operation would be of no avail, and the children would die from marasmus. Moreover, a relapse might occur when operation would have to be performed under far less advantageous circumstances. (Vide Case 7.) The treatment, then, of babies in whom symptoms of obstruction persist beyond the twelfth day is surgical, and Rammstedt's operation should be performed.

With regard to the prevention of sudden deaths from unexplained causes, it is very difficult to suggest any way in which this definite percentage of losses, with or without operation, can be obviated. Similar accidents are reported in America and are well recognised. We have not yet made trial of blood transfusion previous to or after operation, but we propose trying a series of cases in this way, and comparing the results obtained with the figures we have already given.

#### V.—*Post-operative Treatment*.

When the child is returned to bed from the operating theatre it should be kept warm with wool wrapped about the extremities and preferably nursed on a water bed. If there is no shock we prefer the semi-upright position. There is sometimes a mild degree of post-operative bronchitis, which can be treated better in this position.

*Diet*.—This is an important detail. We have shown that the period of time necessary for the pancreas to regain its function is from 10 to 12 days. During this time peptonised milk should be given. Our practice is to give one ounce four hours after the operation, and a similar amount every four hours for the first 24 hours. The second 24 hours an ounce and a half is given every three hours. After this an amount is given according to the weight and age of the child. We have never found it necessary to feed smaller quantities. When the stools cease to show incompletely changed fats (usually about the tenth to twelfth day) the food is changed to citrated modified milk. This change in the stools would indicate a return to the normal outflow of pancreatic secretion. Beyond this point they are fed as normal babies. We make an exception to the 10 to 12-day limit for this change of food in the case of girls. As shown before, in them the pancreas is slow to regain its secretory function for reasons already indicated, and therefore the peptonised milk usually will have to be continued longer than 12 days. Case 15 illustrated this. At the twelfth day the stools were still rather loose and greasy, and she was gaining very slowly. Citrated modified milk was given. The stools became more undigested and she began to lose weight. The food was again changed to peptonised milk and she immediately began to gain. The stools were still loose, but were free from curds. She is still on peptonised milk, which will be discontinued as soon as there is no evidence of undigested fat in the stools.

During the first few days after operation, while the child is taking insufficient food, we continue the saline and glucose infusions. At first eight ounces a day, and later four a day, may be given. The infusion should never be repeated unless the one previously given has been completely absorbed. If absorption is unduly slow it may be



expedited by the hypodermic injection of a  $\frac{1}{2}$  c.cm. of pituitrin. The combined saline-glucose infusion with pituitrin treatment is doubly useful, in that it combats post-operative shock, and replaces, in a measure, the food which must at first be withheld. We have said nothing about medicinal treatment, and we think there is seldom any indication for the administration of drugs. The only fear after operation is shock, and this is best treated in the manner described. Brandy might be advocated, but our experience has taught us that it may cause vomiting. As most of these small patients are in a precarious condition, they are not able to withstand the extra demand on their reserve made by vomiting. The work recently done on direct blood transfusion has suggested to us its employment on the more feeble of these patients. In a further series of cases it is intended to practise this at the time of operation. In cases which do not come to operation, we think this might advantageously be employed about the end of the second week, since two or three children have died from unexplained causes about this time, although the symptoms of obstruction had been relieved.

#### SUMMARY OF CONCLUSIONS ON BOTH CONTRIBUTIONS.

1. Congenital pyloric hypertrophy is the result of prolonged ante-natal spasm induced by hyper-adrenalism.

2. Pyloric obstruction is completed by two secondary influences: (a) retention gastritis with consequent swelling of the mucosa; (b) added spasm due to several causes; foremost by *phimosis*.

3. The final results in the closure of the pyloric orifice are: (a) absence of acid chyme in the first part of the duodenum, leading to (b) failure of secretin formation, leading to (c) suppression of pancreatic secretion. These factors themselves further induce (d) inhibition of the normal pyloric relaxation and establishment of the "vicious circle."

4. Positive diagnosis should never be made without the demonstration of a palpable tumour.

5. Rammstedt's operation is the operation of choice.

6. Fulminating cases demand immediate operation.

7. In all other cases palliative treatment should first be adopted as follows:—(1) Feeds: peptonised milk in appropriate quantities; (2) gastric lavage; (3) circumcision; (4) subcutaneous infusion of saline and 2 per cent. glucose when necessary; and possibly (5) administration of chloral hydrate.

8. *Duration of palliative treatment*: (a) Very wasted and weakly infants. If there is no relief of symptoms in 48 hours operation should be performed without delay. (b) In the majority of cases palliative treatment is to be persevered with for from 10 to 12 days.

9. The critical time at which failure or success of palliative treatment can be gauged is from 10 to 12 days from the commencement of treatment, and coincides with the re-establishment of pancreatic function in successful cases.

10. Failure to improve after this point constitutes an indication for operation in boys, but not necessarily in girls.

11. Sex incidence is about equal; *phimosis* being the determining factor in the onset and severity of symptoms in a large proportion of male subjects of pyloric hypertrophy.

12. Post-operative diet should consist of peptonised milk until pancreatic functions have been re-established.

Finally, we cannot conclude this study without expressing our thanks to the staff of the Great Ormond-street Hospital for their courtesy in placing at our disposal their cases and the hospital notes.

## FURTHER EXPERIENCES IN COLONY TREATMENT AND AFTER-CARE.

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### III.<sup>1</sup>

THE incidence of the new problem involved in the treatment of the discharged tuberculous soldier and sailor has so shaken our old beliefs and jarred our prejudices that we are in danger of attempting to grasp at an idea which we imagine may help us in the solution, while failing to evaluate the idea in that its fundamental principles are not understood. From the number of inquiries received, and from conversations with many, both lay and medical, who have visited Papworth Colony—interested in the problem of the treatment of tuberculosis—it has been brought home to us that even amongst those who have given, or are giving, attention to the matter there is a welter of opinion which must be rescued from chaos and carefully arranged and classified before any concerted action can be taken.

#### *Chances of Success in Change of Employment.*

The simple and oft-repeated formula, "Seek a job in the open air," glibly offered to the middle-aged mechanic, and the equally casual advice "to take things easy for the next three months or so" given to a man with a wife and six children to support, indicate only too clearly that little mental effort can have been brought to bear on the actualities of the situation. If there is one thing that experience of colony work has made clear it is that, as a rule, it is futile, and will now be criminal to give the above advice, unless it is realised that if there is one form of occupation more unsuitable than any other for the consumptive it is a job as an unskilled farm labourer.

The job in the open air—the utopian dream of the unthinking adviser—may be either Scylla, Charybdis, or both, but usually threatening the consumptive with destruction. The idyllic summer holiday at a farm, with its peace and rest, its plain but nourishing milk and eggs, its new and temporary interests, and its gentle exercises in the open air, is very different from the strenuous and exacting life of a farm labourer, even at an enhanced wage of 40s. per week. The unskilled hand, the untrained eye, and the inexperienced brain are of little value to the farmer, and certainly cannot be profitably employed. Though many members of the medical profession, and the vast army of voluntary workers, who so frequently give this advice do not realise its futility, it is a matter to which the consumptive is fully alive. It is only necessary to talk to these men and to obtain their confidence to have it brought home to one that they know better than their advisers that to set an unskilled man to work at any skilled trade is not only economically unsound, but physically detrimental and morally and socially delusive. To bring the matter home to ourselves we have merely to imagine how sorry would be the plight in which most of us would find ourselves were it necessary for us to give up our profession and seek pastures new. Why, then, give advice—fortunately rarely followed, or if followed quickly given up—which nine times out of ten can only be a source of disappointment to all concerned? The question:—How many men can be trained in agriculture in the course of six months? can only be put by a town-bred man with no knowledge of country life, and as it is impossible in six months to train a healthy man to follow a complicated industry such as agriculture, how much less is this possible in the case of a 50 per cent. man suffering from tuberculosis. Had the colony committee the changing of a man's occupation from that of an artisan or clerk to that of a farm labourer, or even a small-holder, for its objective it must

<sup>1</sup> Part I. was published in THE LANCET of Nov. 24th, 1917, and Part II. in THE LANCET of August 3rd, 1918.

CHILD WELFARE IN BRITISH GUIANA.—The Baby Saving League of British Guiana was started five years ago. We have now received the (fifth) annual report for the year 1918. Such an institution appears to be greatly needed, for the infant mortality-rate is extremely high. For the year 1918, for the whole colony, it was 223 per 1000; for the Portuguese, 157; for the East Indian race, 241; for the Chinese, 143; and for the black races, 225. The need for a larger population in British Guiana is an urgent one. It is pointed out in the report that East Indian immigration is likely to be abolished, and a larger supply of labour is needed in order to develop the resources of the interior and to maintain the industries which are already established on the coast. Shortage of the labour supply is already reflected in the diminished acreage under sugar, notwithstanding the enhanced prices due to the world-war.;



inevitably court failure. A genuine case of pulmonary tuberculosis with a definite and progressive lung lesion will undoubtedly benefit by a prolonged stay under ideal colony conditions, but very few will ever be able to stand alone, and, working from morning till night, live on the produce of a small holding. The arrested condition of the disease in these cases is so unstable that the proposition cannot be a paying one, and this instability is the main medical cause, not taking into consideration economical and psychological factors of failure, and must necessarily remain so until some method of stabilising the arrest is attained. One of the difficulties met with in dealing with such a vast problem as that of tuberculosis is that exceptional results which do not appear to bear out general experience crop up now and again; but as a rule, if these exceptional results are carefully analysed, it will be found that the principles on which the colony treatment is based are sound and have not been violated, and that other special factors have come into play and have altered the course of events. In some cases change of employment has undoubtedly been attended with success, but these successes are few and far between, and have, as a rule, been associated with a group of such favourable contributory conditions that the truth of the general proposition is in no way countered. For example, a sympathetic employer may be an important factor in the determination of an apparently exceptional success fundamentally altering the patient's whole economic condition. He permits, nay ensures, the working of shorter hours, later morning rising, more prolonged noonday rest, with ample time for meals, and one of the prime factors in success—the feeling of the absence of competition is assured. The feeling “I shall not get the sack even if I slack a little when I feel weary” affords great psychological comfort. It must be remembered, however, that such philanthropy does not flourish freely in the largest concerns and in the limited liability companies; but the colony having learned much from the sympathetic employer, takes his place, and must strive to provide for all cases of tuberculosis not only the above conditions, but in addition suitable dwellings, good food, and protection from the economic struggle—the salvation of the consumptive working man. The exceptions proving the rule therefore, instead of militating against the general proposition, are of the greatest service as indicating the proper method of tackling the general problem. It is not so much the change of occupation that ensures the favourable reaction, nor certainly is it the mere fact that the patient becomes a farm labourer; for there is no magic in that occupation. Nor, again, is a light open-air job a panacea for the disease. Patients working at either, or both, unless carefully watched and guided become steadily worse and inevitably head for disaster. We must realise the actual economic conditions that are assured when a sympathetic employer has the case in hand, and also that these are necessary for the success of the undertaking. These fundamentals, these economic conditions assured, we are afraid to disturb them in any way, and the problem seems to us so vast that we are almost afraid to do or say anything that might lead to such disturbance.

#### *Reason for Labour's Lack of Sympathy.*

Has it ever struck us how extraordinarily unsympathetic the mass of labour—“the labour world”—is toward all schemes of sanatoriums and the like, and, if so, has it ever occurred to us to seek the reason for this? It is obviously the same reason that underlies the apathetic attitude of labour to the Government's training schemes for disabled sailors and soldiers, which are little more than camouflage, the mere tinkering with a huge problem. What should we, as medical men, say if, owing to a shortage of doctors, it was seriously proposed to give men a six months, or even a 12 months intensive course in medicine and surgery in the large hospitals and then turn the recruits loose to practise medicine and surgery on the community? It may be argued that this is not an exact parallel, but it is sufficiently exact if we leave out of account the question of danger to the public and consider only the amount of knowledge which the man could acquire from such a course. For the training of an efficient workman the present course as recommended and provided is absurd, and the working man knows it. That the skilled artisan does not wish his trade to be exploited by an untrained person is another aspect of the question, but one of equal importance. If we are simply patching up a patient in order that he may return to his original surroundings, where he may infect other working men, small wonder

that the plan of utilising the sympathetic employer receives but scant consideration from the working man, who is thus called upon to run the risk not only of infection but also of diminished earnings due to the business being burdened by the introduction of the invalid.

The insufficiency of the training that can be given to a man disabled, whether by the loss of a limb or a lung, is very fully appreciated by the intelligent working man; not so fully by those called upon to advise, treat, and train him. The medical profession does not fully appreciate that there can be no other criterion of a patient's “cure” or of the arrest of his disease than that of earning capacity, more or less permanent. It is obviously of vital importance that the earning capacity of a consumptive should be restored to as nearly a normal level as possible. To alter a man's occupation, when the earning capacity of such a man is the standard of success, is no easy matter. Here earnings are of prime importance and a moment's thought will make it clear that in the majority of cases of pulmonary tuberculosis, those with well-developed disease, it is impossible for the earning power of the consumptive to be more than 50 per cent. of his normal—for him to be more than a 50 per cent. man. That some become 75 per cent. men is an encouraging fact, but we recognise that it is only under very special conditions that such a percentage is obtained.

#### *Consumptive's Hopeless Handicap in the Open Labour Market.*

If it be accepted that a “middle case” of consumption is unable to work for more than six hours per day at a trade which is not too laborious and not too technical, and is paid at a full trade-union rate of wages for those six hours, it is obvious that the man cannot earn during those restricted hours of work a sufficient sum to keep himself and his family in decent circumstances. In the ordinary workaday world an employer cannot be expected to take into his shops or factory a consumptive with a working capacity of only 50 per cent. and pay him above the trade-union rate of wages. There would soon be a general upheaval in that factory or shop, and a state of unrest such as that we have witnessed arising out of the exorbitant rate of wages paid to munition workers. Our hypothetical employer would have to be a philanthropist indeed who could or would consent, or dare, to adopt such a course. It is obvious, therefore, that even if we could find a sufficient number of sympathetic employers who would guarantee a full wage for a 50 per cent. worker our difficulties would not be at an end. A further subsidy is required, a subsidy that must come from the Government or State, as it is impossible to throw such a burden on the industrial employer of labour. As a rule, an employer asked to employ a consumptive answers that he would prefer to give a donation or subscription to some charitable institution, hospital, or sanatorium and have done with the matter. The disorganisation of business which would arise out of the employment of a consumptive on the only adequate basis, that of the maintenance of health of a patient and his family, is sufficient to undermine the whole scheme. Occasionally an employer willing to run the risk may be and is found, but the arrangement entered into does not as a rule last long. The danger of infection from the presence of a tuberculous worker is hinted at and rapidly passes through the shop. Moreover, if concessions as to hours, &c., are made to an apparently healthy man (the wound in the lung is not visible) it is with difficulty that the other workers are prevented from expecting and demanding similar concessions. The difficulties and obstructions set up by the trade-unions are equally great, in many cases debarring the consumptive from finding suitable employment. The embargo of the union is decisive unless the patient is a skilled workman, who in many trades must have served his full apprenticeship. This indeed is the fatal bar to the training of a consumptive in any new skilled trade. A few months spent in specially fitted-up shops at a colony is quite inadequate to obtain his admission into any skilled trade, in which wages are high, and, for the most part, adequate, and the corresponding trade-union, even should he have the ability to perform the work at the end of such a short period of training. From all points of view, then, the difficulty of training a consumptive in a new trade, to be carried on in the open market, is enormous, and there remain but the inadequately paid casual occupations, where the work is heavy and the remuneration poor, both factors to be avoided if success is to be attained or expected.



*Return of the Consumptive to His Own Trade.*

The myth of a "light job in the country" is exploded. The training of a consumptive in a "light remunerative calling" is not practical politics. There remain but two alternatives: (1) the consumptive must return to his own trade, or (2) he must become a permanent colonist. The former is the one usually adopted for the consumptive; it is at present the only course open to him, though in the majority of cases it must end in disaster. The economic conditions of competitive labour are against the man, and are fatal to success. The philanthropic employers who are willing to eliminate these fatal competitive conditions are few and far between, but to their sympathy and action we owe the cases which appear to provide exceptions to the rule; apparent exceptions only, but they serve as examples of methods which, if followed on a large scale, spell general success.

The nature of this method, call it after-care or any name which may indicate its nature, has as yet been but inadequately appreciated. The problem has almost invariably been viewed from the "individual cure" point of view, one small factor after another being taken and insisted upon. The new idea, which is the outcome of the colony as advocated at Papworth, is admirably expressed by Dr. H. A. Pattison in his study, "The Agricultural and Industrial Community for Arrested Cases of Tuberculosis and their Families," published by the Federal Board for Vocational Education, Washington, 1919. "Industrial communities," he says, "have developed rapidly in the country. Many of them have grown about a single industry for the sake of that industry, such as a steel mill, coal or mineral mine, &c. The converse proposition is the one I wish to offer, the development of industries around a community for the sake of that community." The same idea has been expressed as follows: "Let communities be started in which our consumptive soldier can live in his own home, shielded from the fierce competition of the outside world, a self-respecting worker, an economic asset. Let employment be found, the model factory erected, the hours of toil properly regulated, a fair wage paid."<sup>2</sup>

In other words, the rôle of the colony is that of the philanthropic but unfettered employer, with his factory open for the admission of those who cannot find work elsewhere, and where the mode of life—if a serious relapse is to be avoided—must be carefully regulated. That the disease will progress there can be little doubt, but the rate of its advance may be so controlled that the patient may yet enjoy many years of useful work and pleasant recreation, instead of having to engage in a brief struggle against overwhelming odds, the while seeing his family dragged down to poverty and want. In the model village the amenities of life are such that the wife and child are protected from all massive infection, and in time the latter will be free to compete in the world at large, unhandicapped by intervening years of want, malnutrition, and consequent lowered resistance. There may be little hope of altering at a stroke of the pen imperfect economic conditions in the world at large, but we now have ample evidence that small communities may be, and have been, inaugurated, where the conditions of existence may in time constitute a model for the workaday world outside. Such communities realise the dream of all social workers, and embody the aim and end sought by the consumptive workers of the world, who desire the priceless privilege of living in surroundings that will compensate for their segregation, while helping to protect the communities outside against dangerous sources of infection.

*Essential Features of Consumptive Industries.*

The features essential for the industries specially run for consumptives are many and complex, but the idea that such industries can be only those carried on in the open air must be abandoned as a practical proposition, and this for one reason among others, that enormous tracts of land would be required on which to carry them out. On an acre of ground, unless very highly and intensively cultivated, few people can be employed. An ordinary farm of 200 acres would afford employment for a number of hands infinitesimal as compared with the number of cases awaiting admission. It is, therefore, of primary importance that industries should be started capable of absorbing a greater number of workers per acre of ground. It is accepted that it is impossible to train a

man in a new trade in the short space of time allotted, so it is obviously inadvisable to select an occupation in which elaborate training must of necessity take place; but from the munition works we have acquired experience which should be applied with great success in the employment of the consumptive. Strenuous and prolonged physical manual labour must be avoided and the use of modern machinery enables us to do away with such severe manual toil. It is now no longer necessary to set consumptives to work at carpentry, say, with a plane and a saw, and instruct them in the performance of labour which in all modern businesses is done by machinery. (Little wonder that on the old methods our goods could not compete in the open market.)

In a well-ventilated workshop with good aspect, fitted with modern machinery, the hours of toil regulated to a nicety by a sympathetic management, it is possible for consumptives to earn a reasonable rate of wages. That the wage earned is insufficient to keep the man and his family goes without saying, for, as already pointed out, a full trade-union rate of wages for the short hours worked is insufficient to provide for that standard of comfort which is essential for the well-being of the patient. We are dealing with the 50 per cent. capacity man, and no speeding-up machinery brought into play can do other than leave the percentage unaltered, but it does relieve the patient of much too strenuous exertion. The State must come to the rescue, and for its protection against infection must contribute a subsidy equivalent to some percentage of the patient's earning capacity. When once an industrial colony has been started it will be possible to employ numbers of subsidised patients at various trades, and an encouraging vista of employment will be opened up to our consumptives. All we have to do is to find out and provide the necessary conditions, and make rules and regulations whereby the most suitable working hours are ensured and excessive toil eliminated. Given these things, the labour of the consumptive may be made so remunerative that, while some subsidy will be necessary, it need not be large and will be well applied, especially when the advantages to the general community are taken into consideration. These applied elementary principles of colony treatment, common to all workers amongst the tuberculous, indicate a distinct advance along lines hitherto but little explored. Organisation is needed in order that these principles may be applied logically in the domain of practical politics in the near future. Here we must have organisation of the home life; there must also be a coördinated attack upon the disease, its effects and its causes, primary and predisposing; a full appreciation of the factors in the spread of the disease; and a realisation of the fact that all measures to be successful must be continuous, well-directed, and prolonged. Sir Arthur Newsholme, in his foreword to Dr. Chapman's report on colonies, appreciates the position exactly, except that he does not refer to the control of infection outside the home. "The greater part of the consumptive's life is spent at home, often under unsatisfactory conditions both for the patient and his family, and the supervision of his home life by the tuberculosis officer and the health visitor, even when this is frequent and sympathetic, does not completely meet his needs. If the patient is to have the best possible prospect of recovery, and if his family are to be safeguarded against infection, in many cases he will need (a) improved housing; (b) occupation adapted to his physical capacity. &c.; (c) the family income will need to be supplemented. These requirements for many patients have not hitherto been met."

*Some System of Segregation Required.*

They have not been met, and for the reasons given in the earlier part of this paper they are not likely to be fully met until some system of segregation is thought out and organised. The problem of occupation under private employers working for profit is not likely to be solved; it is impracticable, and, moreover, it may be prejudicial to the health of the other workers to have subsidised consumptives working alongside the non-tuberculous. With the provision of separate workshops and separate dwellings the difficulties, though not by any means removed, are minimised. Indeed, our thoughts directed into this channel, the colony idea acquires an entirely new significance. Formerly it meant the advocacy of open-air occupation, and the provision of those special conditions that were available for the wealthy few: it is not until we can get the public to view the matter from an entirely different angle that the full significance of the new colony idea becomes evident. From the fresh stand-

<sup>2</sup> Varrier-Jones: "A Plea for the Consumptive Soldier," Reveille, No. 2, 1918.



point facts which seem to have no place in our system assume a new importance, and fit in with the general scheme, helping to bind it into a concrete whole.

No scheme for the control of the tuberculous can be regarded as satisfactory which does not embrace the whole life of the consumptive patient. But what scheme can control the whole life of a consumptive in our crowded cities, and where can an organisation be found to throw its tentacles into every yard and alley?

#### *Recommendations of the Inter-Departmental Committee.*

In the past we have gained a knowledge of the facts, but we have failed to view them from the right angle. Turn the picture round; let us get rid of preconceived notions, and build on the firm rock of experience and tried methods. Then, and then only, will progress be made and success attained.

We now note with interest that the Inter-Departmental Committee on Tuberculosis appointed in April, 1919, "to consider and report on the immediate practical steps which should be taken for the provision of residential treatment for discharged soldiers and sailors suffering from tuberculosis and for their reintroduction into employment, especially on the land," has, as a result of its inquiries, and reporting very promptly, recommended that the Papworth Colony, with its various departments, should be adopted for development in various centres all over the country. That it may be improved and developed we recognise very fully. That there are difficulties to be overcome we have ample experience. But that it is based on sound lines we are satisfied, and for this reason, and not because it has been built up in Cambridge; we welcome the recommendations of the Inter-Departmental Committee.

## TREATMENT OF SEPTIC WOUNDS BY IONISATION.

BY F. W. BAKER YOUNG, M.B., CH.B. MANCH.,  
CAPTAIN, R.A.M.C. (T.F.); HONORARY ASSISTANT SURGEON, CANCER  
AND SKIN HOSPITAL, LIVERPOOL.

CASES were treated at a general hospital at the request of Colonel G. W. Crile, M.C., U.S.A., to demonstrate the effect of ionisation in rendering wounds aseptic for delayed primary suture.

#### *Account of Experiments.*

The action of the metallic ions on suppurating wounds, particularly zinc, is well known, and I decided to try the effect of the chlorine ion. Several laboratory experiments were carried out to show that the chlorine ion was detrimental to the growth of bacteria. Although several observers have described the effect of the electrolytic current on bacteria, I can find no description of apparatus. Accordingly apparatus were devised for my purpose. In one experiment a glass tube about 1½ inches in length is closely fitted at each end with a carbon electrode which is fitted into a rubber tube. The rubber tube acts as a cork and as a non-conducting cover for the wires leading to the milliamp. meter. Before use the rubber, glass tube, and electrodes were sterilised by boiling. The solutions to be tested were placed in the glass tube, which was then placed in a water bath kept at blood temperature by a lamp.

*Experiment 1.*—An emulsion of *Staphylococcus aureus* and *albus* was prepared with a normal saline solution at blood heat. The electrode and rubber tube were removed from one end of the glass tube and the tube was almost filled with emulsion. A drop was then taken with a loop and smeared on agar-agar in a test-tube as a control. The electrode and rubber tube were then placed tightly into the glass tube and the whole placed in the water bath. Currents were passed of 5 ma. for 5 minutes, 10 minutes, and 15 minutes respectively. At the end of each period of time a drop was taken by a platinum loop dipped into emulsion, and a smear was made on marked tubes containing agar-agar.

A second series, in which 10 ma. were passed for 5 minutes and 10 minutes respectively, was also taken. The tubes were then placed in an incubator for 18 hours with the following result:—

*First series. Tube A control.*—Profuse colonies of *Staphylococcus aureus* and *albus* covering entire media.

*Tube 1. 5 ma. × 5 minutes.*—Profuse colonies of *Staphylococcus aureus* and *albus*, not so abundant as on control.

*Tube 2. 5 ma. × 10 minutes.*—Colonies of *Staphylococcus aureus* and *albus* discrete, small, and fewer than in tube 1.

*Tube 3. 5 ma. × 15 minutes.*—Agar-agar practically sterile, only one small colony survived.

*Second series. Tube 1. 10 ma. × 5 minutes.*—Colonies discrete and identical in appearance with tube 2.

*Tube 5. 10 ma. × 10 minutes.*—Agar-agar sterile. No growth.

*Deduction.*—Electrolysis with sodium chloride will inhibit the growth of *Staphylococcus aureus* and *albus* with a short exposure and with a low current strength. 10 ma. given for 10 minutes is sufficient to render a culture sterile.

*Experiment 2.*—A microscope slide is prepared with a plasticine cell and the walls of the cell are perforated by the platinum wire. A drop of emulsion of *Staphylococcus aureus* and *albus* was placed in the cell with a few drops of normal saline. The cell was then placed on a warm stage, which was kept at blood heat by siphonage of warm water. The electrodes were then connected with the milliamp. meter. The warm stage was then placed on a microscope stage and a current of 2 ma. passed. There was an immediate activity of the cocci and a general flocking towards the positive pole. The current was increased to 4 ma., when the bacteria arranged themselves in apparently three layers around this pole. At the end of five minutes all movement of cocci had ceased.

*Experiment 3.*—Similarly prepared with plasticine cell. A smear of living culture of gonococcus was placed in cell. A few drops of fresh human blood were then dropped on the gonococci and the whole covered with a cover-glass and placed on a warm stage and connected up with the milliamp. meter as before. 0.5 ma. was then passed for 10 minutes. Gas was given off at the negative electrode and a small drop of blood escaped at the point where the electrode passed through the plasticine. The cover-slip was removed and the plasticine lifted off slide. The blood clot was carefully washed off with normal saline, the slide was then fixed with heat and stained with methylene blue, covered with a slip, and examined under high power with oil immersion. It was observed that complete phagocytosis had occurred. Practically every leucocyte was crowded with gonococci. A few gonococci were extra-cellular.

*Deduction.*—Phagocytosis is probably stimulated by a small current passed for a short time.

#### *Clinical Results.*

I determined to use sodium chloride in treating wounds as likely to cause less irritant effect on the tissues than the metal ions. The average administration was 10 ma. for 20 minutes daily, the wound afterwards being dressed with sterile gauze soaked in normal saline. No other antiseptic was used. In a few cases of cellulitis where the oedema was very marked one hot pack was applied at night-time. By this means the skin was never rendered sodden.

Six cases were treated and sutured, 4 with success and 1 with only partial success. The sixth case broke down and was evacuated to England owing to pressure on hospital accommodation.

Twelve cases of cellulitis were treated, and these were entirely successful. The pain was considerably lessened, and the final result, even in cases in which tendon and tendon-sheaths were involved, showed fewer signs of contracting scar tissue than generally occurs following septic infection of the tendon-sheaths.

Other types of cases were through gunshot wounds of extremities.

Three cases were treated with a view of preparing the surface for skin-grafting, and in one case periosteum was grafted on an exposed tibia.

Four cases in which a joint was exposed and septic were treated, one with complete success. The remaining three cases (two elbows and one knee) had multiple wounds, and the patients were in such a feeble general condition that treatment with ionisation was not carried out on account of the lowered vitality due to multiple wounds.

*Technique.*—Where it was possible to immerse the limb the injured part was placed in a porcelain bath with a carbon electrode. The inert electrode was placed either under the patient's buttocks or strapped to an uninjured limb. Where immersion was impossible several thicknesses of lint were wrung out in a 1 per cent. sodium chloride solution and Carrel's tubes were placed in contact with the wound and covered with the lint, leaving the open end of the tube free. An electrode was then banded to the lint. By means of the Carrel's tubes it was possible to keep up a fresh solution through a sterile glass syringe while the treatment was carried on.



Several cases were examined bacteriologically; examination was made previous to the operation. [A series of cases was here given supporting the statements in the text.]

#### Conclusions.

Ionisation with chlorine or zinc does not possess any advantage over other methods for sterilising a wound for the purpose of delayed primary suture.

Cases of cellulitis show a marked improvement when treated with ionisation, both in the relief experienced by patient and in the final result, which in every case treated was extremely satisfactory, cicatricial contractures being practically unseen.

The fact that one septic joint recovered indicates that the treatment is well worth trying in similar cases.

My thanks are due to Lieutenant-Colonel R. B. Ainsworth, D.S.O., R.A.M.C., for allowing me to carry out these investigations, and to Colonel Crile for supplying the cases and apparatus and for his extremely helpful suggestions and advice.

## Clinical Notes :

### MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

#### AN UNUSUAL CASE OF RETROVERSION OF THE GRAVID UTERUS.

BY R. BURTON ECCLES, L.R.C.P., M.R.C.S.

THE following unusual case of retroversion of the gravid uterus deserves record :—

I was sent for to attend a woman, the message saying that a piece of howel 10 inches or more in length had been protruding for a week, and there had been no evacuation of the howels for the same period, although large doses of castor oil, cascara, and Epsom salts had been taken.

On arrival I found the patient, a woman, aged 27 years, in bed, looking very ill, and complaining of great pain in the back and lower part of her body. The history I got from her was that 14 days previous to my coming she had a sudden pain in the lower part of the body and the back, with frequent desire to micturate. Then the abdomen gradually began to enlarge. Though she had constant dribbling for 14 days, she had been able to pass, each day, a few ounces of clear-coloured urine, and she passed clear urine while I was in attendance.

On examination I found the abdomen very greatly enlarged, giving me the impression at first sight that she was probably in the eighth or ninth month of pregnancy. The body was hard and dull on percussion, the dullness extending above the umbilicus to the ensiform cartilage. The right thigh and leg were enormously swollen and oedematous, also the vulva, the right labia forming a large cushion reaching up to and completely obliterating the anal aperture; serous fluid was oozing from both labia. I then passed a catheter and drew off 104 oz. of dark bloody urine. Per vaginam I felt, with great difficulty, the cervix pushed high up behind the symphysis. The posterior fornix was obliterated by a large, elastic, globular swelling, which filled up the vagina. Per rectum I felt a large substance, which was, in fact, a retroverted uterus. I ascertained from the patient that she had last menstruated three and a half months ago, and came to the conclusion that I had an incarcerated, retroverted, gravid uterus to deal with.

I first tried to replace the uterus manually and failed. As I did not care to use bullet forceps on so oedematous and congested a cervix, I replaced the uterus by the knee-elbow position, the patient at once remarking, "What a great comfort," and that she was now free from pain. I then introduced a Smith-Hodge pessary to keep the uterus anteverted. There was complete atony of the bladder, and a catheter was passed every six hours for eight days. A mixture of hexamine, sodium benzoate, and tincture of nuxvomica was given every four hours.

The patient made an excellent recovery. At the end of the fifth month of pregnancy I removed the pessary. Four months afterwards she gave birth to a fine, healthy male child, the labour being quite normal.

The points in this case, unusual in my experience of country practice, are the absence of serious complications, such as sloughing of the bladder or septic cystitis, and the fact that the woman went on to full term of pregnancy and gave birth to a healthy child.

Driffield, East Yorks.

### SPONTANEOUS CURE OF STRANGULATED INGUINAL HERNIA.

BY W. FLETCHER STIELL, L.R.C.P., M.R.C.S.,  
RESIDENT MEDICAL OFFICER, COUNTY HOSPITAL, LINCOLN.

I AM taking the opportunity of recording this case, not as a plea to wait, watch, and expect such a happy result to ensue from so serious a condition, but more as a surgical curiosity.

A man, aged 37, had been suffering from a swelling in the left groin for about five years. He had during this period consulted several doctors, who had unanimously wisely advised cure of the hernia by operation. The patient was, however, of the procrastinating type and had failed to follow the advice given. On Feb. 4th, 1918, the patient attended the Lincoln County Hospital on account of a painful swelling in the left groin. He gave the following history :—

*History.*—He had noticed the swelling for about five years, he "knew it was a rupture," and as he had never had any difficulty in effecting reduction of the hernial contents, did not think an operation necessary. In December, 1917, the tumour had suddenly increased in size, had become both painful and tender, and could never again be reduced. There was at that time some generalised abdominal discomfort, but no vomiting, constipation, or other symptoms to suggest any intestinal obstruction.

At the actual time of admission to hospital all abdominal symptoms had disappeared and there were no abnormal physical signs in the abdomen. In the region of the left cord, just below the external ring, there was a well-defined, hard, non-cystic tumour, which was neither painful nor tender. The mass was fairly freely movable from side to side, but was fixed in a vertical direction. It was found impossible therefore to reduce it, either into the abdomen or into the scrotum. The testicle itself was unaltered, and a normal vas deferens could be traced upwards behind the tumour.

*Differential diagnosis.*—The differential diagnosis at this stage of examination rested between : (a) an omental plug in an incarcerated inguinal hernia; (b) fibroma of the cord; (c) an organised hæmatoma of the cord from forcible attempts at reduction by taxis on the part of the patient himself.

*Operation.*—Operation was performed on Feb. 5th, 1918. The actual technique and procedure of the operation were in a large measure similar to an ordinary radical cure for inguinal hernia, so that it is unnecessary to describe them in detail. The tumour was occupying the inguinal canal with the aponeurosis of the external oblique and the external abdominal ring stretched tightly over its anterior surface. The tumour itself was everywhere surrounded by a thickened peritoneal investment, to which it was closely attached by old-standing and somewhat vascularised adhesions. The various constituents of the cord were lying posterior to the tumour, and were abnormally adherent to its peritoneal lining. When traced in an upward direction the peritoneal coat of the tumour gradually merged into a small strand of dense fibrous tissue, and the internal ring was solidly and absolutely occluded. The cord was thoroughly isolated, the tumour, together with its peritoneal investment, removed, and the operation completed, as in Halstead's method of radical cure. Convalescence was uneventful and, although no peritoneal neck to the sack could be ligatured at the internal ring, there has been no recurrence of the hernia after 18 months.

*Microscopic examination.*—Microscopic examination of the tumour was performed by a pathologist, who was intentionally given no information of the case, and his findings are therefore of interest. He stated that "this is a mass of fat showing fibrous alveolation. It is undergoing fibrous degeneration and inflammatory infiltration. No evidence of tubercle or new growth. There is no evidence to show how it has originated."

*Remarks.*—Taking into consideration the history of the case, the findings at the operation and the histological examination, there can be little doubt that the tumour owed its origin to an omental plug in the strangulated inguinal epiplocele, which had undergone a process of aseptic necrosis at the internal abdominal ring, with subsequent complete stenosis of the ring. The tumour, therefore consisted of a mass of omentum which, at the time of operation, possessed no actual anatomical connexion with the main mass of the great omentum.

For permission to publish this case I am much indebted to Major D. J. G. Watkins, R.A.M.C. (T.F.), who performed the operation.



## Reviews and Notices of Books.

*War Neuroses and Shell Shock.* By Sir FREDERICK W. MOTT, M.D., LL.D., F.R.S., Brevet-Colonel, R.A.M.C. (T.), &c. With Preface by the Right Hon. CHRISTOPHER ADDISON, M.P., Minister of Reconstruction. London: Henry Frowde and Hodder and Stoughton. 1919. Pp. 348. 16s.

WITH a good deal of Sir Frederick Mott's excellent and comprehensive volume on war neuroses the profession has already become acquainted through previous publication in the form of lectures or otherwise, not infrequently in our own columns. To have at hand, however, a useful "body" of doctrine on the functional neurology of war is almost a *sine qua non* for the practitioner, in view of the large number of functional cases still requiring at least a modicum of treatment. In Sir Frederick Mott's book will be found all he needs on the practical side, for treatment is discussed in detail, together with clinical studies of the multifarious types of war neuroses and interesting analyses of the pathogenesis of such disorders. The author is catholic enough to appreciate the value of the Freudian theory where affections of the psyche are concerned, but he points out the inadequacy of certain Freudian contentions in the case of the typical war neurotic, and emphasises the importance of the commotional element, introducing material that formed part of his Lettsomian lectures<sup>1</sup> on "The Effects of High Explosives on the Central Nervous System." He goes beyond the commotion, however, to elaborate the greater importance of the emotional shock in the perpetuation of symptoms, and furnishes numerous confirmatory clinical illustrations. A section of the book is devoted to study of the phenomena of gas poisoning, both on the clinical and on the pathological side. We do not suppose the practitioner is likely to observe any variety of symptom or symptom-complex of a functional sort, nervous or mental, which is not at least touched on in this book; nor need he be at a loss how to deal with such cases, for Sir Frederick Mott devotes many pages to a discussion of the means of promoting convalescence and of establishing an atmosphere of cure.

In comparatively small compass the results of five years' familiarity with the problems of functional war disorders have been garnered, sifted, and offered for consideration, and we agree with Dr. Addison that a book which is the outcome of such unusual experience cannot fail to be of great value.

*Psychoses of the War, including Neurasthenia and Shell Shock.* By H. C. MARR, Lieutenant-Colonel, R.A.M.C., M.D., Neurological Consultant to the Scottish Command, &c. London: Henry Frowde and Hodder and Stoughton. 1919. Pp. 292. 16s.

Dr. Marr bases his interesting volume on material derived from the observation of no less than 18,000 officers and men, of whom approximately one-half were sufferers from shell shock and neurasthenia, and one-half from more definite mental disorders. The book, however, is not a mere précis of information on war psychoses, inasmuch as its author devotes some space to general observations on the pathogenesis of mental disease, to its types and their clinical expression, to cerebral anatomy and mental pathology, and to infantile mental deficiency. Further, there are sections on the classification of mental affections, on mental case-taking, and on the cerebro-spinal fluid. Not a few of the useful clinical photographs reproduced are of cases of mental disorder in the female sex and of mental defectives who can never have been in the Army. We might, in fact, suggest to Dr. Marr that his title is rather misleading and unnecessarily restricted; his book really constitutes a concise and readable compendium of mental diseases, illustrated by a large number of clinical records derived from military material.

Dr. Marr divides his subject into the four main groups of infantile mental deficiency, adolescent mental enfeeblement, toxic (confusional) psychoses, and organic psychoses. The respective percentages of these in 3755 cases of mental affection in soldiers were 42.31, 8.92, 36.73, and 12.04. It is somewhat surprising to learn that 42 per cent. of the

soldiers admitted to mental hospitals were found to have been weak-minded from infancy, but an adequate explanation is forthcoming in the fact of the capacity for manual routine labour of all kinds exhibited by the mental defective, at least under direction and supervision; their docility and usefulness leads to their being employed on work for which they are quite unsuitable, with the inevitable result. Dr. Marr charitably exonerates the authorities from blame; the mental defective shows, as a rule, no gross bodily physical defect, his mental state does not obtrude itself except in the face of responsibility, and in doubtful cases expert medical investigation is not likely to be always at hand. His second group comprises primary mania, melancholia and dementia, as also alternating insanity and idiopathic epilepsy—conditions in which inherent neuronic weakness is unable to resist the united strain of adolescence and military service. The third group, the second largest, includes the psychoses of both known and unknown toxic agents, the presence of which in the circulation "acts as a veil between the mental functions and the external world." The fourth group deals mainly with neurosyphilis, but also with trauma, arteriosclerosis, and cerebral tumour.

Dr. Marr's selected clinical cases are described in a fresh and informative fashion, which adds to the attractiveness of a useful, unpretentious exposition of the main facts of mental disease, wonderfully complete for its size, well illustrated, and with a good index.

*Psycho-Analysis and its Place in Life.* By M. K. BRADBY. London: Henry Frowde and Hodder and Stoughton. 1919. Pp. 266. 8s. 6d.

Miss Bradby's standpoint is that of the trained psychologist, who is also a humanist, and impressed by the possibilities of life in general which, she believes, seem to open up as a consequence of the discoveries in the realm of thought of Freud and Jung. Her rôle is, in part, that of the expositor, to the educated man or woman, of the meaning of psycho-analysis, but she also makes a persuasive appeal to the psychologist to interest himself at least as much in feeling and willing as in knowing, and to the Freudian psycho-analyst not to ignore such ruling passions of humanity as are not embodied in sexuality.

The reader will find much that is admirable in Miss Bradby's presentation of her subject, which is marked by erudition and independent thinking and by a freshness of exposition and originality of view which will impress those of us who may confine our attention too strictly to the volumes of the medical profession proper.

Miss Bradby at the outset correlates the knowledge of the unconscious mind derived from psycho-analytic investigation with that of the nature and development of mind in primitive man and with our knowledge of the mind of the child. The mode of working of the unconscious mind is sketched and Freudian theory more or less accepted. The Freudian interpretation of dreams is favourably reviewed and various dreams, historical and private, are analysed. The author then considers the application to social and individual conduct of the knowledge of hidden and unconscious motives acquired by psycho-analytic procedures, and ends on a note of enthusiastic hope for future progress, especially in the sphere of education, as the result of such self-knowledge.

It will be understood that Miss Bradby deals mainly with the application of psycho-analysis to the normal mind, and only incidentally, and, we may suppose, at secondhand, with mental disease. She is not on sure ground when she speaks of "perfectly natural normal homosexuality," repressed into the unconscious "in sensitive and upright minds, with results that are always injurious to health and often to sanity." Assuming the facts, they are capable of a quite other, medical, interpretation. Other statements that have a bearing on medicine require more substantiation than is given them, which is perhaps unfortunate, for the lay reader may be inclined to accept as proven what are not specified by Miss Bradby as psycho-analytic assumptions. More generally we get the impression that there is a certain tacit disregard of the significance of the conscious life, as being of less value than unconscious mental activity, and we feel that there is also an unwitting minimising of moral upbringing and the formation of good habits by influence from without, as though knowledge of the unconscious self were somehow to make men all that they should be. But is there any dynamic force in

<sup>1</sup> THE LANCET, 1916, I., 331, 441, and 545.



such self-knowledge, assuming it can be acquired by psycho-analysis? Has it any driving power for good as against evil? Will the dragging of unconscious motives and impulses into the full light of consciousness of itself make us pursue the good? It may be pointed out, further, that springs of action are far from being always as deep down and as hidden as Miss Bradby's reading of the Freudian position suggests.

*What is Psycho-Analysis?* By ISADOR H. CORIAT, M.D., Physician for Diseases of the Nervous System, Boston City Hospital. London: Kegan Paul. 1919. Pp. 124. 3s. 6d.

FROM the preface we learn that this little volume, on the question-and-answer system, is intended for "physicians, clergymen, social workers, and laymen" who are interested in psycho-analysis from the point of view of its aim, purpose, and field of usefulness as a therapeutic procedure. The deduction is allowable that Dr. Coriat sees no disadvantage in individuals becoming familiar with psycho-analysis (as a therapeutic procedure) who can have no trained knowledge whatever of organic or functional nervous disease. It appears to us that the important distinction between psycho-analysis as a method of investigation of the mind, normal or abnormal, and as a means of treating functional nervous disorders, is thereby in danger of becoming eliminated. Many psychologists, many workers in cognate branches of science, are legitimately studying the applicability of Freudian technique to their own subject, but it is a long step from this to the handling of the mind diseased, unless we are to be content to let the opportunity slip and allow non-medical intervention in therapeutics an even larger scope than it has already. No one who is familiar with the results of misdirected, because ignorant, lay treatment can view the prospect with equanimity.

Dr. Coriat follows conventional Freudian doctrine in his little sketch, minimising the difficulties and avoiding as far as may be the contentious aspects. Like Freud, he maintains that under no circumstances does the element of suggestion enter into psycho-analysis, notwithstanding the obstacles in the way of the acceptance of this statement. It is a counsel of perfection to say, as Dr. Coriat does, that "no explanations or suggestions are made to the patient during the course of treatment," for in another section he declares that "the ethical value of psycho-analysis depends upon telling a patient the truth," in other words, explanation. In one answer we find the statement that "libido means vital energy or instinct; it is not always sexual, since the instinct may be hunger or nutritional." Two pages farther on we read that "the sexual instinct displays itself very early in the child, first as the sucking or nutritional instinct"—a contradiction illustrating the preconceptions of the crystallised Freudian mind. We are glad to be assured, however, that "if psycho-analysis be properly carried out it refers less to sexual activities than does the usual medical history of an organic illness."

*Shell Shock, Commotional and Emotional Aspects.* By ANDRÉ LÉRI, Professor in the Faculty of Paris. With Preface by Professor PIERRE MARIE. Edited, with Preface, by Sir JOHN COLLIE, M.D., C.M.G. London: University of London Press. 1919. Pp. 249. 7s. 6d.

WE gave a favourable review of this book on its original appearance in the Horizon Series of military manuals published by Messrs. Masson, of Paris. It is, in our opinion, one of the very best of all the productions bearing on shell shock, and we are confident that its reception in English form will corroborate this opinion. When Charcot was congratulated on the lucidity of his lectures by a foreign confrère well qualified to do so, he replied deprecatingly: "Ah, Monsieur, it's our language." It is not, however, a question of language merely; the Gallic mind has the power of expressing itself with unusual clarity, consecutiveness, and conciseness. All these qualities are found in Professor Léri's excellent monograph.

*Vegetative Neurology: The Anatomy, Physiology, Pharmacodynamics, and Pathology of the Sympathetic and Autonomic Nervous Systems.* By Dr. HEINRICH HIGIER, of Warsaw. Authorised translation by WALTER M. KRAUS, M.D., New York. New York: Nervous and Mental Disease Publishing Co. 1919. Pp. 144. \$2.

Dr. Higier's monograph appeared originally in the *Ergebnisse der Neurologie*, which came to an untimely end,

after only three or four issues had appeared, on the outbreak of the war. The edition published in English is a faithful translation of the original, but the illustrations are not, this time, in colours—somewhat of a drawback, as some of them are very complicated. No student of neurology wishing to keep abreast of knowledge should be without this monograph, in which the author, collating from the widest sources data bearing on his subject, has organised his material into a *revue d'ensemble* which is a model of what such reviews should be. It is not a rival but complementary to such a study as Gaskell's "Involuntary Nervous System"; it does not contain personal original work, but, on the other hand, it represents a laborious marshalling of facts and an able selective skill on the part of the author. The translator has spared us Americanisms, but a painful number of slips have been allowed to escape the proof-reading—e.g., sphincter anus, rami communicanti, was deferens and prostrate, nerve bundles or plexi, different than, mucus colitis, &c. "Unreactibility" (p. 79) is not an Americanism: it is a monstrosity.

*A Conspectus of Recent Legislation on Venereal Disease in the British Dominions and United States of America.* By DOUGLAS WHITE, M.D. London: Published by the National Council for Combating Venereal Disease.

WE welcome this pamphlet not only on account of the systematic presentation of the recent legislation on venereal disease in the countries mentioned, but also by reason of the interesting statements as to the results which have accrued from such legislation.

This valuable pamphlet, under the heading of "Conclusion," contains some most suggestive remarks by Dr. White on the subject of legislation in Great Britain, with reference to the Act of Parliament of 1917. "How much further, and in what direction," he pertinently asks, "are we prepared to move"? He then considers the questions of: (1) notification; (2) penalisation of the conscious transmission of disease; (3) the active repression of prostitution; (4) the safeguarding of marriage against disease.

Dealing with the subject of prophylaxis in the U.S.A., Dr. White writes: "No reference is made to this method in any laws or regulations. All the bureaux of health, who have replied to a query on this matter, express distrust and disapproval of prophylactic 'packets' as likely to defeat the object in view. Some go further and include in their disapproval 'early preventive treatment.' Some express approval of the latter method, but it has not apparently been instituted, unless sporadically, except by the military authorities in the area of the camps. In these, however, good results have been obtained."

The author has dealt successfully with each of the four subjects indicated above and may be congratulated on the attainment of his professed objective—namely, to give information succinctly and to stimulate thought.

*Injuries to the Head and Neck.* By H. LAWSON WHALE, M.D. Cantab., F.R.C.S. London: Baillière, Tindall, and Cox. 1919. Pp. 320. 15s.

THE title of this book is misleading, as the injuries described are, without exception, those due to gunshot wounds about the head and neck; injuries such as those found in civilian practice are not dealt with. Injuries to the vault of the skull, the brain, and the eye are not described, the book dealing only with injuries to those parts which come within the province of the oto-laryngologist; to which is added a chapter upon prosthesis and plastic operations after severe injuries to the face and jaws.

The book contains full records of numerous interesting cases, which illustrate the signs, symptoms, and method of treatment of injuries in this region of the body. This is not a text-book for students, but Mr. Whale has produced a volume which should appeal to the practitioner who is interested in the broad lines of treatment which have been employed in the treatment of war injuries of the head and neck. The plastic work upon the face is new, describing the procedures necessitated by war conditions, but the recognised methods of civil surgery have been modified to suit the special cases treated. The book is written in a pleasant, discursive style, and is well and fully illustrated.



# THE LANCET.

LONDON: SATURDAY, SEPTEMBER 20, 1919.

## Malaria in England.

MALARIA at one time was endemic in England, and traces of its presence could still be found in some London hospitals as late as the early "seventies," patients being sometimes admitted from Essex and other districts for the treatment of enlarged spleens or "ague cakes." The prevalence of laudanum-drinking among the agricultural population of the low-lying districts of Lincolnshire as late as 50 years ago was explained as being due to the need for taking an anodyne to mitigate the discomforts of their recurring attacks of ague. Of late years, however, there has been a general impression that draining and bringing under cultivation of much marshy and waste ground has led to the disappearance of endemic malaria in the affected parts of England. Up to the outbreak of the war little notice was taken of imported malaria cases, it being assumed by many persons that our local mosquitoes were not likely to act as carriers of the infection. But when our soldiers began to be invalided home as the result of malaria contracted mostly in the Eastern war zones, and especially in Macedonia, the Local Government Board entered into communication with the medical departments of the Navy and Army in order that joint action might be taken to meet the danger. Surgeon-Captain P. W. BASSETT-SMITH, directed measures on behalf of the Navy, and Sir RONALD ROSS, consultant in malaria to the War Office, on behalf of the Army. The measures against civilian infection were directed by Lieutenant-Colonel S. P. JAMES, adviser on malaria to the Local Government Board, and Lieutenant-Colonel E. WILKINSON, late Sanitary Commissioner for the Punjab, medical inspector of the Local Government Board, with whom was associated a skilled entomologist, Mr. A. J. GROVE, M.Sc.

A report on malaria in England during 1917 has already been published. Quite recently another report,<sup>1</sup> for 1918, has been issued with an introduction by Dr. G. S. BUCHANAN, first assistant medical officer to the Local Government Board, summarising clearly the results of action taken against the risks of a spread of malaria in this country. From this report it appears that there are at least three species of anophelines, the malaria-carrying mosquitoes, to be found at present in this country, and it is stated that evidence has been found that there are a few areas in England where a mild form of true indigenous malaria still persists. Special inquiries were made into the cases of subjects who were said to have contracted malaria in England during 1917 and 1918. The total number of such cases was 330, of which 38 occurred in the Navy, 224 in the Army, and 68 in the civil population. Of the civil cases 42 occurred in 1917 and 24 in 1918; the majority in both years occurred in

the county of Kent, in an area at the mouth of the Thames, including the towns of Sheerness and Queenborough. All the locally contracted malaria cases were due to infection with the benign tertian parasite, and none died. In the military malaria cases, in which the infection had been contracted in England, their source of origin was attributable to the presence in their immediate neighbourhood of relapsing cases of malaria among soldiers invalided home from the Eastern war zones. In the naval cases the origin was not in all cases so obvious, but some of them occurred in the Kent area already mentioned. Among the civilian population the origin of the cases was generally due to relapses in returned malarious soldiers; but a local outbreak in the civil population of Queenborough included cases whose illness appeared to be attributable to infection from civilians in their immediate vicinity. The clinical characters of these last-mentioned cases were less severe than those in which the infection was derived from returned soldiers, and this suggests that they were possibly due to an indigenous strain of the benign tertian parasite instead of the more virulent strain recently imported from the Eastern war areas. There is a probability that the hot weather in September of the present year may favour the breeding and development of anophelines in districts which have not as yet taken satisfactory steps to reduce the breeding-places of these mosquitoes. We understand that in 1919 both at Sheerness and Queenborough malaria cases, locally contracted, have again been reported. In the Fletton urban district, in the county of Huntingdon, not far from Peterborough, a boy who had never been out of the district is reported to have developed an attack of malaria. It is probable that other instances not recorded as yet in the press have also occurred.

The action taken by the Local Government Board to prevent the spread of malaria in the civil population seems to have been sufficiently comprehensive. Its policy was based primarily on the early detection of all malaria cases and carriers, followed by thorough treatment, protection from mosquitoes, along with special supervision and control. In selected areas this action was supplemented by anti-mosquito measures directed specially against the breeding-places of these insects. Notification of malaria was made compulsory in certain districts. Since the Armistice other measures have been added, in consultation with the Ministry of Pensions and the National Health Insurance Department, for the treatment of malaria in demobilised men. A pamphlet entitled "Suggestions for the Care of Malaria Patients," was prepared by Lieutenant-Colonel JAMES, in collaboration with Sir RONALD ROSS, and this was distributed to medical practitioners throughout the country. In January, 1919, the Local Government Board issued an Order, "Public Health (Pneumonia, Malaria, Dysentery, &c.) Regulations, 1919," which, among other things, imposed on local authorities and their officers certain new powers and duties in regard to malaria prevention. All practical assistance was given by the expert officers of the Local Government Board to medical officers of health and medical practitioners; in all cases where indigenous malaria was suspected and where no other arrangement had been made for the examination of blood films, this duty was undertaken by the experts belonging to the Board's Medical Department.

<sup>1</sup> Reports to the Local Government Board on Public Health and Medical Subjects, New Series, No. 123; Reports and Papers on Malaria contracted in England, 1918. H.M. Stationery Office. 1919. Pp. 51. Price 1s. 6d. net.



## A Shorter Working Day.

AT the meeting of the British Association interest was manifested by a large attendance, which overstrained the accommodation provided, in the possibilities of reduction in hours of labour, with special reference to Lord LEVERHULME'S proposal of a six-hour day. The subject was introduced by Dr. H. M. VERNON, who spoke from his unique knowledge of output under different periods of employment, as ascertained by him in a variety of industries during the war on behalf of the Health of Munition Workers Committee, and since then for the Industrial Fatigue Research Board. Mr. SARGANT FLORENCE told of the work now being carried on by the National Research Council in the United States; while Professor E. L. COLLIS, Sir HUGH BELL, and Professor A. D. WALLER also presented different aspects of the case. Every social movement which affects a considerable portion of the community calls for close attention, but the present position in the industrial section of the community, which forms so large a portion of the whole, and upon which the whole is finally dependent, requires to be watched with particular interest by the medical profession. The workers are demanding and are obtaining a great reduction in their hours of labour with no reduction in their earnings. These hours have up to the present remained (except for miners) practically unaltered since 1850, when they were limited by the Factory Acts to 56½ per week for textile workers and 60 for other operatives; these limits, it is true, only apply to "protected" labour—i.e., juveniles and females—but the hours of the unprotected adult male have been largely determined by these legal limits.

Every community is alive and reacts as a living organism to the influences to which it is subjected; and its reactions are to be measured by the collective behaviour of the units of which it is composed, as indicated by vital statistics. Such records show that epidemics of disease, like influenza or plague, come and go, ruffling the waves of the advancing or receding tide of health, but not materially affecting the total rise or fall over long periods. Three main influences affect life—the air we breathe, the food we eat, the work we do. The effect of the air does not now concern us, although data are accumulating which support the contention that impurities poured into the air of great cities and industrial centres have an important and harmful influence. The importance of the food supply has long been recognised, particularly since MALTHUS early last century pointed out that increase or decrease of population followed the food-supply rather than the birth-rate; and we have just seen how food-supply has been the dominant factor in the Great War, controlling the amount of energy the belligerents had at their disposal—i.e., the amount of work they could do. But the importance of the work itself has hardly been fully appreciated; the importance upon the health of the community of modern industrial life; even though Sir JAMES PAGET laid it down that "fatigue (too much work) has a larger share in the promotion or permission of disease than any other causal condition you can name." Fewer hours of work should mean less fatigue; and the health of the nation is bound to react, though several years must elapse before the reaction can be measured. Health has reacted to the social changes brought about by the sudden advance in civilisation of the last 200 years, and

more particularly of the last 80 years, which has resulted from industrial development guided by intellectual progress. The food-supply has increased and the population has increased, as MALTHUS said it should. Vital statistics indicate a diminution in our exposure to, and an increase in our capacity for resisting, the onset of disease; and in no case has this been more manifest than in the decline in mortality from tuberculosis. What reaction will follow the present movement which should eliminate much industrial fatigue?

Dr. VERNON traced the present possibilities of the six-hour day, and showed by instances taken from the iron and steel industry, and the tinplate industry, that the rate of output per worker cannot always be increased in proportion to the reduced hours. He chiefly dealt with the economic question of output, which is fundamental in the industrial world; for industry must obtain a surplus of output; that is, a greater output per working unit than that unit's requirements necessitate, if the social circulation which supplies him with materials, and absorbs his output, is to be maintained. Hours of labour and conditions of work have to be arranged to ensure this surplus of output which is wealth, the blood-stream of industry. ÆSOP'S fable of the limbs and the stomach is still a useful parable; the stomach must be fed for nourishment to reach the limbs. The constitution of the State has in the past been showing signs of greediness and of an overloading of its metaphorical stomach; dyspeptic symptoms have followed—nightmares of unrest; and somewhat unwieldy corporations have developed, while the work-a-day limbs have suffered from unequal distribution of nourishment. But if the hands go on strike and refuse to feed the stomach, they in their turn can receive no nourishment and must starve. Recently a tendency for more equal distribution has manifested itself, but for this to be maintained output must be maintained, and not only maintained but increased. Can this be effected by adopting the six-hour day? Dr. VERNON'S data show that so far as certain dexterous processes are concerned the answer is "Yes," but that in regard to the majority of automatic processes the answer is a definite "No." Modern industry has developed on a longer-day basis and has not yet organised itself to meet the requirements of an eight-hour day, even though this modification has for years been demanded by the workers. If ever the six-hour day proposed by Lord LEVERHULME is to be generally adapted—and from the point of view of health and welfare it has much in its favour—industry must have due notice. Labour-saving devices must be invented, and processes brought more under the control of the workers' own dexterity.

These things can probably be done, but not in a moment, and to-day each process must be considered on its merits. We must encourage in every way a reduction of hours by permitting multiple short shifts, which to-day are discouraged, if not rendered impossible, for protected labour by the inelastic provisions of the Factory Acts. If short shifts prove an economic success, which can only result through energetic action on the part of employers, and more especially of the workers, then industry will adopt them without compulsion, and will organise itself so that they can be introduced where to-day they could only prove an economic failure. Legal action at present should be limited to fixing some maximum period



for employment, say eight hours a day, or, better, a 48-hour week, and should leave to industry every possible latitude to work out its own salvation within this limit. The step would be a great advance, for it must be remembered there is no legal limit to-day (except for miners) to the hours of adult male labour. At some future time, in the light of experience gained, a further reduction of the maximum might be found of value to the health and wealth of the State; but in the light of present knowledge with industry organised as it is to-day there are at least three dangers in adopting a universal six-hour day: (1) health might be impaired by too little activity, for work is even more necessary to health than rest; (2) the unoccupied time might be spent unprofitably and harmfully, since the working-class population have not been accustomed to having leisure hours to devote to mental and physical recreation; and (3) surplus of output might not be obtained, when economic circulation would cease.

### Marking Time in Psychiatry.

IN common with other Government departments, the Board of Control has been seriously hampered in its activities by the conditions obtaining during the war, which not only depleted its staff but also thrust upon it a number of emergency duties of a difficult and responsible character, notably in connexion with the adaptation for use as war hospitals of certain asylums under its supervision. The present report, though it appears several months after the termination of hostilities, inevitably bears traces of this preceding period of stress, and can hardly be expected, therefore, to come quite up to the standard of fullness and accuracy which may reasonably be looked for in normal times in the reports of a State authority responsible for such important duties in regard to the care and treatment of the insane. Even, however, when full allowance has been made for the difficulties of the moment, it cannot be said that the inadequacy of the Board's last report is entirely accounted for. In the first place, the statistical information which the report contains is very defective, even for a war-time publication, and it is badly arranged; there are no details as to the age distribution of patients on first admission and on recovery; there is only one meagre table showing the percentage distribution of deaths from certain causes at three different age-periods, which, in the absence of any figures indicating the age distribution of the whole asylum population, is quite useless; no particulars are given as to the assigned causation of insanity or as to the clinical forms of disease in patients admitted to care. If the omission of any reference to these latter points could be explained by scepticism on the part of the Commissioners regarding the value, in the present state of knowledge, of any attempt to classify the forms of mental disease or to distinguish their ætiological factors, it would perhaps be a comprehensible position; but in point of fact the Board has had in use for many years past a most minute and complex table of classification with an equally complex table of alleged causes of insanity, and the statistical information collected every year from all the asylums in the country has to be furnished in accordance with these schedules. If

this system is too elaborate and too artificial to be of any use in practice, as may well be the case, and if it is not possible to substitute for it some provisional scheme of a simpler and less ambitious character, it should, at least, be feasible to show the statistical movement of a number of the generally recognised clinical groups of mental disease, as, for instance, general paralysis, the insanity associated with epilepsy, and the insanities of child-birth. Meanwhile the lack of information of this sort renders it the more necessary to provide statistics regarding such matters as the age at onset of attack and the age distribution of the asylum population. If space is a consideration, it would be easy to find room for the inclusion of these really important data by omitting details about trivial administrative points, such as the extension of a certificate to allow an institution to increase its accommodation by one bed, or the purchase of  $3\frac{1}{2}$  acres by a county asylum. Such matters, if worth recording at all, might well be relegated to an appendix; they are quite out of place in the text of the report. It is desirable to make these criticisms at the outset, because the absence of adequate statistical data imports a large element of uncertainty into the interpretation of the two main facts disclosed in the report—viz., the high death-rate amongst asylum inmates and the increase in the number of admissions to asylum care during 1918.

On Jan. 1st, 1919, the number of notified insane persons under care in England and Wales was 116,703—49,936 males and 66,767 females—showing a decrease of 9138 as compared with the number under care on the corresponding date in 1918, and a decrease of 23,763 since the beginning of the war. The number of patients placed under care last year was 21,765—10,078 men and 11,687 women. Of this number, 8835 men and 9726 women had not previously been under asylum treatment. The admissions for the year show an increase in both sexes as compared with the figures for 1917, and the number of first admissions of women is higher than any previously recorded. It should be noted that the figures do not include 3000 to 4000 patients under observation in military hospitals, many of whom will ultimately be certified. During the year 5907 patients were discharged recovered, being a percentage of recoveries to admissions of 27.14—the lowest on record. The decrease in notification has been due in the main to the abnormally high death-rate, which, calculated on the daily average number of patients, amounted last year to 19.56 per cent., as compared with 16.86 per cent. in 1917 and with 9.43 in the pre-war year 1913. This excessive mortality was the subject of a special inquiry by a committee of the Board, who reported that its main cause was the reduction in quantity and deterioration in quality of the food supplied to patients. The unpleasant impression which this statement makes will not be lessened when it is observed, from Statistical Table VI. in Part II., that the increase in the death-rate was confined to institutions receiving paupers, and did not affect the registered hospitals which deal only with private patients. Further information on this matter is clearly desirable, especially as to whether the rationing of asylum patients was scientifically adjusted to their needs as sick people. The Commissioners, as a result of their investigations, judged it necessary to make a series of suggestions to the asylum authorities, and it is

<sup>1</sup> Report of the Board of Control (Lunacy and Mental Deficiency) for 1918.



a little surprising to find that their first recommendation is to the effect "that patients should be weighed at least quarterly and a record kept." Is it to be inferred from this that there are institutions for the insane where patients are not periodically weighed, and that it is only after a disastrous experience of excessive rationing that the utility of such weighing is discovered? The other recommendations of the Commissioners refer mainly to precautions against the spread of communicable diseases, especially tuberculosis and dysentery, which became much more prevalent in the asylum population during the war. The measures advised are generally sound and practical, but the Board of Control can hardly be called progressive scientifically. The financial statistics reveal the interesting and illuminating fact that in the year ending March 31st, 1918, the expenditure on county and borough asylums for the insane amounted to considerably over £4,000,000, and the expenditure for scientific research in connexion with mental disease was £375.

It will be seen that the report does not give a very encouraging view of the present position of insanity in this country, and that it is likely to strengthen the growing sense of dissatisfaction with our existing methods of dealing with the insane. The very tone of the report, with its constant insistence on the purely custodial and administrative side of asylum work, points to what is amiss: it is the failure to recognise, in practice as well as in profession, that insanity is a disease which must be studied and treated in the spirit and by the methods of medical science. The reforms which the Commissioners themselves advocate, such as the establishment of clinics for mental disease in connexion with general hospitals and the amendment of the law to allow of the treatment of cases of insanity in the incipient and more curable stages, will, it may be hoped, do something to remedy the defects of the present system, but it is evident that more radical changes will be needed if psychiatry is to be freed from the influences which now impede its progress, and is to be brought into contact with the main current of medical thought and practice.

## Annotations.

"Ne quid nīms."

### IRISH PUBLIC HEALTH COUNCIL.

THE Chief Secretary for Ireland, acting under Section 10 of the Ministry of Health Act, 1919, has nominated the following to be the medical members of the Irish Public Health Council:—Dr. E. Coey Bigger, now Medical Commissioner to the Local Government Board for Ireland, to be chairman of the Council; Sir John W. Moore, president of the Royal Academy of Medicine of Ireland and chairman of the Public Health Committee of the General Medical Council; Dr. Robert J. Rowlette, nominated by the Irish Medical Committee and the Irish Medical Association; Dr. Alice Barry, medical superintendent of the Child Welfare Work Branch of the Women's National Health Association, nominated by the Irish Medical Committee. The non-medical nominated members of the Council are: Countess of Kenmare, chairman of the Advisory Council for Ireland of the Queen Victoria Jubilee Institute; Mrs. J. McMordie, member of the Tuberculosis Committee of the Belfast Corporation, and of the Belfast Insurance

Committee; Sir James M. Gallagher, ex-Lord Mayor of Dublin and ex-chairman of the Dublin Joint Hospital Board; Mr. J. Ewing Johnston, M.R.C.V.S., president of the North of Ireland Veterinary Medical Association; Rev. P. Kerlin, C.C., nominated by the (Irish) National Association of Insurance Committees; and Mr. John Drennan, representing the approved insurance societies. It will be remembered that the Vice-President and two other Commissioners of the Local Government Board for Ireland; the chairman and two other Irish Insurance Commissioners; the Registrar-General of Births, Deaths, and Marriages in Ireland, are ex-officio members of the Council. Major George A. Harris, of the Local Government Board for Ireland, has been appointed secretary to the Council, the offices of which will be at 33, St. Stephen's Green, North Dublin. The first meeting of the new Council will be held on Thursday, Oct. 2nd.

### THE RODENT MENACE.

CIVILISATION is daily teaching us that we are members one of another, and this applies especially to our failings and failures, and even to our diseases, for one carries the germ and another catches it. On the animal kingdom we are still more intimately dependent, for they frequently act as hosts to our infections during inhospitable intervals. What should we know of malaria if it was not for the mediation of the mosquito, or of plague if it was not for the rat? And the rat is becoming ever more and more suspect. In regard to protozoal parasites it has been long known to harbour the *Trypanosoma lewisi*, an apparently harmless guest. The Japanese have shown the rat to be the host of two other protozoa which, while harmless to itself, are capable of causing serious illness in man. These are the *Spirochæta icterohæmorrhagiae* Inada and the *Sp. morsus muris* Futaki. The work of Inada, Ido, Hoki, Kaneko, and Ito, on the first-named has since been confirmed by the demonstration of rat carriers in France, Belgium, Algeria, and the United States of America. In England the presence of the specific spirochæte of hæmorrhagic jaundice in the rat was not fully proved until the investigation of Major A. G. R. Foulerton, carried out in the Hygiene Department of University College, London, and recently printed at the instance of the Public Health Department of the Corporation of London. Major Foulerton examined 101 rats caught within the City and Metropolitan area, and in 4 of them found a spirochæte which killed a guinea-pig on the twelfth day with all the characteristic appearances of spirochætal jaundice. Three of these rats were from a batch of 12 caught at a general store in the City last November; the fourth from a batch of 7 from another part of London. Dr. A. C. Coles stated in our columns<sup>1</sup> last year that he had found spirochætes resembling the *Sp. icterohæmorrhagiae* in 9 out of 100 rats caught in the neighbourhood of Bournemouth, and gave excellent micro-photographs of the protozoa, but he did not proceed to confirm his results by animal inoculation. Major Foulerton discusses the method of transmission of the protozoon from rat to rat and rat to man, inclining in the first case to accidental inoculation, in the latter to the infection of food and drinking water. For the present the rat-flea has nothing to say to this matter.

In a presidential address, delivered last year before the Royal Society of New South Wales and

<sup>1</sup> THE LANCET, 1918, i., 468.



since reprinted and circulated, Dr. J. Burton Cleland pointed out that a town that lets its rats multiply is exposed to a menace that may lead to enormous financial losses and possibly a heavy death roll. Rats live a communal life in direct contact with each other, and thus the passage of any pathogenic organism is facilitated, while in the passage the pathogenicity of the less lethal forms is probably increased. He went on to discuss rat leprosy, which is widely distributed, though of relatively rare occurrence, its incidence among the rat population in New South Wales being much about the same as the incidence of leprosy amongst the human population. From investigations on its occurrence in rats it might be inferred that there is one diseased rat in Sydney for every 100,000 examined, whilst in New South Wales there is approximately one leper to 80,000 inhabitants. The question arises as to whether there is any possible connexion between the two diseases, whether, indeed, they are not due to the same organism. Dr. Cleland sketches the phylogenetic history of the tubercle bacillus, showing that it was originally a saprophyte, as, for instance, the acid-fast timothy-grass bacillus is still; the next stage being its accidental introduction by the alimentary canal or through wounds into the tissues of vertebrates, where it has found itself capable of living and multiplying, even though in such an unusual environment; finally, being given frequent opportunities of escape from its host through ulceration of the lungs and of introduction consequently to fresh individuals, its pathogenicity has been increased and its saprophytic qualities have been diminished or lost. The rat leprosy bacillus may, he suggests, be in somewhat the same transition stage.

These are new aspects of the rodent menace about which sufficient is known to demand the more active measures of suppression in this country. The Rats Orders of 1918 and 1919 gave local authorities the liberty to organise local campaigns. Several county councils have appointed official rat-catchers. In Leicestershire a summer campaign resulted in the death of 125,223 rats, for which a sum of £1525 was paid out. The Board of Agriculture has, in harmony with a growing habit, suggested a "rat week" for Oct. 20th-27th, in which village communities should compete one against the other in baiting, trapping, and ferreting. All this is to the good, but we doubt the attainment of the end in view so long as slack authorities are not gently urged by legislative action; for rats harried on one side of a boundary can take refuge on the other side where the human community is more lenient. We regret that Lord Aberconway's Rat Destruction Bill did not become law. It is for the Ministry of Health to devise appropriate legislative action which shall not be held up by lack of time or interest in the Chamber.

#### THE MEDICAL DEFENCE UNION.

THE annual general meeting of the Medical Defence Union was held in the board-room of the Public Medical Service at Leicester, under the presidency of Sir John Tweedy, when the report presented began by recording the great loss to the Union incurred by the death in April last of the general secretary, Dr. A. G. Bateman. Dr. Bateman's services were largely instrumental in safeguarding the rights, liberties, privileges, duties, and ethical obligations of medical men in their relations with each other and with the public, and the appoint-

ment of his successor, Dr. James Neal, with a long experience behind him as deputy medical secretary of the British Medical Association, promises a continuation of Dr. Bateman's activities. During the year 123 cases were referred to the Union's solicitor, Mr. W. E. Hempson, 24 being libel and slander actions, prosecuted or defended; 15 malapraxis actions, defended; 8 prosecutions of unqualified persons; 76 arbitration and personal matters. The out-of-pocket expenses for litigation amounted to £278, and the total law charges to £1136. No action conducted by the Union has been lost during the last two years. The profit and loss account for the year shows a credit balance of £2016 at the beginning and £2830 at the end of the year. The most interesting feature of the report is the record of a difference of opinion which has arisen between the Union and the General Medical Council in regard to requests addressed by the Council's acting registrar to members of the Union inquiring their reasons for refusing medical attendance in certain cases in regard to which complaint had been received by the Council. The reply of the Penal Cases Committee of the Council, justifying the Council's action, is given at length in the report. The Union takes the view that a continuance of this new procedure can only lead to a conflict between the General Medical Council and registered medical practitioners. The number of members on the register of the Union is now 8719.

#### THE POSOLOGY OF EMETINE.

At a recent discussion<sup>1</sup> on the posology of emetine at the Société de Thérapie, Paris, Dr. Chauffard stated that he preferred giving subcutaneous injections of the drug as being less painful than intramuscular. He never used rectal injections, as they were liable to cause a recrudescence of dysentery. In moderately severe cases of amœbic dysentery he gave two injections daily of 3-5 cg. of emetine hydrochloride. The patient received a series of injections for from six to eight days, followed by a week to a fortnight's rest. The injections were then resumed if necessary. Dr. Dopfer stated that injections of emetine might give rise to toxic symptoms, such as cardiac, digestive, and nervous disturbance, which was sometimes fatal. The toxicity of emetine was favoured by its accumulation in the system and by its slight degree of daily elimination. In practice, therefore, it was advisable not to exceed a total dose of 1 g., the daily dose being 8-10 cg. If toxic symptoms developed before the total dose of 1 g. was reached, treatment should be suspended. If several courses of emetine treatment were required for relapses of amœbiasis, before undertaking a second series it would be necessary to wait for complete elimination of the drug from the first course—i.e., 40 to 60 days. Major F. Noc advocated the following treatment of amœbic dysentery: (1) an injection of emetine in doses of 4 cg. daily for four days; (2) an intravenous injection of 0.30 g. neosalvarsan on the first or second day; (3) milk as a drink throughout the duration of treatment; (4) small doses of extract of ipecacuanha (5 or 10 cg.), in pills, three times a week; (5) one or two injections of emetine every week or fortnight, according to the frequency of relapses and the number of cysts in the stools; (6) reinjection of small doses of neosalvarsan (0.30 g.) at fairly long intervals concurrently with the injections of emetine.

<sup>1</sup> Bulletin de la Société de Thérap., 4e Série, xxiv., 1919, pp. 125-136.



## THE IDEAL ATMOSPHERE.

THE chemistry of the air was established with some degree of certainty a good many years ago. The essential constituent, of course, for the maintenance of animal life is oxygen absorbed in the process of respiration and passed on to the tissues by way of the circulatory system. These are elementary facts. The physics of the air has only comparatively recently received promising study. It is well to remember that the chemistry of the air does not vary, while the physics of the air does considerably in ways which affect the well-being of the individual. As is well known, the great and important organ, the skin, is susceptible to the fluctuations in the physical conditions of the atmosphere. Terms such as stuffy, oppressive, heavy, thundery, fresh, bracing, are constantly used as expressing certain varying conditions of the air we continually experience, but all through these phases its chemical constitution remains the same. We may disregard the chemistry of the air, as that is assured to us as a constant in all ordinary circumstances—we are taking no regard, of course, of added impurity. The physics of the air, on the contrary, is an ever-varying factor which determines its adaptability to the physiological convenience of the individual. The progressive studies of the physical conditions of the air are rapidly modifying our views on questions of indoor warming and ventilation: these refer to the correct estimate of a healthy aerial environment independently of chemical purity or composition.

In this connexion it is interesting to recall that as far back as 1892 a Report of THE LANCET Sanitary Commission on the Ventilation of Theatres and Places of Public Assembly was published in our columns. This report referred mainly to the steps that were being taken in regard to the ventilation of the great amphitheatre of the Paris Sorbonne. The task was entrusted to an eminent architect and hygienist, M. Emile Trélat, who had already consummated a scheme at the Vienna Opera House which had given great satisfaction. This scheme took for its ideal of well-being in regard to indoor ventilation the conditions prevailing on a fine autumnal day when the air is cold and crisp, but when the rays of the sun are still warm. M. Trélat maintained that the colder the air the greater the internal oxidation in breathing, and therefore the greater the internal warmth. According to these views if, while breathing cold air, the body can be preserved from external cold by the radiation of heat from the sun or other sources, there follows the most healthy and the most enjoyable state of physical existence. These views receive confirmation to-day, for practically the same conclusion has been reached by Dr. Leonard Hill in his admirable series of researches on the subject. In his recent report on "The Science of Ventilation and Open Air Treatment" to the Medical Research Committee (Special Report Series, No. 32, published by His Majesty's Stationery Office), he repeats his statement that the ideal method of warming and ventilating rooms would give radiant heat, a warm floor, and agreeable movement of cool air—the conditions, he adds, of a sunny spring day out-of-doors. Except that M. Trélat speaks of a fine autumnal day, whereas Dr. Hill speaks of a sunny spring day, these investigators appear to have arrived at the same ideals. The weather of these islands does not always approach

these ideals, but the suggestion plainly is that the favourable conditions described should be imitated as nearly as possible in regard to indoor heating and ventilation. The appeal to scientific instruments for guidance in these matters has hitherto been of little value, and particularly does this apply to the ordinary thermometer, for, as Dr. Hill rightly observes, the healthy aerial environment is not a question of actual temperature, but (1) of the cooling power of the air, that depending not only on the temperature, but far more on the movement of the air; (2) the radiant energy of the sun or other source received by the skin; and (3) the drying power, depending upon humidity, movement of the air, and radiant energy received, which affects the cutaneous nerve-endings by varying the difference between the temperature of the surface and the blood temperature in the deeper layers of the skin.

Towards determining the physics of the air, particularly in regard to its cooling and evaporative power, the kata-thermometer has been devised by Dr. Hill. This is an alcohol thermometer designed primarily for the measurement of its own rate of cooling, when its temperature approximates to that of the human body. The classic wet- and dry-bulb thermometer is thus superseded where measurements in behalf of the human body are concerned, and the records given by the dry and wet kata-thermometers form a well-begun means of differentiation as to what is and what is not a healthy aerial environment. In his observations in our last issue on the hot season in Mesopotamia, Dr. F. E. Fremantle dwelt on the value of the kata-thermometer in determining the conditions under which the white man can continue to exist in tropical climes. Scientific measurements of this kind are interesting, though their lessons sometimes seem late in supporting long-established convictions. Cool, clear air has for long been accepted as most congenial to healthy respiration, but the comfort of the body needs to be sustained by artificial warmth in chilly times. The individual who shivers is miserable, and his suffering may well denote the beginning of disturbance of health.

## A PROGRESSIVE MOVE.

IN the advertisement pages of this week's issue of THE LANCET appears a notice indicating an interesting departure by the authorities of the Hospital for Nervous Diseases, Maida-vale. The advertisement invites applications for the post of psychologist to the hospital, from which we assume the hospital is about to establish the nucleus of what should develop into a psychological department. From the report of the medical registrar of the hospital for the last year it appears that there is much material awaiting investigation, for of the 4000 patients treated at the hospital in 1918 nearly half are classified as suffering from functional nervous disorders. Apart from the treatment of these patients and the opportunity for original work, much can be done for many of the patients who are classified as suffering from organic nervous disease, but who also show faulty mental adjustment, and the appointment of a psychologist displays the intention to place the facilities of the hospital at the disposal of those competent to carry out original investigation in psychotherapy.



## TUBERCULOUS INFECTION IN SCHOOL CHILDREN.

Dr. Alexander Arnfinssen<sup>1</sup> has tested 80 school children between 6 and 18 years of age at Trondhjem, in Norway, with von Pirquet's reaction, and found that it was positive in only 37·8 per cent. Although Trondhjem is an old city, tuberculosis until comparatively recently was almost unknown there. The surrounding country, from which the city partly draws its population, had been relatively protected from infection up to 1850, when the construction of railways and good highroads brought about a change in the situation. In spite of the low percentage of the tuberculin test, the mortality from tuberculosis is higher at Trondhjem than in other Norwegian cities. The writer, therefore, suggests that the greater the dissemination of tuberculous infection the lower is the mortality from the disease owing to the population having acquired a relative immunity. The state of nutrition of the children is very good, probably owing to the fact that 82 per cent. had been breast-fed up to the age of 3 months or more. Children from tuberculous homes showed a positive cuti-reaction in 68 and 64 per cent. for boys and girls respectively.

## PERFORATION OF THE LUNG A SEQUEL OF PERFORATION OF THE STOMACH.

In the *American Journal of the Medical Sciences* for August Dr. J. Friedenwald has reported a very rare sequel of gastric perforation—subphrenic abscess perforating through the lung. A man, aged 51 years, was seen in consultation. He complained of gastric symptoms for 35 years, mainly fullness after meals and belching. For the past eight or ten years there were periodic attacks lasting three or four weeks to several months, characterised by pain in the stomach appearing two hours after meals, and relieved by soda and rest. Pyrosis and hunger pain frequently occurred. He vomited at times, but there was no history of hæmatemesis or melæna. After an attack lasting some weeks he was seized with agonising pain in the upper abdomen requiring injections of morphine. The abdomen was distended and there was a tender epigastric area. Next day there was dull pain in the left kidney region which radiated towards the epigastrium. The pain lasted ten days, and was accompanied by a temperature ranging from 101° to 103° F. Cough and hiccough developed and purulent expectoration followed. During the first day he expectorated about a quart of pus. When the expectoration began the temperature and pain diminished. He was admitted to hospital. On examination he was thin and pale. The tongue was coated, and there was marked pyorrhœa alveolaris. In the chest only some impairment of the percussion note in the region of the right scapula could be detected. Auscultation was negative. The abdomen was somewhat distended, and the recti were spastic. There was a tender area in the epigastrium and left lumbar region, over which was a burn caused by hot applications. The liver extended a finger-breadth below the costal margin. X ray examination showed a high stomach with rapid expulsion and defect at the pyloro-duodenal junction (revealing an ulcer), dilatation of the bronchi, and cloudy infiltration below the right clavicle. The temperature was 100°.

On the first day in hospital he expectorated about a pint of pus. The expectoration rapidly diminished and ceased in a week. The pus was creamy and of a putrid odour. It contained colon bacilli and streptococci in abundance. Recovery quickly took place. Evidently the attack of abdominal pain indicated gastric perforation, which was followed by subphrenic abscess, and finally by perforation of the lung. The complete evacuation of the abscess led to recovery. In gastric perforation producing subphrenic abscess the pus usually accumulates rapidly and the symptoms are very acute. There is often sudden severe pain in the epigastrium or hypochondrium radiating to the shoulders with dyspnoea due to pressure on the diaphragm. There are usually vomiting, hiccough and weakness, and acceleration of the pulse. Fever, with chills and sweating, is not uncommon. Dr. Friedenwald could find recorded only four cases—all German—in which perforation of a gastric ulcer was followed by rupture through the lung.

## INTELLIGENCE TESTS.

It was announced some months ago that the authorities of Columbia College, New York, had resolved to replace their matriculation examination from July last by a series of psychological tests for the selection of those candidates for admission who could profit most by a University course of study. For many years past the utility of special mental tests has been gaining increasing recognition. Their value was finally established during the war, and nowhere so conclusively as in the United States Army, in which they were applied to about one and a half million recruits. A brief report of the methods adopted for measuring intelligence by these Army mental tests has now been issued from the Government Press, Washington, showing also some of the results obtained and the practical applications secured. Men of too low-grade intelligence were rejected, while those of superior intelligence were considered for advancement, the most suitable being selected for special training or for specific Army duties. On the basis of these tests endeavours were made to provide each unit (save in certain arms of the Service) with its proportion of superior, average, and inferior men, instead of leaving the proportion to chance. In this way were formed units of uniform mental strength which could be trained at a uniform rate. Intelligence, of course, is only one of the factors in military efficiency, but it is probably the most important single factor. The results obtained from intelligence tests and from other mental tests by the United States Army and by our own Admiralty during the war are clear indications of their future value in the work of human selection and vocational guidance.

## ANTHROPOLOGY AS AN IMPERIAL STUDY.

THE Mackie Anthropological Expedition to Uganda, postponed for obvious reasons on the outbreak of the war, is now to get to work. Under the direction of the Royal Society, the mission will be in the personal charge of the Rev. John Roscoe, whose thorough acquaintance with the subject and long residence in Uganda as a missionary, constitute exceptional qualifications. The original idea was that the Colonial Office should finance the scheme, but Mr. Lewis Harcourt, upon full consideration, did not concur. Accordingly, Mr. P. Jeffrey Mackie, of

<sup>1</sup> Norsk Magazin for Lægevidenskaben, 1919, lxxx., 508-530.



Glenreadell, a well-known Scotch distiller, was approached and he undertook to defray the entire cost. We hope that the results of his generosity will provide a valuable contribution to our knowledge upon a subject hitherto unduly neglected. Anthropological study is of particular importance to the British Empire, to which has fallen the charge of so great and various a collection of the human race. The expedition could not be in better hands than those of Mr. Roscoe, lecturer to the University of Cambridge in African Anthropology, and author of an authoritative work on the folklore of the Baganda.

#### THE OPENING OF THE WINTER SESSION.

A WELCOME sign of the return to more normal conditions of life is the renewed foregathering of past and present members of London medical schools at the commencement of the winter session. The social dinners which one by one have been dropped during the war are again to take place, and will bring together for the first time men and women whose medical duties have taken them to the ends of the earth, and given them, in a brief year, more than the normal experience of a life-time. Some of the London schools of medicine are, as usual, giving their newcomers the opportunity of hearing the stimulating experience of veterans in the profession.

Dr. Wilfrid Ombler Meek died with tragic suddenness on Sept. 14th at the Brompton Hospital Sanatorium, Frimley, where he had long been resident medical officer. He was in his fortieth year.

THE inaugural sessional address at the Pharmaceutical Society of Great Britain will be given on Wednesday, Oct. 1st, at 3 P.M., by Mr. W. J. Uglov Woolcock, M.P., at the School of Pharmacy, 17, Bloomsbury-square, London, W.C.

UNIVERSITY OF LONDON: LECTURES IN ADVANCED PHYSIOLOGY, 1919-1920.—The following are recognised as advanced lectures which a candidate at the B.Sc. Honours examination may name for part of his examination. *King's College*, 1st term:—Dr. Da Fano: Histology of the Nervous System. Ten lectures at 4.30 P.M. on Tuesdays, beginning Oct. 17th. *King's College for Women*, 3rd term:—Dr. E. Mellanby: Nutrition. Eight lectures at 5 P.M. on Mondays and Wednesdays. *St. Bartholomew's Hospital*, 2nd term:—Mr. J. W. Trevan: The Reaction of the Blood and Acidosis. Eight lectures at 4.30 P.M., on Wednesdays. *Guy's Hospital*, 2nd term:—Dr. M. S. Pembrey and Dr. J. H. Rytffel: The Regulation of Respiration. Eight lectures at 4.30 P.M. on Thursdays. The precise dates of delivery will be announced later, as will also the place of delivery of the following: 2nd term:—Mr. W. L. Symes: Physiologically Balanced Solutions. Eight lectures at 5 P.M. on Tuesdays. 3rd term:—Mr. J. A. Gardner: The Bio-chemistry of Sterols. Eight lectures at 5 P.M. on Tuesdays. At the Imperial College of Science and Technology during the 1st term Professor A. D. Waller will deal with the Energy Balance of the Human Body and Electrical Signs of Motive Phenomena at 5 P.M. on Wednesdays, beginning on Oct. 15th, but these lectures do not count for examination. Intercollegiate courses also approved for the Honours B.Sc. examination will be delivered at University College during the 1st term by Professor Bayliss on Physical Chemistry in Relation to Physiology; and during the 3rd term, at King's College, by Professor Halliburton and Dr. Rosenheim, on Advanced Chemical Physiology; at Bedford College, on Advanced Practical Histology; at St. Bartholomew's Hospital, by Professor F. A. Bainbridge, on Electrical Changes on Skeletal and Cardiac Muscle (practical work); and during the 2nd term at Guy's Hospital, on Practical Work on Respiration. Further information may be obtained from the heads of the laboratories in which the lectures are given, and in the case of courses by Professor Waller, Mr. Gardner, and Mr. Symes, from Professor Waller, Physiological Laboratory, University of London, South Kensington, S.W.7.

## THE INDUSTRIAL EMPLOYMENT OF MOTHERS:

### FRENCH AND GERMAN EXPERIENCES.

AN account has been given of the steps which were taken during the war for protecting the welfare of the children of women employed in factories in France and Germany in a report which was issued a short time ago, and which was prepared in the Intelligence Department of the Local Government Board. The infant welfare work which has been done in these countries is suggestive. A short description of it may be useful so as to enable a comparison to be made with similar work in England.

#### France.

In France, as in this country, women were extensively employed in factories and on munition work, and attention was aroused to the dangers of such employment for the health of the mothers and infants. Statistics compiled from the weekly bulletins of municipal statistics for Paris showed that during the second year of the war, as compared with the first, there was an increase in the percentage of stillbirths and cases of maternal mortality, and in the number of abandoned infants. The number of premature births had also increased. There was a vigorous discussion on the subject in the Academy of Medicine in December, 1916, as an outcome of which a committee was appointed to consider the matter. The resolutions which were passed were strongly supported by the Ministry of Labour, the Ministry of the Interior, and the Ministry of Munitions. The need was emphasised for the compulsory establishment, in every war factory where women were employed, of a nursing room furnished with cradles and reserved exclusively for breast-fed infants. It was held that the mothers should be allowed to attend to their infants during working hours without any loss of wages. They should be employed on day shifts only. There should be, in addition, a crèche for artificially-fed infants and a day nursery for children up to 4 years of age attached to each factory, or to a group of factories, and in factories where a number of women were employed a welfare supervisor should be appointed, whose duties and functions should be similar to those of welfare workers in English factories.

The vital need for breast-feeding was so well recognised that in August, 1917, a law was passed under which certain amendments were made in and clauses added to the second book of the Industrial Code. These clauses provided that two periods of 30 minutes each were to be allowed during working hours, and in addition to the usual rest-periods, to nursing mothers to breast-feed their infants up to 1 year of age, and they were to be allowed to attend to their infants on the premises. Whether this law was complied with was a debated point. M. Pinard reported to the Academy of Medicine that the effect was nil and that the measures for the protection of expectant mothers existed only "on paper."

The need for crèches and day nurseries for the children of women workers was also recognised. In 1897 the crèche was legally defined as "an establishment for the hygienic and moral care of infants until they have reached their third year." Crèches might be opened only on the authorisation of the prefect, and were to be subject to inspection by persons appointed for the purpose, either by the Minister of the Interior or by the prefect. A report on the working of the crèche, and a medical report, had to be submitted to the prefect each year, and he had power to order a crèche to be closed if he considered the arrangements defective. Later in the same year it was made obligatory for every crèche to be supervised by a doctor; and no infant could be received at a crèche without a medical certificate showing that it was free from infectious disease. During the war the crèches in France have had to contend with many difficulties and anxieties, among which were scarcity of milk, high price of food and coal, lack of funds, difficulties in arranging for medical supervision owing to the mobilisation of so many of the doctors, and difficulties in finding a working staff which was adequate in number and competence. In various industrial regions, however, crèches were established in connexion with a factory or group of factories, to a very large extent by the employers themselves. Among those specially mentioned in the report are Messrs. Schneider at



Creusot, the Châtillon-Commentry Works at Montluçon, the "Comité des Forges"—a federation of nearly 60 employers' associations representative of the metal, electrical, mechanical construction, railway material, and other industries—and other employers in Basse Indre, Saint Etienne, in the india-rubber industry of Auvergne, Clermont, Thiers, and the neighbouring district. A group of firms formed an association at Levallois Perret and Neuilly, and erected a model building, the cost of the building being met by the employers themselves. Similar measures were carried out elsewhere. The manner in which the employers have organised and assisted in providing these institutions is remarkable.

The creches receive grants from the State, Department, or Municipality, from two, or even from all three; some, however, receive no grant from public funds. In many creches a small charge is made to the mothers for each child cared for, more as a matter of principle than for the money obtained. Children of 2 years of age can be sent to infant schools or cared for in day nurseries (garderies). A day nursery becomes an infant school if any instruction is given, and is subject to inspection by the education authority, and becomes a creche if children under 2 years are admitted.

The French working woman appears to be more prejudiced than her English sister where creches and similar institutions are concerned, preferring, in many cases, to leave her children with foster-mothers. Some think the infants would thus be better cared for, others regard it as more respectable to leave their children with neighbours than take them to a free creche.

French women have long been accustomed, as a rule, to send their children to be cared for in country villages by foster mothers, often arranging for them to be breast-fed. The mortality among these children was at one time extremely high, and for their protection in 1874 the "Loi Roussel" was passed, which, among other provisions, stipulated that a record should be kept of all facts connected with the boarding-out of infants, and that the children should be examined medically from time to time. It was realised, however, that the protection afforded by this law was not sufficient, and infant welfare consultations were set up in a number of Departments to which foster-mothers were encouraged to bring children under their care for medical supervision, advice, and help. In the Department of Seine et Oise there were in 1914 nearly 100 consultations. In 1917 a report for this department stated that of 4893 infants attending only 192 died before reaching 1 year of age—a mortality rate of 39 per 1000, the general infant mortality rate for the department in 1916 being 67 per 1000, as compared with 73 per 1000 in 1913. In estimating the value of these consultations it should be realised that, where attendance is voluntary, the best mothers and foster-mothers attend in greater numbers than others, and among their children, or the children in their care, the infant mortality-rate would naturally be lower than the general infant mortality-rate of the Department.

#### *Germany.*

The infants of mothers working in factories in Germany have usually been cared for in creches or infants' homes and the children below school age in day nurseries, whilst for children of school age "day shelters" were provided where they could spend their free time until their mothers returned from work. During the war the number of creches and day nurseries greatly increased. Many were carried on by municipal authorities, and creche associations and other organised bodies made considerable efforts to extend the existing accommodation and open new creches. In many cases it was found necessary to open the creches earlier and close them later, and often to keep them open all night. Among the many difficulties experienced were the scarcity of food, soaps, and rubber teats. At the end of 1916 the "Central Office for Women's Employment" was set up within the War Bureau and placed under the direction of an experienced medical woman. Amongst the duties attached to the office was that of suggesting and carrying out measures for the protection and well-being of the women, and of seeing that the children did not suffer on account of the employment of their mothers.

The large associations interested in welfare work among women and children were appealed to, and in January, 1917, was formed the "National Committee for Women's War

Work," which, together with the "Central Office for Women's Employment" and various local committees, was responsible for much of the welfare work which was carried out during the war. In Germany the general feeling appeared to be in favour of boarding-out the children in suitable foster homes rather than of placing them in institutions. The creches, day nurseries, and day shelters received financial support from (1) private contributions; (2) payments by mothers; (3) municipal grants (many creches being supported entirely by municipalities, who in their turn received Imperial and State aid); (4) Imperial funds (half to two-thirds of any expenditure on war relief); (5) State aid; (6) State insurance institutions, &c. (fire insurance societies have contributed on the ground that children left at home without supervision are frequently the cause of fires); and (7) contributions from employers. Under the Imperial Industrial Law women workers in factories were forbidden to work on night shifts, their working day was limited to ten hours, and they could not be employed for a fortnight before or six weeks after confinement. By an emergency law of August 4th, 1914, the Imperial Chancellor was given power to suspend some of the provisions of the industrial law, among others those relating to women's labour. The result appears to have been very serious, long hours, and night shifts becoming general, and in some cases it was stated that women were being kept at work in factories for 24 hours at a stretch, and in mines for 36 hours, without a proper rest. Representations to the Government seem merely to have called forth circulars from the War Bureau at intervals in 1917, urging the responsible officials in various districts to do all they could to bring about improvements. The condition of women workers appears to have been much worse in Germany than either in France or England.

The original report contains an immense amount of information and a wealth of detail, and is well worth careful study.

## SCHOOL MEDICAL INSPECTION, 1918.

BIRMINGHAM—BRISTOL—HULL—LIVERPOOL—  
NOTTINGHAM—SHEFFIELD.

FOR the city of *Birmingham* the report of the medical officer dealing with health conditions in schools is very brief, owing to conditions connected with the war. The total number of children medically examined was 35,269; 2314 were treated for scabies and 1021 for throat affections (enlarged tonsils and adenoids). A school for physically defective children and an open-air school at Uffculme have been carried on with much benefit to the children admitted. Dr. Lewis Graham alludes in his report to the important results likely to be obtained in the nursery schools, for the accommodation of children between 2 and 5 years of age, that are to be established according to Section 19 of the Education Act (1918). It is stated that "the number of children reported as necessitous and in need of food" decreased during 1918. Actual ratios of malnutrition are not supplied. Considering the circumstances of the times this is to be regretted.

At *Bristol* the work has been considerably interfered with by changes in the medical staff, due to the war; school attendance was also interrupted by an outbreak of influenza in October and November. On the other hand, by an augmentation of the nursing staff more frequent supervision in the schools, and a better following up of the children at their homes has become possible. A new central clinic has been opened, which is stated to be a great improvement on former arrangements. Routine inspection of infants had to be given up, only special cases of "ailing children" brought forward by the head teachers being examined. The total number examined in the code groups (intermediate and leavers) was 9121. The nutrition of the children appears to have been satisfactory; only 0.11 per cent. were considered to be actually badly nourished, and 3.43 per cent. "below normal." The clothing and footgear were also satisfactory in all except 1.32 per cent. for the former and 1.86 for the latter. Cleanliness was satisfactory in 98.95 per cent. for the body, and 96.70 per cent. for the head. A new clinic has been opened for minor ailments in Portland-square, which has already proved to be of great benefit, 27,109 attendances having been recorded during the year. Dr. Percy Stocks, the



acting school medical officer, draws attention to the prevalence of tuberculosis, of which 503 cases among school children had been treated during the year at the Tuberculosis Dispensary, 410 being pulmonary; the proportion found at the routine inspection was 0.72 per cent., the lungs being affected in 0.69 per cent.; an increase in open-air school accommodation is recommended, and measures are now being taken to carry this out. Open-air classes were practicable, summer camps, and organisation of boy scout troops in connexion with the schools are other excellent recommendations. The only epidemic prevalence of importance was that of influenza; 70 cases were fatal. Scabies was diagnosed in only 10 children at the routine examinations (0.11 per cent.), but 491 other children of various ages were found to be suffering from the disease and were treated at the clinics; in 1915 there had been only 53 cases altogether. Impetigo also increased from 228 cases treated in 1915 to 752 cases in 1918.

At Hull the number of children examined in the code groups was 9769; the nutrition is considered to have been "extremely satisfactory," 0.26 per cent. only having been classed as "bad" and 11.24 per cent. as below normal. These figures should be compared with those of 1913, just before the war, when 0.27 per cent. were found to be badly nourished and 14.12 below normal. Dinners were provided according to an excellent diet table; on account of the coupon difficulty no meat was given, but a menu of soup, suet pudding, lentil pie, &c., gave a daily average of proteid 0.6 oz., fat 1.6 oz., and carbohydrate 3.3 oz. per head. The education committee now provide spectacles for any child that requires them if they have not been obtained within three months of the examination when the eyesight was found to be defective; in the case of necessitous parents no charge is made, in other cases the cost is recovered. A large number of cases (541) of ringworm of the scalp were treated, a considerable increase on the number (317) in the previous year; 398 children were cured, with an average treatment through ten weeks (if the attendance was regular). A great increase of scabies has occurred; in 1914 there were 296 cases, in 1917 there were 1056, and in 1918, 1442 cases; the average period of absence from this cause was 8.5 weeks; the interference with education is obvious. Disinfection of the houses and bedding has been carried out, but there is no power to insist on the treatment of any person over school age, and, of course, reinfection occurs. Pulmonary tuberculosis was found in 16, and suspected in 61 children in the three code groups; in addition, 21 children specially examined were considered to be positively affected, and 77 others were suspected to be suffering from the disease. Two epidemics of influenza occurred in 1918, one in June and July, the second (more severe) in October and November, causing great disturbance of school work. Dr. James Fraser, the school medical officer, does not consider school closure to be of use in limiting spread of the disease.

The work of medical inspection in Liverpool schools was considerably interfered with by a severe outbreak of influenza in the autumn, necessitating school closure for four weeks; medical treatment was only slightly interrupted. The total number of children examined in the code groups was 24,252. Actual malnutrition was only present in 0.132 per cent.; in 0.334 per cent. the child's nutrition was not satisfactory, without being actually in need of treatment. Scabies is stated to have been very prevalent (1179 cases, as compared with 512 in 1916 and 851 in 1917, p. 5 of report; in Table II., p. 17, it is stated that 44 cases were found among the code-group children and 49 among those specially examined); the need for suitable facilities for treatment is urgent. Baths and disinfectants are required. "Approximately 500 children were away from school at the end of the year with this disease. .... The gain in increased Government grant would probably more than make up for the cost of installation and administrative expenses of the special centre or centres." Arrangements were made for the special inspection of children absent from school for a long time, such as cases of ringworm, of phthisis or other tuberculous infection, &c. 3988 children were examined, of whom 1111 were found fit to attend school. With regard to operation for adenoids and enlarged tonsils, Dr. E. W. Hope, who presents this report, notes that in 37 cases (4 per cent.) hæmorrhage occurred, and in 11 instances it was necessary to keep the children at the clinic for two nights instead of one. "Experience has proved

the desirability of not allowing any children to return home until the following day, as it is quite impossible to forecast which children, if any, are likely to suffer from hæmorrhage or collapse." This is a very wise precaution, not always adopted. Two outbreaks of influenza during the year made the closing of several schools necessary—16 in July, 27 in September; and at the beginning of October all the elementary schools in the city were closed for a month.

In an introductory letter to the education committee of the corporation of Nottingham, Dr. Philip Boobyer, the medical officer of health for the city and superintendent medical officer of schools, refers to the need for radical improvement in the conditions of life of the industrial classes, especially in the densely populated urban districts, which has been brought home to everyone by the large proportion of men of military age who have been found unfit for military service. This is largely the result of heredity, but improvements in the conditions of the working classes in our great cities are more practicable at the present time than any attempt at restrictions on matrimony for eugenic reasons. The provision of better dwellings is of the first importance, and as regards the elementary school child the open-air schools have done excellent service. The number of children inspected in the code groups was 5137, all entrants, no leavers being examined. This was on account of ill-health of the staff, the prevalence of epidemic disease, and school closure for various reasons; but a large number of other children (7255) were examined as special cases at the clinics. Malnutrition was present in 132 cases (2.56 per cent.), and in addition 2.10 per cent. were not considered satisfactory in this respect. Scabies was not excessively prevalent (58 cases, 1.12 per cent.) in the children of the age-group examined, but altogether 843 children were under treatment, of whom 72 per cent. were cured. Dr. E. M. Wyche, the senior school medical officer, refers to the difficulties attending treatment, and the immense loss of school time involved, chiefly owing to repeated reinfection at the home. The matter is of serious importance: the total number of children excluded school for all causes during 1918 was 1650, with a loss of 83,369 school days. 841 of these children were excluded for scabies, and 39,652 actual school days were lost for this reason, involving a loss of £413 attendance grant. This is an excellent use of the *argumentum ad crumenam*, which might well be applied to the negligent parents. Ringworm has been most successfully treated by the education committee's X ray department, 192 children having been treated during the year without a single failure: radiant heat has been used to restore the growth of the hair, also for alopecia areata. Open-air education is carried on in several of the recreation grounds and open spaces in the city, and seven open-air class rooms have been erected for specially selected delicate children. The work of medical inspection, treatment, and after-care, is evidently carried out with great thoroughness and enthusiasm in the city of Nottingham.

Owing to the absence of 12 medical officers on military service routine medical inspection was suspended in Sheffield during 1918, but 16,956 "selected cases" were examined in school, as well as over 25,000 at the various clinics. Malnutrition was only found in 28 children, and in six others the nutrition was not satisfactory. Dr. Thomas Chetwood, the school medical officer, referring to this question of nutrition, states that during 1918 there was a decided improvement, as shown by the weights of the children (taken regularly every six months). The total number of dinners and breakfasts served at the feeding and school centres was 89,733, being a decrease of 54,474 on the number provided in 1917. Scabies is reported in 2304 children. The method of treatment is described by Dr. E. F. Skinner. It was extremely thorough and yet simple. The parent is instructed to attend at the cleansing station at a fixed time and to bring a set of clean underclothing (in addition to the clothes worn by the child). The child is undressed, and both sets of clothing submitted to steam sterilisation for an hour while the child is being treated. After rubbing down with soft soap the child is placed in the bath for 20 minutes and well rubbed with a loofah; after the bath the skin is rubbed with sulphur ointment, the cleansed and sterilised clothing, powdered with sulphur, is put on, and the child leaves, taking another set of sterile clothes with it. Printed instructions and sulphur ointment and powder are given to the parent, who is told to repeat the process each day. The children are seen by the doctor at



the end of a week, and, if fit, are sent back to school. "The treatment is simple, and its efficiency has been abundantly proved by this year's experience. .... The average time of exclusion is only 11.98 days." With ordinary treatment at home with ointment, the average absence has been 56 days. The secret of successful treatment is to take all the infected children in a family at the same time, but a large measure of success depends on the efficacy of the rubbing.

## SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

### *The Public Health (Pneumonia, Malaria, Dysentery, &c.) Regulations (Scotland), 1919.*

THIS Order is closely similar to that issued in February last by the English Local Government Board.<sup>1</sup> It makes notifiable all cases of malaria, dysentery, trench fever, acute primary pneumonia, and acute influenzal pneumonia. Notification is not required in cases of malaria, dysentery, or trench fever, which to the practitioner's knowledge have been already notified within the preceding six months. The medical officer of health for the district, on receiving the notification, is to take any necessary steps to prevent the spread of the disease. He is to forward to the Board the name and address of the patient in cases of (a) trench fever; (b) malaria, where the infection was apparently contracted in this country; and (c) dysentery. The Order proceeds:—

*Malaria.*—The M.O.H. is to take steps to see that the person affected is supplied with efficient mosquito netting, receives necessary quinine treatment, receives proper advice as to the continuation of quinine treatment in order to prevent relapses, and advice as to precautions to prevent the spread of infection. On the occurrence of two or more cases in a district where the disease appears to have been locally contracted the local authority may, and if required by the Board shall, appoint and pay an approved medical practitioner to make systematic visits to houses where the disease has occurred, and offer to examine therein persons suspected of being infected with malaria, examining the blood, and further making certain that proper treatment and preventive measures are being carried out.

*Dysentery.*—The M.O.H. may give notice in writing that until further written notice the person specified shall discontinue any occupation connected with the preparation or handling of food or drink for human consumption, that children of or in the care of the said person shall not be sent to school, and that certain specified measures are taken for the destruction of excreta and prevention of infection. If the M.O.H. suspects that any person employed in the preparation or handling of food or drink for human consumption is a carrier of dysentery he may give notice in writing to the manager of the trade or business concerned, certifying that for prevention of the spread of disease he considers it necessary to make a clinical examination of such suspected person, and the manager and all other persons concerned shall give to the M.O.H. all reasonable assistance. If the suspected person be found to be a dysentery carrier notice may be given to the person and to the manager of the trade or business, with a view to preventing the employment of the said person in that or any other business concerned with the preparation or handling of human food for a specified period.

*Trench fever.*—Special measures are to be taken for the destruction of lice, and inmates of the house may be temporarily segregated until their clothing has been completely freed from vermin.

In the case of enteric fever the regulations are the same as for dysentery. Where typhus fever or relapsing fever is found, the names of infected persons are to be transmitted to the Board, and the same measures for the destruction of lice as in trench fever are applicable. Expenses incurred by the Medical Officer of Health are to be defrayed by the local authority concerned, and they may also provide medical assistance where necessary in cases of the diseases specified.

### *Organised Health in Edinburgh.*

Some extremely interesting facts and figures are contained in a report prepared by Councillor J. A. Young, L.D.S., convenor of the Public Health Committee of Edinburgh Town Council, on the progress of health administration in the city. The first record available regarding public health work is dated 1812–13, when the Police Commissioners undertook the scavenging of the city, the watering of the streets, and the building and maintenance of public conveniences. The cholera epidemics in the early part of the century seem to have been dealt with by voluntary workers in special hospitals, but it was not until the outbreak of 1866 that a hospital was provided at public expense. There was not until 1870 any public provision for the treatment of infectious diseases, and at that date it was only furnished for cases of small-pox. The late Sir Henry

Littlejohn was appointed medical officer of health in 1862, and immediately undertook a thorough survey of the sanitation of the city. His report was published in 1865, and taking the figures for 1863, it gives a picture of the actual condition of affairs at the time of the formation of the department. In 1861 the population of the city was 170,444, and the death-rate 25.88 per 1000; in 1911 the figures were 320,829 and 14.39 respectively, this reduction in the death-rate being equivalent to the saving of 3673 lives per annum on the increased population. Deaths under 5 years of age show an enormous reduction, from 93.29 per 1000 living in 1863 to 33.6 per 1000 in 1913. In 1863 the death-rate from zymotic diseases was equal to 6.23 per 1000; in 1913 to 0.87; many of the diseases then chiefly responsible—cholera, typhus, &c.—have now practically disappeared. The phthisis death-rate in 1863 was 2.54 per 1000; in 1913 the figure was 1.13. The general sanitary condition of the city shows corresponding improvement. In 1863 the most densely crowded district had a population of 646 persons per acre; the highest figure at the present day being 343. The internal condition of the tenements in 1863 was in many instances appalling. Sir Henry Littlejohn mentions one known as Middle Mealmarket Stair, in which 248 persons were housed, and which was unprovided with sink or water-closet. Of 171 cow-byres then existing, 110 were below human dwellings, and many of them filthy and overcrowded, with the cows dying off from pleuro-pneumonia. A comparison of the finance of the department shows an average expenditure for the last nine years of £36,778, as compared with an average for the ten years to 1889 of £5365.

### *Edinburgh Royal Infirmary: Retirement of Professor William Russell and Dr. Graham Brown.*

At the meeting of managers held on Sept. 8th special minutes were passed expressing regret at the retirement of Professor William Russell and Dr. Graham Brown, and placing on record the valuable services which these gentlemen have rendered to the institution. Professor Russell first became a member of the staff in 1888, when he was appointed pathologist to the infirmary, a position which he held for four years. In 1891 he became assistant physician, and in 1907 full physician in charge of wards. In 1913 he was appointed by the University the first occupant of the Moncrieff-Arnott chair of Clinical Medicine. In all these positions he performed his duties with efficiency and zeal, and in consideration of his eminent services the managers of the Royal Infirmary have appointed him a consulting physician to the institution. Professor Russell's successor as Moncrieff-Arnott professor of Clinical Medicine is Dr. F. D. Boyd, whose appointment has been previously announced. Dr. Graham Brown was appointed assistant physician to the infirmary in 1897, and full physician in 1912. He has also held the position of lecturer on neurology in the University for a number of years, and is well known for his special ability in this branch of medicine. In recognition of his services to the institution Dr. Graham Brown was appointed a consulting physician to the Royal Infirmary.

### *Criminal or Spontaneous Abortion?*

On Sept. 9th and 10th, in the High Court of Justiciary at Edinburgh, a woman was tried for causing the death of a young clerkess by performing an illegal operation. The case is of interest from the fact that the deceased, who was about four months' pregnant, had placenta prævia, and also because of the absence of any wound of the private parts, and the assertion of the Crown that the attempted abortion had been made by means of an injection into the womb from a Higginson's syringe. At the post-mortem, made by Professor Littlejohn and Dr. Haig Ferguson, there was found dilatation of the os and cervix, absence of the usual plug of mucus in the cervix, and partial detachment of the placenta around the internal os. There was evidence of considerable loss of blood, and the medical witnesses ascribed death to hæmorrhage and shock. All the internal organs were healthy, and no other conditions to account for death were found. The deceased went by arrangement to the house of the prisoner one evening about 5.30; she was then in good health, and there was no history of previous illness or hæmorrhage. She was quite well at 9 P.M. except for slight sickness, alleged to be due to some strawberries and cream which she had eaten a short time earlier. At 9 P.M. deceased went to bed and the prisoner spent a quarter of an hour with her alone.

<sup>1</sup> THE LANCET, 1919, i., 303, 309.



The young woman then became ill, vomited, and was collapsed, and died about 11 P.M. A Higginson's syringe in a basin of water was seen in the room immediately after the prisoner had been with her. Three obstetricians who appeared for the defence contended that the appearances were quite consistent with impending spontaneous abortion. The jury unanimously found the prisoner guilty of culpable homicide and she was sentenced to five years' penal servitude.

Sept. 15th.

## CANADA.

(FROM OUR OWN CORRESPONDENT.)

### *The Health Department of Canada.*

THE Hon. Newton W. Rowell has been placed in charge of the organisation of Canada's Department of Health, authorised by special legislation at the last session of Parliament. Dr. John Amyot, who has been appointed Deputy Minister, was formerly professor of hygiene and public medicine in the University of Toronto. The new department is taking over from other departments of Government administration those branches which concern the health of the people, such as quarantine, marine hospitals, the health of the Indians. Immigration was the first to be brought over to the new department. The question of co-operation with the various boards of health of the different provinces is claiming the particular attention of the Deputy Minister with a view to co-operation in the campaign against venereal diseases. The policy of the department will be shortly announced to the public.

### *Hospitals in Montreal and Toronto.*

A number of citizens have become interested in a new hospital scheme for Montreal. It is to be known as the St. Mary's Memorial Hospital, and is to perpetuate the memory of relatives who lost their lives in the Great War. The hospital will be open to all classes and creeds in the community. An appeal for funds will be made in October. Many Montreal families have already promised to endow beds. Montreal is in great need of enlarged hospital accommodation.

Mr. William Ramsay, formerly a Toronto wholesale merchant and director of many commercial concerns, died recently in Scotland. He left over half a million dollars to Toronto charities—the General Hospital, \$10,000 a year; Home for incurables, \$5,000.

### *Public Welfare in Alberta.*

The Department of Public Health of Alberta province, under the responsible Minister, Hon. A. G. Mackay, and Deputy Minister, Dr. J. T. Normau, has recently been given power by the Legislature to prevent, mitigate, or suppress disease. It can deal with all epidemics, and, if necessary, order, in the case of small-pox, general vaccination of all communities affected. It is handling the venereal diseases problems, and it is seeing that the provisions of the Provincial Health Act are applied when necessary.

The war being over, the Canadian Public Health Association is showing signs of new life. Dr. H. E. Young, secretary of the Provincial Board of Health of British Columbia, was elected president at the last annual meeting, held for the present year in Toronto. Edmonton, Alberta, was chosen as the place of meeting in 1920. Alberta has more trouble in health matters with the 33.6 per cent. foreign-born population than with the remaining 66.4 per cent. British-born, owing to the foreigners holding to their traditions and refusing to adopt up-to-date methods in vogue in Canada.

Toronto, Sept. 1st.

## Public Health.

### REPORT OF THE LONDON COUNTY COUNCIL'S MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER FOR THE YEAR 1918.

Dr. W. H. Hamer's annual report on the health of the metropolis during 1918 contains a great deal of interesting material. It appears that in 1918, for the first time in records going back nearly a century, the deaths in London exceeded the births. Two causes contributed to this result—namely, the reduction in births brought about by the war and the large number of deaths from the two epidemics of influenza. The deaths among civilians alone during the year outnumbered the births by nearly 5000, and to this figure must be added a number of deaths among Londoners on active service. In the first week of November, when the second epidemic of influenza reached its height, the death-rate in London was 55.5 per 1000. This is the highest rate recorded in any week since the cholera year of 1849, in the thirty-sixth week of which 3183 deaths were registered, giving a rate of over 72 per 1000. The total number of deaths among civilians in 1918 numbered nearly 76,000, and of this total it is estimated that not fewer than 18,000 were due to the influenza epidemics. The infant mortality was 108, showing a slight increase on the rate of 104 per 1000 births in 1917.

### *Notifiable Infectious Diseases.*

The remarkably low prevalence of notifiable infectious diseases in London in recent years was maintained in 1918. Several groups of small-pox cases, however, gave cause for anxiety, but happily in each instance prompt measures of isolation were effective in limiting the spread of the disease. Diphtheria was less prevalent than in 1917, and, while there was a slight increase in the number of cases of scarlet fever, the total was nevertheless far below the average. There was an increase in the deaths from dysentery, which amounted to 313, as compared with 290 in 1917, the increase being in female deaths, while the male deaths showed a decline. There were no recognised outbreaks due to importation of the disease from abroad, such as occurred in two boroughs in 1917. The incidence of typhoid fever was very low. Cerebro-spinal fever was less prevalent than in 1917, and poliomyelitis and poliomyelitis were at a comparatively low ebb. There were, however, a few cases of encephalitis lethargica which might formerly have been described as poliomyelitis. There was some increase in the number of cases of pulmonary tuberculosis notified, both among males and females, mainly in the first half of the year. The mortality was also higher than in 1917, but this increase was largely due to the influenza epidemics.

### *Fleas and Scarlet Fever.*

In recent annual reports by Dr. Hamer the relationship of scarlet fever to rainfall and flea prevalence was discussed. The present report contains a diagram showing the seasonal prevalence of fleas over a series of years and the incidence of scarlet fever and diphtheria in the corresponding period. The diagram is divided into two sections; the first shows the monthly prevalence of fleas in relation to the monthly case rates of scarlet fever and diphtheria during the ten years 1909-18. A small inset diagram gives the mean monthly rates for the ten years, and as the maximum seasonal incidence of scarlet fever cases is about one month later than the maximum prevalence of fleas the case-rates are ante-dated one month to facilitate comparison. The second section of the diagram is designed to illustrate how far a deviation from the average quarterly incidence of flea prevalence is associated with a corresponding deviation from the average quarterly incidence of scarlet fever, as well as at all ages as in certain age-groups; the average for diphtheria at all ages being also shown. The contour of flea prevalence is based upon figures which post-date by one month the figures for scarlet fever and diphtheria. The first section of the diagram shows a greater measure of association of annual prevalence of fleas with scarlet fever than with diphtheria. The three years of highest prevalence of scarlet fever and fleas (1913-15) are followed by three years of relatively low incidence, but in diphtheria the correspondence is not so close. In some years there is a secondary prevalence of

**EDUCATIONAL GRANTS FOR EX-SERVICE MEN.**—Under the Government scheme of financial assistance for the higher education of ex-Service officers and men the total number of grants awarded by the Board of Education now amounts to 9500, including 4000 officers and 5500 men. The courses in respect of which grants have been awarded include more than 2500 for engineering and technological subjects, between 800 and 900 for classics, philosophy, and literature, and about 1200 for pure science and mathematics. Applications are still being received in large numbers, and are being dealt with at the rate of more than 100 a day.



diphtheria following the normal autumn incidence, and in 1914 the February case-rate of diphtheria exceeded the normal autumnal maximum of the preceding October. There is no evidence of any similar secondary prevalence in the case of scarlet fever, although the decline after the normal autumnal maximum is not equally regular in all years.

In the second section of the diagram the average figures for each quarter are taken as a basis in order to eliminate the wide fluctuations of monthly records. The diagram shows the extent of deviation in any first quarter from the average of nine first quarters in the period 1910-18, and so on for other quarters. The general similarity of the contours of the flea and scarlet fever prevalences is significant, especially in view of the less-marked correspondence shown in the case of diphtheria. In view of the interval of about a month between the maxima of flea and scarlet fever prevalence, the question arises whether the interval points to the fact that there are two distinct phenomena controlled by one factor (such, for instance, as meteorological conditions), or whether a part of the interval can be taken to represent evolution of a scarlet fever germ. In either case the facts, in Dr. Hamer's opinion, imply that the conditions which favour flea prevalence are either identical or intimately associated with those influencing prevalence of scarlet fever, and a presumption is raised that steps directed to the elimination of fleas may loosen the foothold of scarlet fever. Effect is, as far as practicable, being given to this view in London at the present time. There was, for example, prevalence of scarlet fever in Southwark in the summer of last year. The outbreak occurred at a time when the amount of scarlet fever in London as a whole was relatively small. The area affected was very limited, but the incidence within the area was very high. Application was made to the borough council to disinfect the infants' department of the council's school central to the area, the records of which showed a greatly excessive proportion of flea-bitten children. This was done, and, in addition, the officers of the borough council visited homes and disinfected rooms and bedding associated with scarlet fever cases. This action was followed by marked reduction of prevalence of scarlet fever.

#### Influenza.

A special report on the three widespread influenza epidemics of 1918-19 is given in the appendix. The report is divided into two parts—namely: (1) a review of recent epidemic prevalences; and (2) a study of the light thrown on these epidemics by earlier prevalences, with a summary view of the epidemiology of the influenza group of diseases. If the subject is to receive adequate treatment, Dr. Hamer urges the necessity for "extensive and peculiar" knowledge of the epidemiology of past epidemics of influenza in London, and expresses the opinion that the subject must be approached from the natural history point of view. As Creighton has said in another connexion, the older or Hippocratic method must be applied. This is one which "took account of gradations, modifications, affinities, being careless of symmetry, of definitions, or clear-cut nosological ideas, or the dividing lines of a classification." The attempt to comply with such conditions will involve reference to the sweats, agues, spotted fevers, and lethargies of the earlier centuries; then, throughout, to obscure pneumonias, certain outbreaks of "typhus" and various "new diseases." The special report on influenza contains many valuable suggestions, and is worthy of the careful consideration of all epidemiologists.

### URBAN VITAL STATISTICS.

(Week ended Sept. 13th, 1919.)

*English and Welsh Towns.*—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had been 10.0, 10.0, and 10.7 in the three preceding weeks, fell to 10.4 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual death-rate was 10.9, or 0.4 per 1000 above that recorded in the previous week, while among the remaining towns the rates ranged from 5.6 in Wallasey, 5.9 in Huddersfield, and 6.0 in East Ham and in Bury, to 16.3 in Tynemouth, 17.1 in South Shields, and 19.3 in West Hartlepool. The principal epidemic diseases caused 313 deaths, which corresponded to a rate of 1.0 per 1000, and included 241 from infantile diarrhoea, 26 from diphtheria, 17 from whooping-cough, 15 from measles, 11 from scarlet fever, and 3 from enteric fever. Measles caused a death-rate of 1.3 in Barrow-in-Furness and in Gateshead. There were 1504 cases of scarlet fever and 1057 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 1454 and 1006 respectively at the

end of the previous week. The causes of 16 deaths in the 96 towns were uncertified, of which 4 were registered in Liverpool, 3 in Tynemouth, and 2 in Birmingham.

*Scotch Towns.*—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had been 10.7, 10.9, and 10.8 in the three preceding weeks, fell to 10.2 per 1000. The 222 deaths in Glasgow corresponded to an annual rate of 10.3 per 1000, and included 20 from infantile diarrhoea, 4 from diphtheria, 3 from whooping-cough, 2 from measles, and 1 from scarlet fever. The 68 deaths in Edinburgh were equal to a rate of 10.5 per 1000, and included a fatal case each of measles and diphtheria.

*Irish Towns.*—The 134 deaths in Dublin corresponded to an annual rate of 17.3, or 2.4 per 1000 below that recorded in the previous week, and included 7 from infantile diarrhoea, and 1 each from enteric fever and diphtheria. The 100 deaths in Belfast were equal to a rate of 13.0 per 1000, and included 10 from infantile diarrhoea, and 2 each from enteric fever and scarlet fever.

## The Services.

### THE HONOURS LIST.

The following awards to medical officers in connexion with military operations in India and in Persia are announced:—

*C.I.E.*—Capt. J. B. Hanafin, I.M.S.; Lt.-Col. J. B. Jameson, I.M.S. (ret.); Maj. L. Hirsch, I.M.S.; Lt.-Col. S. J. Rennie, R.A.M.C. (ret.); Lt.-Col. J. W. Watson, I.M.S.

*C.S.I.*—Col. A. E. Tate, C.M.G., A.M.S.

*C.B.E.*—Maj. and Bt. Lt.-Col. (temp. Col.) F. A. F. Barnardo, C.I.E., I.M.S.

*O.B.E.*—Capt. (temp. Maj.) A. F. Babonau, I.M.S.; Temp. Capt. J. Cairns, R.A.M.C. (T.F.); Capt. (temp. Maj.) F. R. Coppinger, R.A.M.C.; Maj. (temp. Lt.-Col.) J. K. S. Fleming, I.M.S.; Maj. G. D. Franklin, I.M.S.; Maj. A. T. Frost, R.A.M.C.; Capt. W. A. Frost, R.A.M.C.; Capt. T. B. Heaton, R.A.M.C. (S.R.); Maj. D. P. Johnstone, R.A.M.C.; Maj. T. W. Minty, I.M.S.; Lt.-Col. P. St. C. More, I.M.S.; Maj. R. B. Nicholson, M.C., I.M.S.; Maj. H. W. Pierpont, I.M.S.; Lt.-Col. J. J. W. Prescott, D.S.O., R.A.M.C.; Capt. C. H. Smith, I.M.S.; Capt. (temp. Maj.) J. R. D. Webb, I.M.S.

*M.B.E.*—Lt. (temp. Capt.) P. X. Godinho, I.M.S.

*Military Cross.*—Temp. Lt. Mahomed Nawaz, I.M.S.; Capt. R. R. M. Porter, I.M.S.

*To be Brevet Lieutenant-Colonel.*—Maj. N. W. Mackworth, I.M.S.

*To be Brevet Major.*—Capt. J. A. A. Kernahan, I.M.S.; Capt. (temp. Lt.-Col.) J. V. Macdonald, M.C., I.M.S.; Capt. (temp. Maj.) M. A. Rahman, I.M.S.; Capt. (temp. Maj.) E. E. Doyle, I.M.S.; Capt. (temp. Maj.) C. Ryles, R.A.M.C.; Capt. (temp. Maj.) W. R. Stewart, I.M.S.

### ARMY MEDICAL SERVICE.

Major-General Sir M. T. Yarr, C.B., K.C.M.G., to be Inspector of Medical Services (temporary), vice Major-General Sir W. Battie, V.C., K.C.M.G., C.B., K.H.S.

Temp. Cols. Sir T. C. English, K.C.M.G. (Captain, R.A.M.C., T.F.), and Sir C. A. Ballance, K.C.M.G., C.B., M.V.O. (Captain, R.A.M.C., T.F.), relinquish their temporary commissions on re-posting.

### ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. O. W. A. Elsuier relinquishes the temporary rank of Colonel on re-posting.

The undermentioned relinquish the acting rank of Lieut.-Col. on re-posting: Majors G. H. Stevenson, T. F. Ritchie, P. J. Maret; Temp. Capt. J. Scott, D. Miller.

The undermentioned to be acting Lieut.-Colonels whilst commanding Medical Units: Capt. (acting Major) R. G. Shaw; Capt. E. Percival, T. S. Eves; Temp. Capt. (acting Majors) H. C. Watson, J. P. Davidson; Temp. Capt. G. Jackson.

Temp. Major E. W. H. Groves (Captain, R.A.M.C., T.F.) relinquishes his temporary commission on re-posting.

The undermentioned relinquish the acting rank of Major: Capt. J. E. Hepper (on ceasing to be specially employed); Temp. Capt. A. W. Tabuteau, L. ap. I. Davies, W. H. Clements, J. M. Morris, W. J. J. Arnold, C. Roche, A. L. Krogh (on re-posting); Temp. Lieut. G. E. Froggatt.

To be acting Majors whilst specially employed: Capt. S. H. Smith, F. Worthington, R. E. Todd, H. F. Joynt; Capt. and Bt. Major T. A. Weston; Temp. Capt. H. G. Gillies, A. L. Robinson, S. S. Dunn, G. Cooper, H. M. Anderson, C. E. Waldron.

Capt. T. D. Inch resigns his commission.

Temp. Capt. (acting Major) R. Jamison to be acting Lieutenant-Colonel whilst specially employed.

Temp. Capt. J. H. G. Hunter and J. McFadden to be Captains.

The undermentioned late temporary Captains to be temporary Captains: L. Gibbons, R. A. Flynn, T. F. Griffith, J. Joule, C. L. Driscoll.

Officers relinquishing their commissions: Temp. Lieut.-Col. and Hon. Lieut.-Col. W. I. de C. Wheeler (retains the rank of Lieutenant-Colonel); Temp. Lieut.-Col. E. J. Moore, Temp. Lieut.-Cols. G. E. Miles and C. T. Parsons (retain the rank of Lieutenant-Colonel); Temp. Hon. Lieut.-Cols. G. S. Buchanan and J. Robertson (retain the honorary rank of Lieutenant-Colonel); Temp. Hon. Lieut.-Col. H. R. Kenwood (Major, R.A.M.C., T.F.) (relinquishes his temporary commission on re-posting). Temporary Majors retaining the rank of Major: T. M. Kendall, P. J. A. Secombe. Temporary Captains granted the rank of Major: J. Crawford, R. E. Cree. Temporary Captains retaining the rank of Captain: A. W. George, D. Corry, W. E. Morgan, W. F. Thompson (acting Major); J. E. L. A. Turnley, R. M. Gordon, F. F. C. Willington, W. G. Shaw, J. G. Shanklin, G. L. Keynes, C. J. Glasson, J. M. Christie, S. C. H. Moberly, E. R. Wheeler, E. M. Brown, J. A. Wilson, F. W. Jones, C. J. Heaton, J. D. Carroll, R. A. Banbury, A. Poole, P. B. Whittington, J. C. Fergusson, J. Prichard, W. D. Lawrie, W. McFarlane, G. Hoffmann, C. Gray, H. C. Hinwood, W. C. P. Barrett; Temp. Hon. Capt. W. A. Pride (retains the honorary rank of Captain); Temp. Lieut. R. M. D. Devereux and W. H. Newton (retain the rank of Lieutenant).



*Canadian Army Medical Corps.*

Temporary Lieutenant-Colonels (acting Colonels) to be temporary Colonels: C. P. Templeton, E. L. Stone.

Temporary Majors (acting Lieutenant-Colonels) to be temporary Lieutenant-Colonels: J. S. Jenkins, C. Hunter, W. T. Lockhart, C. F. L. Haszard.

Temp. Major (acting Lieut.-Col.) L. H. McKim relinquishes the acting rank of Lieutenant-Colonel.

The undermentioned temporary Captains (acting Majors) relinquish the acting rank of Major: J. G. Shaw, J. Pullar.

The undermentioned temporary Captains (acting Majors) to be temporary Majors: D. S. Lewis, S. Sprague, G. O. Scott, H. W. Wadge, P. J. S. Bird, J. D. Jones, J. S. Fitzsimmons, J. W. Hunt, A. B. Wilkes, B. R. Almquist.

Temp. Capts. (acting Majors) E. F. Risdon and R. A. Thomas relinquish the acting rank of Major.

Temp. Major N. G. Cooper and Temp. Capt. H. W. Bell retire in the British Isles.

*South African Medical Corps.*

The undermentioned relinquish their commissions and retain the rank of Captain: Capt. J. McL. Hendry; Temp. Capts. E. W. Dyer, J. I. de Villiers, E. Wolff, A. S. Wilson, G. H. Coke.

## GENERAL RESERVE OF OFFICERS.

T. D. Inch, late Captain R.A.M.C., to be Captain.

## SPECIAL RESERVE OF OFFICERS.

Capt. L. C. Rudd and E. R. Chambers relinquish their commissions. Capt. R. T. C. Robertson relinquishes the acting rank of Lieutenant-Colonel on ceasing to command a Medical Unit.

Captains relinquishing the acting rank of Major on ceasing to be specially employed: H. C. G. Pedler, R. O. C. Thomson.

Captains to be acting Majors: D. McIntyre, J. J. McI. Shaw (whilst specially employed).

## TERRITORIAL FORCE.\*

Major M. G. Foster is restored to the establishment on ceasing to hold a temporary commission in the Army Medical Service.

Capt. (acting Lieut.-Col.) J. Barkley, D.S.O., and W. D. Sturrock relinquish their acting rank of Lieutenant-Colonel on ceasing to be specially employed.

Capt. (acting Majors) J. L. M. Symms and L. E. Hughes relinquish their acting rank of Major on ceasing to be specially employed.

4th London General Hospital: Major W. A. Turner is restored to the establishment on ceasing to hold a temporary commission in the Army Medical Service.

2nd London Sanitary Company: Capt. (acting Major) A. G. G. Thompson relinquishes the acting rank of Major on ceasing to be specially employed.

## ROYAL AIR FORCE.

*Medical Branch.*—Capt. (acting Major) C. J. G. Taylor (Surgeon-Lieut., R.N.V.R.) relinquishes his commission on ceasing to be employed.

The undermentioned are transferred to the unemployed list: Capts. Wm. S. T. Connell, T. R. Hunter, W. H. Cam.

## INDIAN MEDICAL SERVICE.

To be acting Lieutenant-Colonels while commanding Medical Units in the Field: Majors F. H. Stewart, S. H. L. Abbott, Capts. A. G. Coullie, J. B. Lapsley, J. Portelli to be temporary Lieutenant.

## DEATHS IN THE SERVICES.

Fleet Surgeon George Hewlett, R.N., died on August 26th at Andover as a result of a collision between the motor-bicycle he was riding and a motor-car four days previously. As a student in Edinburgh he surprised some by graduating after four years' study with first-class honours, but he was very shrewd, had an alert mind and a retentive memory. A Cornishman, he went at once to sea, first in the merchant service, and later in the Navy, where he did a great deal to keep a friendly spirit alive in the ships in which he served. His loss will be keenly felt by his old shipmates. He was by nature a man of the wild, and after leaving the service spent a year fishing and shooting in British Columbia. His alternative employment was the sailing of his yacht about the Channel. For three years of the war he served as fleet surgeon of Portsmouth Dockyard.

THE LATE MR. EDWIN O. SACHS, F.R.S.E.,  
CHAIRMAN OF THE BRITISH FIRE PREVENTION COMMITTEE.

—Mr. Sachs, who died at his residence in Portland-place on Sept. 9th at the early age of 49, practised for several years as an architect and was the author of a standard work, "The Modern Opera House and Theatre." He was the first in England to apply electrical power to the working of the stage, and the "Sachs System" has been adopted by Covent Garden Opera House and the Theatre Royal, Drury-lane. It is, however, by his keen interest in regard to fire protection that he will be most remembered. Realising that the great loss of human life and property due to fire might be much reduced by legislation and ordinary measures of precaution, he devoted his time to propaganda work in this direction, and helped to procure preventive legislation by which loss of infant life due to the use of inflammable clothing could be minimised. His activities, which were entirely voluntary, extended to many other countries besides the British Isles, and he was vice-president of the International Fire Service Council. During the war the committee of which he was chairman made arrangements for a voluntary survey force for over 2000 war hospitals, camps, and factories. He initiated or guided work of high importance to the nation in circumstances of ill-health attended by much suffering.

## Correspondence.

"Andi alteram partem."

THE BRITISH FEDERATION OF MEDICAL AND  
ALLIED SOCIETIES.

To the Editor of THE LANCET.

SIR,—A letter from Dr. E. R. Fothergill was published under the title "The Cult of Individualism" in the issue of the *British Medical Journal* dated Sept. 13th. That communication contained so many inaccuracies and mis-statements that we would request space in your valued columns to correct any false impressions that may have been occasioned by it. Seeing that no issue exists between the British Medical Association and the Federation of Medical and Allied Societies (late Medical Parliamentary Committee), of the former of which we are also members, we are not concerned with the defence of the body we represent. In the first place we do not subscribe to the wholesale condemnation of the Association contained in the fourth paragraph of Dr. Fothergill's letter. And we cannot agree that the British Medical Association "is now recognised by all departments in the State as the mouthpiece of the profession," much as we might wish it to be. Apart from the fact that the Medical Directory contains the names of twice the number of medical men that the membership of the Association embraces, there are several other professional bodies that the Government departments consult direct. The policy of the Federation can in no way be construed as making for rivalry with the Association; the aims of the former are definite in extent. It provides a permanent "round table" at which representative doctors, of all shades of opinion and engaged in all branches of medical work, may meet and confer with one another and with the representatives of lay bodies whose activities are ancillary to medicine; it aims at obtaining support for the profession from a much larger section of the public than any purely medical body can hope to obtain; it constitutes a "reference library" on matters affecting the public health, and by being in a position to supply information to the profession and the public, on the one side, and to those guiding legislation, on the other, it is truly a "liaison committee." Thus, in place of overlapping and confusion in policy, the Federation offers a real prospect of unity in thought and action.

Dr. Fothergill has a great deal to say regarding schisms in the ranks of the profession: it will therefore interest him to know that the three bodies he mentions and whose existence he deprecates are amongst those who have taken part in the formation of the Federation, so that already far greater unity exists than was the case prior to the formation of the Medical Parliamentary Committee. It will be time enough to discuss the objection raised regarding individual subscriptions when the Federation asks for them.

It would be well if Dr. Fothergill could understand that there are others besides himself who are working disinterestedly for the good of the profession and the community.—We are, Sir, yours faithfully,

MALCOLM MORRIS,

Chairman.

CHARLES BUTTAR,

Honorary Secretary.

N. HOWARD MUMFERY,

Organising Secretary.

The British Federation of Medical and Allied Societies,  
20, Hanover-square, W., Sept. 15th, 1919.

## CONTROL OF VENEREAL DISEASE.

To the Editor of THE LANCET.

SIR,—In the account given in THE LANCET of Sept. 6th of the recent deputation of the National Council for Combating Venereal Diseases, and the reply thereto of the Public Health Committee of the London County Council, the recommendation of the last-named body is merely stated without the addition of the detailed reasons on which it was presumably based. THE LANCET account proceeds to comment on the London County Council's recommendation as indicating a "policy of passivity" in relation to the preventive treatment of venereal diseases, and apparently regards the National



Council's proposal of "treatment at an approved centre within a short time after exposure to possible infection," and its further statement that, for the effectual prevention of *syphilis*, "treatment must be initiated within six hours after exposure to risk," as embodying the only possible scheme of medical prevention.

I desire to point out that the National Council's scheme in respect to *syphilis* (as reported) gives a very wide and dangerous margin of safety in its mention of "within six hours" and says nothing of the safety margin in the case of *gonorrhoea*, which is overwhelmingly more widespread than *syphilis*. It is scarcely to be supposed that the six-hour margin is meant by the Council to apply to both cases! Further, the National Council's scheme 'not only is of very doubtful efficiency, but also involves an increased expenditure of public money out of all proportion to the slight amount of good it might possibly bring about.

Is it not probable, if not certain, that it is owing to such objections as these that the London County Council's Public Health Committee "is not satisfied that the public provision of early preventive treatment as suggested by the National Council for Combating Venereal Disease is desirable"? Or is THE LANCET's implication that the County Council's Committee is indifferent to the question of preventing the spread of venereal diseases to be preferred?

I am Sir, yours faithfully,

Sept. 11th, 1919.

H. BRYAN DONKIN.

### PROPHYLACTIC QUININE IN MALARIA.

To the Editor of THE LANCET.

SIR,—During a stay of three months in Aden I had a great deal of trouble with my servant. He was a Somali, who understood no English and no Hindustani, and who spoke worse Hindustani, if possible, than I did myself. Heated misunderstandings, no doubt aggravated by the fact that I was suffering at the time from repeated attacks of mild malaria, naturally resulted, and our relations became more and more strained.

The first step on the road to reconciliation was taken when I found that I could with absolute certainty keep myself free from malaria by taking 5 gr. of quinine daily. I then found to my shame one evening that my unfortunate servant was excusing himself for his shortcomings in a fearful jumble of tongues on the grounds that he was sick in the same way that "master" had been sick himself. Five grains of quinine daily transformed him into an intelligent and efficient valet. To save trouble I used to give him my own tablets, and when we parted, the best of friends, he begged me to tell him where they could be purchased. I explained to him, in the code we had established, that they were beyond his means and he must go to the civil hospital.

Nothing will ever persuade this Somali boy or myself that in certain circumstances there is not a type of malaria which can with certainty be prevented by quinine, and which will with equal certainty recur if the quinine is discontinued.

In view of the above domestic incidents I have read with much interest Major A. H. Gosse's article on quinine prophylaxis in your issue of Sept. 6th.

I am, Sir, yours faithfully,

Kensington, W., Sept. 12th, 1919.

J. E. SANDILANDS.

### EROSION OF THE GREAT VESSELS OF THE NECK IN SCARLATINAL ABSCESS.

To the Editor of THE LANCET.

SIR,—This condition may not be so rare as is implied in the annotation in your issue of last week. During an epidemic of scarlet fever in South Wales in 1887 I saw two cases in a fortnight, both in young children, and both rapidly fatal. One burst externally, and I concluded that it was the external carotid which was eroded.

I am, Sir, yours faithfully,

Bournemouth, Sept. 14th, 1919.

E. CURTIN.

### CRYPTOPODIA.

To the Editor of THE LANCET.

SIR,—Mr. T. S. P. Strangeways has overlooked the fact that the arthritis began 10 years later than the enlargement of the feet, and I may add that there is no trace of it in the lower limbs. Moreover, for more than 10 years past the

patient has been bedridden—i.e., living under the very conditions which Mr. Strangeways lays down as essential to cure. In the face of the very remarkable blood-count it is hard to deny the right of the condition to be regarded as a disease, and even a specific one. I especially hope that the blood-count will receive the attention that it deserves. With reference to Dr. Parkes Weber's remarks, I distinctly stated, and believe that I demonstrated to Dr. Parkes Weber personally, the very ready and deep pitting on pressure in the case under notice. This differentiates it sharply, on his own showing, from the case described by him at the Royal Society of Medicine. How my case can possibly have anything in common with one in which the enlargement consisted of "dense fibrous tissue," as described by Mr. W. Robinson in your last issue, I fail to see.

For the present, my description of my case by a new name, and as a new disease, has not been in any way shown to be unwarranted.

I am, Sir, yours faithfully,

De Crespigny Park, Denmark Hill, S.E., E. C. BOUSFIELD.

Sept. 15th, 1919.

### THE RESULTS OF COMPLETE COLECTOMY.

To the Editor of THE LANCET.

SIR,—In reference to Mr. J. E. Adams's letter in THE LANCET of August 23rd, in which he criticises me for not giving fuller details of my cases, I plead guilty, since I might have mentioned that he was the surgeon who performed the third operation on Case B.

I am, Sir, yours faithfully,

JAMES TAYLOR.

Cambridge Hospital, Aldershot, Sept. 12th, 1919.

### MIND AND MEDICINE.

To the Editor of THE LANCET.

SIR,—The adhesion of a prominent psychologist to one of Freud's main principles, noticed lately in your journal, reminds us that not so long ago a leading alienist wrote that psycho-analysis was dead in England, thanks to Dr. C. Mercier. A continental observer, if told of this, would likely enough have seen in it merely the common spectacle of a man of talent attacking a man of genius. Now, it is certain that Dr. Mercier was a man of talent, but not quite certain yet that Freud has genius. Contemporary estimates are notoriously unreliable, and, moreover, inevitably so, or mankind, which, as was long ago pointed out, whether or not it wishes to act rightly, mostly desires correct knowledge, would have improved ere this its powers of criticism of a current event or opinion. Sometimes posterity endorses contemporary verdicts, but oftener reverses them. How will it be with Freud's work? The testimony already mentioned may furnish an indication, as also the appearance of paragraphs on "repression" in the daily press—a phenomenon, this latter, of complete unimportance had it happened when Freud's name first crossed the Channel (or rather the North Sea), but of considerable significance now, after the lapse of years and the consequent test of time.

What more than his obscurity of style and the poorness of his translators has spoiled Freud's reception over here is the British ignorance that there is such a study as sexuality—or perhaps one had better say, after the last International Medical Congress in London, the British "conspiracy" (as I have seen it misspelt in a foreign journal) of silence. That ignorance or that conspiracy is perforce beginning to disappear now; still, in this country we have only yet got to the antivenereal campaign and sexual pedagogy, and to these only fairly recently; although in different booklets on the latter subject have appeared in such numbers as to suggest that their production is, if one may help oneself to a metaphor from the illustrious physician of Chinon, as easy as wetting the bed. The best book of Freud's to begin with—in fact his countrymen say his best book altogether—is the "Psycho-pathology of Everyday Life." The assertion is ventured that a single perusal of this work would make a good many partial converts. When a man sees that by the help of Freud, and of nobody else, he can account for missed trains, undated cheques, and other seemingly fortuitous slips of his daily life, he is impressed. Not that the dreaded sexual element is absent. This book, too, is not one to leave about. Sex occupies in it nearly as much space as in human thought



and conduct. One secretly fearing that his mistress has conceived makes an ordinary slip of the tongue in ordinary conversation; but it is enough for the psycho-analyst to guess his secret by. Well, these things happen and will go on happening; better to study than to snigger over them, or pretend they are non-existent.

Probably the strongest impeachment comes from the man who first in this country mentioned Freud's work, and to whom the latter paid the compliment of writing to regret that psycho-analysis did not meet with his full approval. That impeachment was, that the line of inquiry is full of risk of error; for sexual symbolism, which is central to the argument of Freud's chief work, can, like any other symbolism, be rather easily carried to an excess, become far-fetched, strained, intolerably overweening. In its simpler applications it will probably convince most unprejudiced minds, particularly in presence of the high standard of investigation some Freudian disciples attain. Take, for instance, an article in *Imago*, on the sexual symbolism of the fish, by a lesser known one. In this paper proofs, often pictorially reproduced, are drawn from prehistoric drawings, down through classic art, through mythology, anthropology, etymology, literature and folklore, to a quotation (about Montenegrin water-bailiffs) from *Country Life*, of all sources—and the editors in a fine spirit of team work add others. It is difficult to doubt, after reading this multifarious evidence of the world-wide association of the fish with erotic deities, and those presiding over increase and fertility, as also with marriage ceremonies, that the author has made out a strong case. Again, others besides Freud rely on sexual symbolism. In view of the mention of religion in your article the following two instances come in well. A reviewer in *The Expository Times* has written: "..... the Bible is full of symbols and we have lost their language. We are very prosaic. The writers of the Old Testament and of the New were very imaginative. Between us there is a gulf fixed of which we are aware only in unquiet moments." Now a much less orthodox, but not Freudian, writer in another Continental journal has recently tried to interpret the symbolism in the familiar story of Samson. It is, he says, a story of a rude, primitive time, containing little of morality, and turning on the three motives of strength, love, and rustic wit. To trace the second motive he has recourse to the sexual symbolism undoubtedly present in the narrative; and when he recalls how the Romans at the Cerealia let loose in the circus foxes with firebrands at their tails, and the rite at Carseoli of covering foxes with grass, setting fire to them, and letting them run over the fields, the fox being regarded as the Genius of the Crops, and kindred Arabian and Japanese rites, it at least puts one strongly in mind of the way in which early civilisations connected phallic symbols with the earth's fertility. Exegesis of this kind will be allowed much significance; and not only this, but also some of the simpler interpretations of sexual symbolism in dreams and neuroses. But with more highly developed ones a feeling of dubiety begins. One perceives that the logical razor of Occam, never very sharp in Austro-Germany, would make short work of many of them. And that, then, is the danger, that sexual symbolism is a risky business. You never know how far to trust it, how far to go with it.

Mr. Havelock Ellis, perhaps the rarest mind in the British medical profession, further pronounces Freud to be an artist. Certainly he is one of the few who are at home either in the literary or the scientific camp, two positions between which there has been small, but for various reasons must in the future be more, communication. It is a bold thing, however, to say that the artistic imagination can serve the purpose of scientific investigation, and a statement unwarranted by history. What might be nearer the truth is that Freud has the specific faculty of the great investigator, the gift of "superb guessing" (which, after all, is essentially reconstructive, not creative), but has it in exuberant degree; like, for instance, Kepler the astronomer. Of his amazing reconstructions of the infant mind he offers hardly a trace of verification. The length of his inductive leaping pole is dangerous, but the reach of his theories impressive. And if it be true that he has opened a new window giving upon the wonderland of the human mind, then it is not fitting to complain of the view.—I am, Sir, yours faithfully,

Sept. 15th, 1919.

CADUCEUS.

## Obituary.

JOHN CAHILL, M.D. DURH., F.R.C.S. ENG.

Dr. John Cahill, whose death on Saturday, Sept. 6th, was alluded to in *THE LANCET* last week, was the only son of the late Dr. Thomas Cahill, of Albert Gate, Knightsbridge. A Catholic, he was born in 1857 and educated at Beaumont College, and then for two years in Germany. He joined the medical school of St. George's Hospital in 1877, but in the year of his qualification as M.R.C.S.—namely, in 1881—his father died. Cahill remained at the hospital discharging the junior appointments, and took the F.R.C.S. Eng. in 1884, when he decided to go into private practice in the neighbourhood where his father and his family were still well remembered. This he did, and for over 30 years he practised in Seville-street, Lowndes-square, his success being alike due to his high professional attainments and his kind and cultivated personality. At first his practice was distinctly surgical, and for some years he was surgeon to the Hospital of St. John and St. Elizabeth, but later he proceeded to the M.D. Durham, and confined himself to general practice. He was medical adviser to the Egyptian Civil Service and a member of the Egyptian Government Medical Commissioners Board, his knowledge of French and German standing him in good stead in such appointments.

Cahill always took a deep interest in the organisation and material prospects of St. George's Hospital, which to him was, of course, not only his old educational centre, but an important local institution. The perplexities which have beset the hospital in the midst of the various rumours with regard to the sale of the site were under discussion by the committee of management of the charity at a time when he was a member of the committee, and on that body no one's voice was more readily heard, both on domestic matters and larger schemes. During the shortage of the medical staff, caused by the calling up of all available men to serve with the forces, Cahill did arduous and unselfish work as temporary assistant physician to the hospital, and his death from heart disease, while still in middle age, can undoubtedly be referred to the strain of professional overwork aggravated by deep sorrow caused by the death of his son.

In 1887 he married Lucy Keith, youngest daughter of the late Thomas Keith, C.B., Accountant General at the India Office, and had two daughters who survive him, as well as an only son, Captain Archibald Cahill, M.C., of the Royal Berkshire Regiment, who was killed in action in 1917. For 40 years Cahill was a well-known man to all connected with St. George's Hospital, and he leaves behind him a reputation for accomplishment, industry, and courtesy which all might envy.

RICHARD FRANCIS TOBIN, F.R.C.S.I.,

PAST PRESIDENT OF THE IRISH MEDICAL ASSOCIATION.

Mr. Richard F. Tobin, of Dublin, died suddenly at his club on August 31st at the age of 76 years. A native of Waterford, he was educated at Clongowes Wood College and Dublin, and after obtaining his licence from the Royal College of Surgeons of Ireland in 1864 at the age of 21 he entered the Army Medical Service. He had a distinguished career, and in 1880 was appointed assistant professor of surgery in the Army Medical School. In 1885 he took part in the Sowakin Expedition, subsequently contributing an account of his experiences to the Transactions of the Royal Academy of Medicine in Ireland. He retired from the Army Medical Service soon afterwards with the rank of Brigade Surgeon, and, settling in Dublin, was appointed a surgeon to St. Vincent's Hospital. He held this post until a few years ago, and earned the reputation of a sound and careful surgeon, taking a special interest in diseases of the prostate. In later years he suffered much from deafness, and some three years ago he retired from active work. He continued, however, to hold the posts of Inspector of Anatomy in Ireland and secretary of the Board of Superintendence of Dublin Hospitals. He was for a time President of the Irish Medical Association, and was surgeon to the Marquis of Aberdeen during the period of his viceroyalty. He wrote a "Synopsis of Surgery," and contributed many articles to the professional journals.



Tobin lost his only son in the Dardanelles, and the grief for this loss, together with his own personal affliction of deafness, would have embittered many men, but with him sorrow only brought out more strongly his native kindness. A few months after his son's death it fell to Tobin's lot to minister professionally to the wounds of James Connolly, the rebel leader of Easter week, in the interval between his surrender and his execution. A friendship sprang up between the two men so curiously unlike—the aristocrat and the revolutionary, the loyal veteran soldier and the avowed rebel. After Connolly's death Tobin made himself, it is believed, responsible for the expense of educating the labour leader's son. The incident is illustrative of the gentleness, the simplicity, and the Christianity of Tobin. He brought the same gentleness and charming courtesy into every relation of life, and no surgeon in Ireland enjoyed more fully the love and friendship of his students and professional colleagues.

## Medical News.

**NATIONAL HOSPITAL FOR DISEASES OF THE HEART, WESTMORELAND-STREET, W.**—Systematic courses of instruction are given from time to time in morbid anatomy, pathology, diagnosis, and treatment of diseases of the heart and circulation. Practical instruction in electrocardiography and graphic methods is also given. Post-graduate students are admitted to the clinical practice of the outpatient department and wards, and application should be made to Captain R. G. E. Whitney, the secretary of the hospital.

**THE War Office** has addressed to Sir Arthur Stanley, the chairman, Joint War Committee, British Red Cross Society and Order of St. John, a letter conveying the appreciation of the Army Council of the inestimable service rendered by the British Red Cross Society and the Order of St. John of Jerusalem in England. In this letter the Council recognise the high value of the work done by the organisations and the hospitals formed under their auspices. "The preparations," they say, "made in time of peace, and the energy and efficiency displayed when put to the test of war, have greatly assisted in the restoration of life and health to the sick and wounded, and have contributed in no small measure to the achievement of victory." Sir Arthur Stanley is finally requested to convey the thanks of the Army Council to the various branches of the two organisations whose members have unstintingly devoted their resources to the services of the sick and wounded.

**BOATING ACCIDENT ON BELFAST LOUGH.**—The bodies of the three victims of the boating accident of August 29th have now been recovered. Mr. Thomas Huston, L.R.C.P. & S. Edin., aged 48, of Woodville House, Hounslow, London, his 12-year-old son, and Mr. Frank Huston, son of Dr. James Huston, Carrickfergus, a medical student, started for a sail on Belfast Lough, nothing more being heard of them until the boat was seen drifting empty. In the course of the last week the bodies were found floating at sea and an inquest followed.

**PRESENTATION.**—The governors of the Royal Devon and Exeter Hospital recently presented Mr. E. J. Domville, consulting surgeon to the charity, with a grandfather clock and an illuminated address, as a mark of appreciation for his services in performing the duties of resident house surgeon for a period of three and a half years during the period of the late war.

**BRISTOL ROYAL INFIRMARY.**—A strong appeal is being made for increased financial support for the Bristol Royal Infirmary. The deficit is £22,170. The president, Mr. H. H. Wills, has offered £5000 conditionally upon the adverse balance being cleared off by the end of the year.

**Messrs. Henry Frowde and Hodder and Stoughton** have in preparation a "Practice of Medicine in the Tropics" by many eminent authorities, edited by Dr. W. Byam and Dr. R. G. Archibald, Majors, R.A.M.C. The number of contributors is 75, drawn from many parts of the world.

**DONATIONS AND BEQUESTS.**—The late Mr. Robert Anderson, of Glasgow, has bequeathed £1000 each to the Glasgow Royal Infirmary, the Western Infirmary, the Glasgow Samaritan Hospital for Women, and the Royal Hospital for Sick Children; and £500 each to the Victoria Infirmary and the Orphan Homes of Scotland.—By the will of the late Mrs. Sarah Finnie, of Kilmarnock, the testatrix left £1000 each to the Zenana Mission of the Church of Scotland and to the Kilmarnock Infirmary, and £350 to the Kilmarnock Nursing Association.

**GUY'S HOSPITAL BIENNIAL DINNER.**—The Guy's biennial dinner will take place at the Connaught Rooms on Tuesday, Oct. 28th, at 7 P.M., Dr. Lauriston Shaw in the chair. All Guy's men who have not received an invitation to the dinner are asked to communicate with Mr. F. J. Steward, 98, Portland-place, London, W. 1.

**UNIVERSITY COLLEGE HOSPITAL.**—The old students' dinner will be held at the Imperial Restaurant, Regent-street, on Friday, Oct. 3rd, Sir J. Rose Bradford in the chair. Tickets 15s. (exclusive of wine) may be obtained from the honorary secretary, Dr. A. M. H. Gray, 30, New Cavendish-street, W. 1.

It has been decided to erect and partially endow a cottage hospital for Helston (Cornwall) as a war memorial. The cost of the scheme is estimated at £4000, and the building will contain eight beds. About £1600 has been subscribed, and it is thought that the amount required will be easily obtained.

**THE Local Government Board** has published what is to all intents and purposes a directory of maternity and infant-welfare centres in England and Wales. The list includes all the municipal and voluntary maternity and child-welfare centres known to the Board on April 1st, 1919. The names and addresses of the secretaries of voluntary centres are also given, and appended is an index of the towns and villages containing centres. It is a most useful little book of reference for all who are engaged in this class of work, but from the point of view of the doctor it would be still more useful were it to contain as well the name of the medical officer who is in charge of each centre. Such a directory would prove of immense help, and we believe that one containing this information has not as yet been published. The Local Government Board list can be procured through any bookseller or from H.M. Stationery Office under the title, "Maternity and Child-Welfare Centres in England and Wales."

**ISOLATION ACCOMMODATION IN NORTH DEVON.**—The question of isolation accommodation has again arisen in North Devon. Dr. W. A. Valentine, medical officer of health for Barnstaple Port Sanitary Authority, reported on Sept. 13th last, at their meeting in Barnstaple, that he had visited the hospital ship with Dr. H. A. Macewen, from the Ministry of Health, and that they found the ship was no longer suitable for the reception of patients. It was suggested by some of the members that a couple of Army huts should be obtained and placed between Instow and Fremington. At a subsequent meeting of the Barnstaple rural council a letter was read from the Lynton urban council stating that the latter were willing to join in a scheme with neighbouring authorities for the provision of an isolation hospital. The chairman, Mr. W. T. Buckingham, said that their chief difficulty lay in the absence of power to remove patients to hospital. They had cases and carriers of diphtheria in the district with whom they could not deal. He pointed out the function of a hospital in the prevention of epidemics. The hospital ship had prevented the spread of small-pox in Appledore when two cases occurred there 20 years ago.

**POST-GRADUATE STUDY IN FRENCH: OPPORTUNITY AT LAVAL.**—Speaking at the recent meeting of the Canadian Medical Association, Professor S. Grondin, of Laval University, Quebec, stated that his university would be glad to receive, free of charge, any young English-speaking doctors of the Dominion who, having passed their degree in their own universities, would like to come to Quebec and follow during one year the lectures given at the university and the clinics in the hospitals. They would, he said, receive a hearty welcome, and after six months would have learned how to speak French. Laval was asking in return from the English universities the same privilege for its young French doctors. Professor Grondin went on to recall his own stay of six months in the Rotunda Hospital at Dublin, ascribing thereto his ability to deliver an address in English. We have no doubt that the Laval offer would be extended to medical graduates from this country who desired to acquire a working knowledge of medical French within the borders of a university of the Empire.

### BOOKS, ETC., RECEIVED.

BAILLIÈRE, TINDALL, AND COX, London.

Handbook of Gynaecology. By Bethel Solomons, M.D. Pp. xii. + 236 10s. 6d.

FROWDE, H., AND HODDER AND STUGHTON, London.

Fractured Femurs. By M. G. Pearson, M.B., B.Sc., and J. Drummond, M.D. Pp. 92. 10s. 6d.

KIMPTON, HENRY, London.

The Operations of Obstetrics. By F. E. Leavitt, M.D. Pp. 466. 30s. A Stereoscopic Atlas of Plastic Surgery of the Face, Head, and Neck, with Case Reports. By J. C. Beck, M.D., and I. Frank. With Stereoscope. 35s.



## Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

- ADAMS, J., has been appointed Certifying Surgeon under the Factory and Workshop Acts at Bishop's Castle.  
 CAMPBELL, A. S., Certifying Surgeon under the Factory and Workshop Acts at Dundee.  
 CHUBB, ELSIE M., M.D. Lond., D.P.H., Government Medical Inspector of Schools in the Cape Province, South Africa.  
 DAVIS, HARRY, M.R.C.S., L.R.C.P., L.S.A., D.P.H. Camb., Medical Officer for the No. 7 District by the Liskeard (Cornwall) Board of Guardians.  
 FITZGERALD, CHARLES CONWAY, L.R.C.P. & S. Edin., Chief Tuberculosis Officer for the county of Antrim.  
 LANGRAM, WILLIAM, L.R.C.S., L.M. Edin., L.A.H. Dub., Temporary District Medical Officer by the Axminster (Devon) Rural District Council.  
 MCKENNA, T. H., Medical Officer of the Forkhill Dispensary District.

## Vacancies.

For further information refer to the advertisement columns.

- Barbados General Hospital.—Sen. Res. S. £300.  
 Battersea General Hospital, Battersea Park, S.W.—Res. M.O. £200.  
 Bedford County Hospital.—Res. M.O. £150.  
 Belgrave Hospital for Children, Clapham-road, S.W.—Two Asst. P.'s  
 Bermundsey Infirmary, Lower-road, Rotherhithe, S.E.—First Asst. M.O. £350.  
 Bethlehem Royal Hospital, Lambeth-road, S.E.—Hon. Neurologist. Also Jun. Asst. P. £350.  
 Birkenhead Borough Hospital.—Jun. H.S. £170.  
 Birmingham, Lodge-road War Pensioners Hospital.—Asst. M.O. £350.  
 Birmingham Municipal Anti-Tuberculosis Centre.—Sen. Asst. Tuberc. O. £650.  
 Bridge of Weir, near Glasgow, Consumption Sanatoria of Scotland.—Asst. M.O. £200.  
 Brighton, Royal Sussex County Hospital.—Asst. H.S. £80.  
 Cardiff, King Edward VII.'s Hospital.—H.S. £200.  
 Central London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.—H.S. £50.  
 Cheltenham Eye, Ear, and Throat Free Hospital.—Asst. S. £400.  
 Chester, Cheshire County Council.—Dist. Tuberc. O. £400.  
 Crowthorne, Berks, Broadmoor State Asylum.—Asst. M.O. £300-£350.  
 Cumberland Education Committee.—Two School Dentists. £350.  
 Dunfermline, Carnegie Dunfermline Trust.—Sch. M.O. £400.  
 Durham County Council.—Five Asst. School M.O.'s. £600.  
 Epslbourn, Princess Alice Hospital.—R.M.O. £175.  
 East Riding Education Authority.—Female Asst. Sch. M.O. £350.  
 Sch. Dent. £350.  
 Evelina Hospital for Children, Southwark, S.E.—H.S. and H.P. £160.  
 German East Africa Occupied Territory.—M.O.'s. £400-£20-£500.  
 Glamorgan County Asylum, Bridgend.—Fourth Asst. M.O. £400.  
 Glasgow, Hawkhead Asylum, Cardonald.—Jun. Asst. M.O. £275.  
 Glasgow, Scottish Western Asylums' Research Institute.—Director. £600.  
 Glasgow, Victoria Infirmary.—Visiting P. and Visiting S.  
 Grimsby and District Hospital.—H.S. £300.  
 Guy's Hospital, S.E.—Hon. Anest.  
 Hackney and Stoke Newington, Metropolitan Boroughs of.—Tuberc. O. £500.  
 Hatfield Union.—M.O. £75.  
 Hospital for Consumption and Diseases of the Chest, Brompton.—H.P. 30 guineas.  
 Hospital for Epilepsy and Paralysis, Maida Vale, W.—Hon. Psychologist, Hon. Ophth. S., and Hon. Asst. P.  
 Hospital for Sick Children, Great Ormond-street, W.C.—Res. Med. Supt. £200. Also Asst. Cas. M.O., H.S., and H.P. All £50.  
 Huddersfield Royal Infirmary.—Asst. H.S. £100.  
 Ipswich, East Suffolk and Ipswich Hospital.—H.P. £250.  
 Italian Hospital, Queen-square, W.C.—Hon. Ophth. Surg.  
 Lambeth Metropolitan Borough.—Tuberc. O. £600.  
 Leamington, Warneford, Leamington, and South Warwickshire General Hospital.—Res. H.S. £200.  
 Leeds General Infirmary.—Res. M.O. £150. Res. Obstet. O. £50. Also Res. M.O. at Ida and Robert Arthington Hospitals. £60. Two H.P.'s and Two H.S.'s.  
 Leeds Public Dispensary, North-street.—Res. M.O. £200.  
 Lincoln County Hospital.—Jun. H.S. £150.  
 Liverpool, Hospital for Consumption and Diseases of the Chest, Mount Pleasant.—Asst. M.O. and Pathologist. £175.  
 Liverpool Infirmary for Children.—Two Res. H.P. and Res. H.S. £90.  
 Maldon Union.—M.O. and Pub. Vac. £100.  
 Manchester, Ancoats Hospital.—Res. Surg. O. £200. Also H.S. £100.  
 Manchester Northern Hospital for Women and Children, Park-place, Cheetham Hill-road.—Hon. Asst. P.  
 Manchester Royal Infirmary.—Path. and Med. Registrars. £350 and £75 respectively.  
 Metropolitan Hospital, Kingstand-road, E.—H.S., Asst. U.P., and Asst. H.S. £100 each.  
 Middleton-in-Wharfedale Sanatorium, near Ilkley.—Asst. Res. M.O. £325.  
 Mothers' Hospital, 153-163, Lower Clapton-road, E.—Res. M.O.

- National Hospital for the Paratysed and Epileptic, Queen square, W.C.—Radiologist.  
 Newcastle-upon-Tyne, Hospital for Sick Children.—Jun. Res. M.O. £200.  
 Newport Borough Asylum, Caerleon, Mon.—Asst. M.O. £400.  
 New South Wales, Department of Public Instruction.—Prinpl. M.O. £900.  
 Norwich Poor-law Institution.—Res. M.O. £350.  
 Preston, Lancashire County Council.—Asst. Disp. Tuberc. O. £550.  
 Prince of Wales's General Hospital, Tottenham, N.—H.P. and H.S. £200. Also Jun. H.S. and Jun. H.P. £120.  
 Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—Dist. Res. M.O. £80.  
 Queen Mary's Hospital for the East End, Stratford, E.—H.S. £150.  
 Reading, Berks Education Committee.—Sch. Dent. £400.  
 Rotherham Hospital.—Jun. H.S. £150.  
 Royal Free Hospital, Gray's Inn-road, W.C.—Hon. Anest. Also Cas. O. (£100) and Registrar.  
 Royal London Ophthalmic Hospital, City-road, E.C.—Curator and Librarian. £200.  
 Royal National Orthopaedic Hospital, 234, Great Portland-street, W.—Surg. Registrar.  
 Royal Westminster Ophthalmic Hospital, King William-street, West Strand, W.C.—Non-Res. Asst. H.S. £40.  
 Salisbury General Infirmary.—H.S. and Asst. H.S. £200 and £150 respectively.  
 Seamen's Hospital, Greenwich.—House appointments.  
 Serbia, Serbian Relief Fund Hospitals.—Surg.  
 Sheffield Royal Infirmary.—H.S. for Ear, Nose, and Throat. £150.  
 Southend-on-Sea County Borough.—Tuberc. O. £600.  
 Sunderland Royal Infirmary.—Sen. H.S., Two Jun. H.S.'s, and H.P. £250 and £200 respectively.  
 Swansea General and Eye Hospital.—H.S. £250.  
 Taunton and Somerset Hospital.—Res. Asst. H.S. £150.  
 Truro, Royal Cornwall Infirmary.—H.S. £170.  
 Weston-super-Mare, Somerset County Education Committee.—School Oculist and Med. Inspect. £450.  
 Whitehaven and West Cumberland Infirmary.—Res. H.S. £180.  
 Wolverhampton and Staffordshire General Hospital.—H.S. £200.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Malton (York).

## Births, Marriages, and Deaths.

### BIRTHS.

- BRIMBLECOMBE.—On Sept. 10th, at Willow Bank, Martock, Somerset, the wife of S. L. Brimblecombe, M.R.C.S., L.R.C.P., of a son.  
 DENT.—On Sept. 9th, at 21, Endsleigh-street, to Lieutenant R. W. Dent, H.M.T.S. *Monarch*, and Dr. Patricia Dent (née Barnes), of Okeburn, Ambleside Avenue, Streatham, a daughter.  
 DOLL.—On Sept. 8th, at Hill-street, Knightsbridge, the wife of Dr. H. William Doll, of a son.  
 ORAM.—On Sept. 11th, at St. Michael's Lodge, Deepcut, Farnborough, Hants, the wife of Captain A. R. Oram, M.C., R.A.M.C., of a son (Richard).

### MARRIAGES.

- BROUGHTON-HEAD-BLAND.—On Sept. 10th, at Christ Church, Brondesbury Park, London, N.W., Leslie Charles Broughton-Head, M.B., L.D.S. Eng., to Dorothy, elder daughter of George R. Bland, Brondesbury Park, N.W.  
 CONNAN-MACKINTOSH.—On Sept. 11th, at Trinity Presbyterian Church, Donald Murray Connan, M.B., B.S., to Annie Dorothy, second daughter of Rev. Eneas and Mrs. Mackintosh, of Temuka, Alton, Hants.  
 HARVEY-DOHERTY.—On Sept. 15th, 1919, at St. Pancras Parish Church, London, by the Vicar, Rev. E. L. Metcalfe, M.A., and the Rev. E. Harvey, M.A., brother of the bridegroom, Joseph Harvey, Captain, R.A.M.C. (T.C.), youngest son of the late Mr. John Harvey and Mrs. Harvey, Rathmines, Dublin, to Winifred Eleanor, fifth daughter of Mr. and Mrs. W. Doherty, Claremont, Western Australia.  
 STEILL-HOLLAND.—On Sept. 15th, at Nettleham Parish Church, Lincoln, by the Rev. C. K. Watkins, William Fletcher Stiell, M.R.C.S., L.R.C.P., youngest son of Dr. and Mrs. Stiell, of Clapham, London, S.W., to Margaret, younger daughter of Mr. George Holland and the late Mrs. Holland, of "Kelvin," Lime Tree Avenue, Retford.  
 WRIGHT-DEAN.—On Sept. 9th, at Metheringham, Charles Samue Eric Wright, M.B., to Kathleen Mary, only daughter of Mr. and Mrs. J. H. Dean, Heath House, Nocton, Lincoln.

### DEATHS.

- ECCLES.—On Sept. 9th, at Upper Norwood, William Soltan Eccles, M.R.C.S. Eng., aged 76 years.  
 MACNAB.—On Sept. 12th, at Lansdown-place East, Bath, Robert Macnab, M.D. Glasg., F.R.C.S. Edin., aged 78 years.  
 MEEK.—On Sept. 15th, suddenly, at Frimley, Wilfrid Ombler Meek, M.B., B.S. Lond., in his 40th year.  
 RASKIN.—On Sept. 14th, at The Orchard, Helford, Corawall, Gathrie Rankin, M.D., F.R.C.P., and of 9, Harley street, London.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.



# Medical Diary for the ensuing Week.

## LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

LONDON HOSPITAL MEDICAL COLLEGE, in the Clinical Theatre of the Hospital.

A Special Course of Instruction in the Surgical Dyspepsias will be given by Mr. A. J. Walton:—

MONDAY, Sept. 22nd.—4.30 P.M., Lecture XV.:—Foreign Bodies, Rupture of the Stomach, Gastric Adhesions, Acute Dilatation of the Stomach.

FRIDAY.—4.30 P.M., Lecture XVI.:—Technique and Complications of Gastric Operations.

## Communications, Letters, &c., to the Editor have been received from—

- A.—Army Medical Service, Lond., Director-General of; Dr. H. W. Armit, Sydney.
- B.—Surg.-Commr. W. Bastian, R.N.; British Fire Prevention Committee, Lond.; Dr. E. C. Bousfield, Lond.; British Organotherapy Co., Lond.; Dr. D. T. Barry, Cork; British Federation of Medical and Allied Societies, Lond.; Dr. G. Blacker, Lond.; Dr. E. F. Barton, Lond.; Major W. Hyam, O.B.E.
- C.—Mr. B. F. Conolly, Lond.; Mr. F. B. Cornell, Whitley Bay; Dr. E. F. Cyrilax, Lond.; Mr. A. Crauf, Worthing; Charing Cross Hospital Medical School, Lond., Governors and Staff of.
- D.—Sir H. B. Donkin, Isleworth; Dr. P. W. Diack, Lond.
- E.—Dr. R. Eager, Exminster; Dr. J. Elliott, O.B.E., Chester; Dr. R. B. Eccles, Driffield.
- F.—Factories, Chief Inspector of, Lond.; Food Education Society, Lond., Hon. Sec. of.
- G.—Mr. H. T. Gray, Lond.; Dr. A. M. H. Gray, Lond.
- H.—Mrs. Hogarth, Quainton; Dr. C. T. W. Hirsch, Lond.; Dr. H. Head, Lond.
- I.—Dr. H. Illoway, New York.
- J.—Prof. F. W. Jones, Lond.
- K.—Dr. H. C. Kidd, Bromsgrove.
- L.—Dr. G. C. Low, Lond.; Mrs. O. Langmead, M.B., Lond.; Dr. R. B. Low, O.B., Lond.
- M.—Dr. F. H. Morison, Carlisle; Ministry of Health, Lond.; Major R. F. W. Mackenzie; Dr. C. S. Myers, Hatchingam; Mr. A. E. Mahood, Bristol; Dr. I. Moore, Lond.
- N.—Dr. H. P. Newsholme, Ripon; Dr. L. E. Napier, Reading; National Board, Young Women's Christian Association, New York.
- P.—Pharmaceutical Society of Great Britain, President, Vice-President, and Council of.
- R.—Dr. Roland, Paris; Lieut.-Col. Sir L. Rogers, I.M.S.; Dr. J. D. Rolleston, Lond.; Mrs. E. Riach, Lond.; Dr. W. C. Rivers, Worsboro' Dale; Mr. T. H. Robinson, Melton Constable.
- S.—St. Mary's Hospital Medical School, Lond., Medical Staff and Lecturers of; Dr. F. J. Steward, Lond.; Dr. W. C. Sullivan, Lond.; St. Marylebone General Dispensary, Sec. of.
- T.—Dr. D. Turner, Edinburgh; Major J. Taylor, R.A.M.C.
- V.—Dr. R. M. Vick, Lond.
- W.—Mr. L. J. Webb, Winchester; Mr. W. B. Woollam, Buxton; Dr. J. Wilson, Belfast.

Communications relating to editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C. 2.

## MANAGER'S NOTICES.

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Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

# Notes, Short Comments, and Answers to Correspondents.

## THE ECONOMICS OF NIGHT CALLS.

It was recently recorded in the obituary notice of a well-known north-country practitioner that throughout his long and active professional life he was able to attend to a series of night calls without deterioration of his day-time work. This ability must surely be passing with the brave age of heroes. The present-day practitioner is of commoner clay, and there must be few who do not experience some loss of attention or of interest in their work after a bite out of the night's sleep. The matter has its bearing, too, from the patient's point of view; a jaded doctor, even if, as we are assuming here, his night-watching is the result of professional engagements, is not worth as much as a fresh one. The Federation of Ratepayers Associations at Johannesburg recently discussed the question, debating whether suitable provision could not be made for procuring medical attention and medicines during the night time. Dr. E. P. Baumann, senior physician to the Johannesburg Hospital, attended by invitation to submit the point of view of medical practitioners. He urged that though the question of fees was a consideration it was not the primary one, and he suggested that some steps be taken to form a panel of junior practitioners to whom night work would be a welcome introduction to the public. His estimate that 99.9 per cent. of night calls were futile and not cases of necessity may have been intentionally picturesque, but he went on very justly to point out the physical strain of night calls upon a practitioner who had spent a busy day. A subcommittee was appointed to discuss the question with the local medical profession and to report to the Federation. Something instructive may come of it.

## "STAMMERING AND VOICE DEFECTS."

To the Editor of THE LANCET.

SIR,—With reference to Miss Emil Behnke's comment on the statement I made in my paper on the above subject in your issue of August 23rd, may I say that I think my meaning was rather misunderstood.

I know the late Mrs. Behnke's books on the subject well, and have in the past obtained valuable help from them. By saying that "stammering and functional voice defects have until recently been looked upon as unfortunate disabilities, and no real scientific attempt was made thoroughly to deal with such cases, and hence there was no recognised cure," I mean that stammering and functional voice defects have not until recently been regarded as an evidence of a disease which required specialised medical treatment in addition to specialised speech treatment. As a rule, stammering, &c., patients were sent to teachers of elocution or speech specialists—the cure being left to them entirely—and the symptom alone was treated. Now, however, it is generally accepted that the symptom—i.e., stammering, &c.—cannot permanently be cured until the underlying psychic cause has been dealt with, and this latter can only successfully be accomplished by those trained in psychological medicine. My paper, of course, only referred to functional and not to organic voice defects.

I am, Sir, yours faithfully,

Blackheath, S.E., Sept. 10th, 1919.

MABEL V. O. OSWALD.

## COLONIAL HEALTH REPORTS.

Basutoland.—The report on this territory for 1917-18 states that typhus fever, which had been prevalent for more than a year in certain districts of Cape Colony, appeared in August, 1917. The early cases were nearly all among the Tembu of the Quthing and Mohales Hoek districts. Later, cases occurred in the Qacha's Nek district. Energetic measures were at once taken to control the epidemic. Infected areas were strictly quarantined. Recruiting for mines and other purposes was prohibited in the southern districts and every means taken to discourage the movements of natives from one place to another. All infected huts were destroyed by fire, and clothing and other personal effects disinfected by boiling. The death-rate was high—about 50 per cent.—but this resulted in the people, who were thoroughly scared, co-operating actively with the authorities in enforcing quarantines. This would not have been the case had the disease been attended with a low mortality. From August 14th, when the first cases were noted, till Dec. 31st, there were 215 cases with 100 deaths. No Europeans were affected. There was no case of small-pox. A good many men suffering from malarial fever came under the notice of the medical officers.



They were all imported cases, chiefly returned general service boys from German East Africa. Syphilis is still very prevalent, and a proposal is under consideration to inaugurate free treatment for the disease. The general difficulty in dealing with the problem of syphilis in a native territory is the indifference of the people. Most cases have a non-venereal origin (only 16 cases of chancre were seen during the year); the initial lesion is often overlooked, mucous patches on the mouth follow, and the infection spreads from one member of a family to another, and whole villages may be rapidly infected. In a great many instances the secondary symptoms subside without treatment, but not before the patient has passed infection on to many others. Dysentery was again prevalent, but much milder in type than in recent years. There were a few cases of meningitis, mostly tubercular in origin. The general health of the community has been above the average. 1997 in-patients and 32,347 out-patients were treated at the Government hospitals and dispensaries. On April 1st, 1917, there were 181 male and 182 female inmates of the Leper Asylum, and during the year ended March 31st, 1918, 52 new cases were admitted. One patient was discharged as a possibly arrested case; there were 29 deaths and 8 births. Of 43 deserters all but two returned to the settlements. There has been an improvement in the general health of the inmates.

*Nyasaland.*—In 1917-18 the health of the Protectorate was not satisfactory owing to the extensive movement of natives necessitated by the military operations. Small-pox, which in the previous year was confined to the Dowa and Lilongwe districts, made its appearance in seven other areas. It was found impossible to entirely restrict the movements of natives with a view to checking the spread of the disease, as the increasing military demands for labour had to be made. Owing to the lack of medical officers sleeping sickness investigations had to be suspended. Twenty-eight cases of plague were reported from Karonga in the North Nyasa district, the outbreak being merely a continuance of the one reported in the previous year. The extermination of rats, inoculation, and other preventive measures which were adopted not only checked the local spread of the disease, but prevented its gaining an entry into other parts of the Protectorate. As in the case of plague, cerebro-spinal meningitis was introduced into Nyasaland from German East Africa. It was first observed among the native German prisoners of war who were sent to Zomba for internment. Sixty-seven cases were recorded during the year; the case mortality was high, but of the three Europeans who contracted the disease only one died. The number of Europeans resident, including officials and non-officials, but excluding the military, was 463 males and 215 females. The Asiatic population amounted to 422. The native population is estimated at 1,227,442—approximately 559,810 males and 667,632 females.

#### NOCTURNAL ENURESIS.

To the Editor of THE LANCET.

SIR,—Can any of your readers suggest treatment for a boy, aged 9, who suffers from incontinence of urine both by day and night? By constant supervision—telling him to pass water every two hours or so—he can be kept dry. He apparently has no "call" when the bladder is full, as he has been known to declare that he did not wish to pass water during the very act of micturition, he not being aware of the fact that he was passing water. He is a well-nourished and apparently healthy boy except that he is a had stammerer.

I am, Sir, yours faithfully,

9, Welbeck-street, Cavendish-square, W. 1,  
Sept. 10th, 1919.

F. ST. J. S.

#### OCULIST AND OPTICIAN.

THE following letter, signed "F.," appears in the *Times* of Sept. 10th:—

"Even more important than opticians' prices is the verification of opticians' work. My oculist ordered me a change of lenses. I took the prescription to an optician of repute, recommended by my oculist, but the new glasses, luckily for me, pained my eyes, and I went back to the oculist. He found, to his intense indignation, that the prescription had been incorrectly carried out. The optician made the usual excuse of war conditions, and later had the impudence to send me an additional bill for putting the glasses right, which of course I flatly refused to pay. There should be a regular system of verification. Without it the skill of the oculist may be all in vain, and the patient's eyes may suffer irreparable injury. It would be a little more trouble for the oculist to see his patient again, but he would sometimes be as surprised and indignant as my friend was."

We have had occasion to point out that the work of the ophthalmologist may be entirely disorganised by a lack of conscience or knowledge on the part of the optician, adding that in our experience most opticians do their work, as such, extremely well. The real message to the public contained in "F.'s" letter is that it is dangerous to resort to the optician for a prescription for glasses. In "F.'s" case, by falling back on the qualified ophthalmologist, the source of his trouble was detected. A rejoinder to "F.'s" letter appeared on the

following day in which the pertinent warning is given that some opticians are not to be trusted, though others are excellent scientific workers.

#### THE SURGEON AND HIS FAMILY.

THE *patria potestas* was accurately defined by the Roman Code, but in modern civilisation the duties and privileges of the father of the family towards his own household are determined rather by broad views of equity and by the force of accumulated public opinion than by statute. Many of these duties are common to all ranks of society and to all kinds of occupation, but there are special privileges attaching to fathers who possess special qualifications. The schoolmaster helps his son at home with his school lessons; the hoo-maker patches the shoes which otherwise go out to be done; the public hygienist exerts in his private family that special supervision in the prevention of disease for which his larger experience qualifies him. It would be absurd to exclude the surgeon from the position of special helpfulness to his own household. The question has been recently discussed in the daily press in the light of a tragic incident. The scanty story relates to a man who, after receiving serious injuries in a shooting accident, was taken to a county hospital where his father, a consulting surgeon, performed an operation upon him, but was unable to save his son's life. No details were given in regard to the urgency of surgical intervention nor what opportunity of assistance or consultation were open to the surgeon. But on general grounds the propriety of a father operating upon his son has been apparently called in question. The argument seems to rest upon the assumption that a surgeon in the position of a near relative cannot offer to his patient the same skill which he could give to a stranger. It overlooks the fact that the whole course of medical training is directed towards transforming the emotion of pity into the instinct of helpfulness. Were this mutation incomplete no medical man would trust himself to be arbiter of human life at all. To the surgeon his art has no affective tone. Blood is simply a corpuscular fluid with certain chemical and physical properties. Small casualties occurring in the house of the medical practitioner are, of course, dealt with as a matter of ordinary routine, the more so probably as the medical man suffers under the disability of not being allowed, in most instances, to pay the colleague whom he calls in. On this account, as well as for convenience, the practitioner frequently gives the anaesthetic to any member of his family when a larger surgical intervention is needed. What is to be regarded as a major operation depends on the skill of the surgeon. In a report recently received from a hospital in India paracentesis abdominis and curettage are classed as such. The hospital surgeon in this country possesses the skill which makes the so-called major operation to him an ordinary everyday task. To deprive him of the privilege of offering his services to members of his family in urgent need would be stupid; his call is often no less clear than that of Abraham to use the knife on his own son.

#### A TAR-SPRAYING FATALITY.

THE death is reported from pustular dermatitis of a labourer employed in tar-spraying the road. It is stated that some of the tar spray came into contact with his face and neck. Inflammatory conditions of the skin have been known to he set up amongst the workers engaged on moulding pitch into "patent fuel," and pitch, of course, is related to tar. "Pitch cancer" was a matter of inquiry by the Home Office some years ago, and certain protective measures were recommended which the manufacturers agreed to adopt (vide THE LANCET, Sept. 6th, 1913). It seems desirable that similar precautions should be taken by tar-pavers, particularly as the process is conducted on a very large scale on our roadways.

#### RHEUMATOID ARTHRITIS OF THE SPINE.

Spes writes:—I have a patient who suffers severe pain which I can only relieve by morphia injections—everything else tried has failed to alleviate. Can anyone who has had similar cases give me any help by suggestions?

J. B. D.—It is usual in cities (and a commendable practice) to carry out the work of cleaning and tidying the streets in the small hours of the morning when the traffic is at its lowest.

Temp. Major.—Temporary officers of the Royal Army Medical Corps are not entitled to any gratuity on demobilisation other than the bonus of £60 a year granted to them under the terms of their contract, except in the case of those who have for a period of six months or longer held acting rank higher than that of Captain, and have drawn the Army pay and allowances of the higher rank, in which case they are awarded the gratuity equal to that allowed under Article 497 of the Royal Warrant, less any gratuity which may have already been drawn under the provisions as set forth in the contract for the award of £60 on completion of each year's service.



# Presidential Address

ON

## THE DIFFERENTIATION OF MANKIND INTO RACIAL TYPES.

*Delivered before the Anthropological Section of the British Association for the Advancement of Science*

BY PROF. ARTHUR KEITH, M.D. ABERD.,  
LL.D., F.R.S.,

HUNTERIAN PROFESSOR AND CONSERVATOR OF THE MUSEUM, ROYAL  
COLLEGE OF SURGEONS OF ENGLAND.

LADIES AND GENTLEMEN,—For a brief half-hour I am to try and engage your attention on a matter which has excited the interest of thoughtful minds from ancient times—the problem of how mankind has been demarcated into types so diverse as the Negro, the Mongol, and the Caucasian or European.

### EXPLANATIONS, ANCIENT AND MODERN.

For many a day the Mosaic explanation—the tower of Babel theory—was regarded as a sufficient solution of this difficult problem. In these times most of us have adopted an explanation which differs in many respects from that put forward in the book of Genesis; Noah disappears from our theory and is replaced in the dim distance of time by a “common ancestral stock.”

Our story now commences, not at the close of a historical flood, but at the end of a geological epoch so distant from us that we cannot compute its date with any degree of accuracy. Shem, Ham, and Japheth, the reputed ancestors of the three great racial stocks of modern times—the white, black, and yellow distinctive types of mankind—have also disappeared from our speculations; we no longer look out on the world and believe that the patterns which stud the variegated carpet of humanity were all woven at the same time; some of the patterns, we believe, are of ancient date and have retained many of the features which marked the “common ancestral” design; others are of more recent date, having the ancient pattern altered in many of its details.

We have called in, as Darwin has taught us, the whole machinery of evolution—struggle for existence, survival of the fittest, spontaneous origin of structural variations, the inheritance of such variations—as the loom by which Nature fashions her biological patterns. We have replaced the creative finger by the evolutionary machine, but no one is more conscious of the limitations of that machine than the student of human races.

We are all familiar with the features of that racial human type which clusters round the heart of Africa; we recognise the Negro at a glance by his black, shining, hairless skin, his crisp hair, his flattened nose, his widely opened dark eyes, his heavily moulded lips, his gleaming teeth and strong jaws. He has a carriage and proportion of body of his own; he has his peculiar quality of voice and action of brain. He is, even to the unpractised eye, clearly different from the Mongolian native of North-Eastern Asia; the skin, the hair, the eyes, the quality of brain and voice, the carriage of body and proportion of limb to body pick out the Mongol as a sharply differentiated human type. Different from either of these is the native of Central Europe—the Aryan or Caucasian type of man; we know him by the paleness of his skin and by his facial features—particularly his narrow, prominent nose and thin lips. We are so accustomed to the prominence of the Caucasian nose that only a Mongol or Negro can appreciate its singularity in our aryanised world. When we ask how these three types—the European, Chinaman, and Negro—came by their distinctive features, we find that our evolutionary machine is defective; the processes of natural and of sexual selection will preserve and exaggerate traits of body and of mind, but they cannot produce that complex of features which marks off one racial type from another. Nature has at her command some secret mechanism by which she works out her new patterns in the bodies of man and beast—a mechanism of which we were almost ignorant in Darwin's day, but which we are now beginning to perceive and dimly understand. It is the bearing of this creative or morphogenetic mechanism on the evolution of the modern races of mankind which I propose to make the subject of my address.

No. 5013

### THE ENDOCRINE GLANDS AS GROWTH-CONTROLLING STRUCTURES.

Hidden away in various parts of the human frame is a series of more or less obscure bodies or glands, five in number, which, in recent times, we have come to recognise as parts of the machinery which regulate the growth of the body. They form merely a fraction of the body—not more than 1/180th part of it; a man might pack the entire series in his watch-pocket. The modern medical student is familiar with each one of them—the pituitary body, about the size of a ripe cherry, attached to the base of the brain and cradled in the floor of the skull; the pineal gland, also situated in the brain, and in point of size but little larger than a wheat-grain; the thyroid in the neck, set astride the windpipe, forms a more bulky mass; the two suprarenal bodies situated in the belly, capping the kidneys, and the interstitial glands embedded within the substance of the testicle and ovary, complete the list. The modern physician is also familiar with the fact that the growth of the body may be retarded, accelerated, or completely altered if one or more of these glands become the seat of injury or of a functional disorder.

### Acromegaly and Giantism.

It is 33 years now since first one woman and then another came to Dr. Pierre Marie in Paris seeking relief from a persistent headache, and mentioning incidentally that their faces, bodies, hands, and feet had altered so much in recent years that their best known friends failed to recognise them. That incident marked the commencement of our knowledge of the pituitary gland as an intrinsic part of the machinery which regulates the shaping of our bodies and features. Dr. Marie named the condition acromegaly. Since then hundreds of men and women showing symptoms similar to those of Dr. Marie's patients have been seen and diagnosed, and in every instance where the acromegalic changes were typical and marked there has been found a definite enlargement or tumour of the pituitary body. The practised eye recognises the full-blown condition of acromegaly at a glance, so characteristic are the features of the sufferers. Nay, as we walk along the streets we can note slight degrees of it—degrees which fall far short of the border-line of disease; we note that it may give characteristic traits to a whole family—a family marked by what may be named an acromegalic taint.

The pituitary gland is also concerned in another disturbance of growth—giantism. In every case where a young lad has shot up, during his late “teens,” into a lanky man of seven feet or more—has become a giant—it has been found that his pituitary gland was the site of a disordered enlargement. The pituitary is part of the mechanism which regulates our stature, and stature is a racial characteristic. The giant is usually acromegalic as well as tall, but the two conditions need not be combined; a young lad may undergo the bodily changes which characterise acromegaly and yet not become abnormally tall, or he may become—although this is rarely the case—a giant in stature and yet may not assume acromegalic features.

There is a third condition of disordered growth in which the pituitary is concerned—one in which the length of the limbs is disproportionately increased—in which the sexual system and all the secondary sexual characters of body and mind either fail to develop or disappear—where fat tends to be deposited on the body, particularly over the buttocks and thighs—where, in brief, a eunuchoid condition of body develops.

In all of these three conditions we seem to be dealing with a disordered and exaggerated action of the pituitary gland; there must be conditions of an opposite kind where the functions of the pituitary are disordered and reduced. A number of cases of dwarfism have been recorded where boys or girls retained their boyhood or girlhood throughout life, apparently because their pituitary gland had been invaded and partly destroyed by tumours. We shall see that dwarfism may result also from a failure of the thyroid gland. On the evidence at our disposal, evidence which is being rapidly augmented, we are justified in regarding the pituitary gland as one of the principal pinions in the machinery which regulates the growth of the human body and is directly concerned in determining stature, cast of features, texture of skin, and character of hair—all of them marks of race. When we compare the three chief racial types of humanity—the Negro, the Mongol, and the Caucasian or European—we can recognise in the last named a greater predominance



of the pituitary than in the other two. The sharp and pronounced nasalisation of the face, the tendency to strong eyebrow ridges, the prominent chin, the tendency to bulk of body and height of stature in the majority of Europeans, are best explained, so far as the present state of our knowledge goes, in terms of pituitary function.

#### *The Genital Glands in Relation to Growth.*

There is no question that our interest in the mechanism of growth has been quickened in recent years by observations and discoveries made by physicians on men and women who suffered from pituitary disorders, but that a small part of the body could influence and regulate the growth and characterisation of the whole was known in ancient times. For many centuries it has been common knowledge that the removal of the genital glands alters the external form and internal nature of man and beast. The sooner the operation is performed after birth the more certain are its effects. Were a naturalist from a unisexual world to visit this earth of ours it would be difficult to convince him that a brother and a sister were of the same species, or that the wrinkled, sallow-visaged eunuch with his beardless face, his long tapering limbs, his hesitating carriage, his carping outlook and corpulent body, was brother to the thick-set, robust, pugilistic man with the bearded face.

The discovery that the testicle and ovary contain, scattered throughout their substance, a small glandular element which has nothing to do with their main function—the production of genital cells—was made 70 years ago, but the evidence which leads us to believe that this scattered element—the interstitial gland—is directly concerned in the mechanism of growth is of quite recent date. All those changes which we may observe in the girl or boy at puberty—the phase of growth which brings into full prominence their racial characteristics—depend on the action of the interstitial glands. If they are removed or remain in abeyance the maturation of the body is both prolonged and altered. In seeking for the mechanism which shapes mankind into races we must take the interstitial gland into our reckoning. I am of opinion that the sexual differentiation—the robust manifestations of the male characters—is more emphatic in the Caucasian than in either the Mongol or Negro racial types. In both Mongol and Negro, in their most representative form, we find a beardless face and almost hairless body, and in certain Negro types, especially in Nilotic tribes, with their long, stork-like legs, we seem to have a manifestation of abeyance in the action of the interstitial glands. At the close of sexual life we often see the features of a woman assume a coarser and more masculine appearance.

#### *The Suprarenal Bodies.*

Associated with the interstitial glands, at least in point of development, are the suprarenal bodies or glands. Our knowledge that these two comparatively small structures, no larger than the segments into which a moderately sized orange can be separated, are connected with pigmentation of the skin dates back to 1894, when Dr. Thomas Addison, a physician to Guy's Hospital, London, observed that gradual destruction of these bodies by disease led to a darkening or pigmentation of the patient's skin, besides giving rise to other more severe changes and symptoms. Now it is 150 years since John Hunter came to the conclusion, on the evidence then at his disposal, that the original colour of man's skin was black, and all the knowledge that we have gathered since his time supports the inference he drew. From the fact that pigment begins to collect in and thus darken the skin when the suprarenal bodies become the seat of a destructive disease we infer that they have to do with the clearing away of pigment, and that we Europeans owe the fairness of our skins to some particular virtue resident in the suprarenal bodies.

That their function is complex and multiple the researches of Sharpey-Schafer, of T. R. Elliott, and of W. B. Cannon have made very evident. Fifteen years ago Bulloch and Sequeira established the fact that when a suprarenal body becomes the site of a peculiar form of malignant overgrowth in childhood the body of the boy or girl undergoes certain extraordinary growth changes. The sexual organs became rapidly mature, and through the framework of childhood burst all the features of sexual maturity—the full chest, muscularity of limbs, bass voice, bearded face,

and hairy body—a miniature Hercules—a miracle of transformation in body and brain. Corresponding changes occur in young girls—almost infants in years—with a tendency to assume features which characterise the male. Professor E. E. Glynn<sup>1</sup> has recently collected such cases and systematised our knowledge of these strange derangements of growth.

There can be no doubt that the suprarenal bodies constitute an important part of the mechanism which regulates the development and growth of the human body and helps in determining the racial characters of mankind. We know that certain races come more quickly to sexual maturity than others, and that races vary in development of hair and of pigment, and it is therefore reasonable to expect a satisfactory explanation of these characters when we have come by a more complete knowledge of the suprarenal mechanism.

#### *The Pineal Gland.*

During the last few years the totally unexpected discovery has been sprung upon us that disease of the minute pineal gland of the brain may give rise to a train of symptoms very similar to those which follow tumour formation of the cortex of the suprarenal bodies. In some instances the sudden sexual prematurity which occurs in childhood is apparently the immediate result of a tumour-like affection of the pineal gland. We have hitherto regarded the pineal gland, little bigger than a wheat-grain and buried deeply in the brain, as a mere useless vestige of a median or parietal eye, derived from some distant human ancestor in whom that eye was functional, but on the clinical and experimental evidence now rapidly accumulating we must assign to it a place in the machinery which controls the growth of the body.

#### *The Thyroid Gland.*

We come now to deal with the thyroid gland, which, from an anthropological point of view, must be regarded as the most important of all the organs or glands of internal secretion. Here, too, in connexion with the thyroid gland, which is situated in the front of the neck, where it is so apt to become enlarged and prominent in women—I must call attention to a generalisation which I slipped over when speaking of the pituitary and suprarenal glands. Each of these glands throws into the circulating blood two sets of substances—one set to act immediately in tuning the parts of the body which are not under the influence of the will to the work they have to do when the body is at rest and when it is making an effort. Another set of substances—which Professor Gley has named morphogenetic—has not an immediate but a remote effect; they regulate the development and coördinate the growth of the various parts of the body.

Now, so far as the immediate function of the thyroid is concerned, our present knowledge points to the gland as the manufactory of a substance which, when circulating in the body, regulates the rate of combustion of the tissues. When we make a muscular effort, or when our bodies are exposed to cold, or when we become the subjects of infection, the thyroid is called upon to assist in mobilising all available tissue-fuel. If we consider only its immediate function it is clear that the thyroid is connected with the selection and survival of human races. When, however, we consider its remote or morphogenetic effects on growth its importance as a factor in shaping the characteristics of human races becomes even more evident. In districts where the thyroid is liable to that form of disease known as goitre it has been known for many a year that children who were affected became cretins—dwarf idiots with a very characteristic appearance of face and body.<sup>2</sup>

Disease of the thyroid stunts and alters the growth of the body, so that the subjects of this disorder might well be classed as a separate species of humanity. If the thyroid becomes diseased and defective after growth of the body is completed, then certain changes, first observed by Sir William Gull in 1873, are set up and give rise to the disordered state of the body known as myxœdema. "In this state," says Sir Malcom Morris,<sup>3</sup> "the skin is cold, dry and rough, seldom or never perspires, and may take on a yellowish tint; there is a bright-red flush in the malar

<sup>1</sup> Quart. Journ. of Med., 1912, vol. v., p. 157.

<sup>2</sup> The story of the discovery of the action of the thyroid gland is told by Professor G. M. Murray, Brit. Med. Jour., 1913, ii., 163.

<sup>3</sup> Brit. Med. Jour., 1913, i., 1035.



region. The skin as a whole looks transparent; the hair of the scalp becomes scanty; the pubic and axillary hair, with the eyelashes and eyebrows, often falls out; in many cases the teeth are brittle and carious. All these appearances disappear under the administration of thyroid extract."

We have here conclusive evidence that the thyroid acts directly on the skin and hair, just the structures we employ in the classification of human races. The influence of the thyroid on the development of the other systems of the body, particularly on the growth of the skull and skeleton, is equally profound. This is particularly the case as regards the base of the skull and the nose. The arrest of growth falls mainly on the basal part of the skull, with the result that the root of the nose appears to be flattened and drawn backwards between the eyes, the upper forehead seems projecting or bulging, the face appears flattened, and the bony scaffolding of the nose, particularly when compared to the prominence of the jaws, is greatly reduced.

Now these facial features which I have enumerated give the Mongolian face its characteristic aspect, and, to a lesser degree, they are also to be traced in the features of the Negro. Indeed, in one aberrant branch of the Negro race—the Bushman of South Africa—the thyroid facies is even more emphatically brought out than in the most typical Mongol. You will observe that, in my opinion, the thyroid—or a reduction or alteration in the activity of the thyroid—has been a factor in determining some of the racial characteristics of the Mongol and the Negro races. I know of a telling piece of evidence which supports this thesis. Some years ago there died in the East End of London a Chinese giant—the subject, we must suppose, of an excessive action of the pituitary gland—the gland which I regard as playing a predominant part in shaping the face and bodily form of the European. The skeleton of this giant was prepared and placed in the museum of the London Hospital Medical College by Colonel T. H. Openshaw, and any one inspecting this skeleton can see that, although certain Chinese features are still recognisable, the nasal region and the supra-orbital ridges of the face have assumed the more prominent European type.

#### *Achondroplasia and Mongolism.*

There are two peculiar and very definite forms of dwarfism with which most people are familiar, both of which must be regarded as due to a defect in the growth regulating mechanism of the thyroid. Now, one of these forms of dwarfism is known to medical men as achondroplasia, because the growth of cartilage is particularly affected, but in familiar language we may speak of the sufferers from this disorder of growth as being of the "bulldog breed" or of the "dachshund breed." In the dachshund the limbs are greatly shortened and gnarled, but the nose or snout suffers no reduction, while in the bulldog the nose and nasal part of the face are greatly reduced and withdrawn, showing an exaggerated degree of Mongolism. Among achondroplastic human dwarfs both breeds occur, but the "bulldog" form is much more common than the "dachshund" type. The shortening of limbs with retraction of the nasal region of the face—pug-face or prosopia we may call the condition—has a very direct interest for anthropologists, seeing that short limbs and a long trunk are well-recognised racial characteristics of the Mongol.

In the second kind of dwarfism, which we have reason to regard as due to a functional defect of the thyroid, the Mongolian traits are so apparent that the sufferers from this disorder are known to medical men as "Mongolian idiots," for not only is their growth stunted, but their brains also act in a peculiar and aberrant manner. Dr. Langdon Down, who gave the subjects of this peculiar disorder the name "Mongolian idiots" 55 years ago, knew nothing of the modern doctrine of internal secretions, but that doctrine has been applied in recent years by Dr. F. G. Crookshank<sup>1</sup> to explain the features and condition of Mongoloid imbecile children.

Some years ago<sup>2</sup> I brought forward evidence to show that we could best explain the various forms of anthropoid apes by applying the modern doctrine of a growth-controlling glandular mechanism. In the gorilla we see the effects of a predominance of the pituitary elements; in the orang, of the thyroid. The late Professor Klaatsch tried to account for the superficial resemblances between the Malay and the

orang by postulating a genetic relationship between them; for a similar reason he derived the Negro type from a gorilline ancestry. Occasionally we see a man or woman of supposedly pure European ancestry displaying definite Mongoloid traits in their features.

We have been in the habit of accounting for such manifestations by the theory, at one time very popular, that a Mongoloid race had at one time spread over Europe, and that Mongoloid traits were atavistic recurrences. An examination of the human remains of ancient Europe yields no evidence in support of a Turanian or Mongol invasion of Europe.

#### THE MECHANISM OF THE CONTROL OF GROWTH.

All of these manifestations to which I have been calling your attention—the sporadic manifestation of Mongoloid characters in diseased children and in healthy adult Europeans, the generic characters which separate one kind of ape from another, the bodily and mental features which mark the various races of mankind—are best explained by the theory I am supporting—namely, that the conformation of man and ape and of every vertebrate animal is determined by a common growth-controlling mechanism which is resident in a system of small but complex glandular organs. We must now look somewhat more closely into the manner in which this growth-regulating mechanism actually works.

That we can do best by taking a glimpse of a research carried out by Bayliss and Starling in the opening years of the present century. They were seeking to explain why it was that the pancreas poured out its digestive juice as soon as the contents of the stomach commenced to pass into the first part of the duodenum. It was then known that if acid was applied to the lining epithelial membrane of the duodenum, the pancreas commenced to work; it was known also that the message which set the pancreas into operation was not conveyed from the duodenum to the pancreas by nerves, for when they were cut the mechanism was still effective. Bayliss and Starling solved the puzzle by making an emulsion from the acid-soaked lining epithelium of the duodenum and injecting the extract of that emulsion into the circulating blood. The result was that the pancreas was immediately thrown into activity. The particular substance which was thus set circulating in the blood and acted on the pancreas and on the pancreas alone, and which thus served as a messenger or hormone, they named secretin. They not only cleared up the mechanism of pancreatic secretion, but at the same time made a discovery of much greater importance. They had discovered a new method whereby one part of the human body could communicate with and control another.

#### *The Theory of Hormones.*

Up to that time we had been like an outlandish visitor to a strange city, who believed that the visible telegraph or telephone wires were the only means of communication between its inhabitants. We believed that it was only by nerve fibres that intercommunication was established in the animal body. Bayliss and Starling showed that there was a postal system. Missives posted in the general circulation were duly delivered at their destinations. The manner in which they reached the right address is of particular importance for us; we must suppose that the missive or hormone circulating in the blood and the recipient for which they are intended have a special attraction or affinity for each other—one due to their physical constitution—and hence they, and only they, come together as the blood circulates round the body.

Secretin is a hormone which effects its errand rapidly and immediately, whereas the growth or morphogenetic hormones, thrown into the circulation by the pituitary, pineal, thyroid, suprarenals, and genital glands, act slowly and remotely. But both are alike in this: the result depends not only on the nature of the hormone or missive, but also on the state of the local recipient. The local recipient may be specially greedy, as it were, and seize more than a fair share of the manna in circulation, or it may have "sticky fingers" and seize what is not really intended for local consumption.

We can see that local growth—the development of a particular trait or feature—is dependent not only on the hormones supplied to that part, but also on the condition of the receptive mechanism of the part. Hence we can understand a local derangement of growth—an acromegaly or gigantism confined to a finger or to the eyebrow ridges, to the nose, to one side of the face, and such local manifestations

<sup>1</sup> The Universal Medical Record, 1913, vol. iii., 12.

<sup>2</sup> Jour. of Anat. and Physiol., 1913.



are not uncommon. It is by a variation in the sensitiveness of the local recipient that we have an explanation of the endless variety to be found in the relative development of racial and individual features.

#### *Regulation of Muscular Effort.*

Some ten years after Starling had formulated the theory of hormones Professor W. B. Cannon, of Harvard University, piecing together the results of researches by Dr. T. R. Elliott and by himself on the action of the suprarenal glands, brought to light a very wonderful hormone mechanism—one which helps us in interpreting the action of growth-regulating hormones. When we are about to make a severe bodily effort it is necessary to flood our muscles with blood, so that they may have at their disposal the materials necessary for work—oxygen and blood-sugar—the fuel of muscular engines.

At the beginning of a muscular effort the suprarenal glands are set going by messages passing to them from the central nervous system; they throw a hormone—adrenalin—into the circulating blood, which has a double effect; adrenalin acts on the flood-gates of the circulation, so that the major supply of blood passes to the muscles. At the same time it so acts on the liver that the blood circulating through that great organ becomes laden with blood-sugar.

We here obtain a glimpse of the neat and effective manner in which hormones are utilised in the economy of the living body. From that glimpse we seem to obtain a clue to that remarkable disorder of growth in the human body known as acromegaly. It is a pathological manifestation of an adaptational mechanism with which we are all familiar. Nothing is better known to us than that our bodies respond to the burden they are made to bear. Our muscles increase in size and strength the more we use them; increase in the size of our muscles would be useless unless our bones also were strengthened to a corresponding degree. A greater blood-supply is required to feed them, and hence the power of the heart has to be augmented; more oxygen is needed for their consumption, and hence the lung capacity has to be increased; more fuel is required—hence the whole digestive and assimilative systems have to undergo a hypertrophy, including the apparatus of mastication.

Such a power of coördinated response on the part of all of the organs of the body to meet the needs of athletic training, presupposes a coördinating mechanism. We have always regarded such a power of response as an inherent property of the living body, but in the light of our growing knowledge it is clear that we are here dealing with a hormonal mechanism, one in which the pituitary gland is primarily concerned.

#### *Production of Acromegaly.*

When we study the structural changes which take place in the first phase of acromegaly,<sup>8</sup> we find that not only are the bones enlarged and overgrown in a peculiar way, but so are the muscles, the heart, the lungs, the organs of digestion, particularly the jaws; hence the marked changes in the face, for the form of the face is determined by the development of the upper and lower jaws. The rational interpretation of acromegaly is that it is a pathological disorder of the mechanism of adaptational response; in the healthy body the pituitary is throwing into the circulation just a sufficiency of a growth-regulating substance to sensitise muscles, bones, and other structures to give a normal response to the burden thrown on the body. But in acromegaly the body is so flooded with this substance that its tissues become hypersensitive and respond by overgrowth to efforts and movements of the slightest degree. It is not too much to expect, when we see how the body and features become transformed at the onset of acromegaly, that a fuller knowledge of these growth mechanisms will give us a clue to the principles of race differentiation.

#### THE PATH OF FUTURE INQUIRY.

There must be many other mechanisms regulated by hormones with which we are as yet totally unacquainted. I will cite only one instance—that concerned in regulating the temperature of the body. We know that the thyroid and also the suprarenal glands are concerned in this mechanism; they have also to do with the deposition and absorption of pigment in the skin, which must be part of the heat-regulating mechanism. It is along such a path of inquiry that we expect to discover a clue to the question of race colour.

This is not the first occasion in which the doctrine of hormones has been applied to biological problems of the British Association. In his Presidential address to the Zoological Section at Sheffield in 1910 Professor G. C. Bourne applied the theory to the problems of evolution: its bearing was examined in more detail in an address to the same section by Professor Arthur Dendy during the meeting at Portsmouth in 1911. At the meeting of the Association at Newcastle in 1916 Professor MacBride devoted part of his address to the morphogenetic bearings of hormones. Very soon after Starling formulated the hormone theory, Dr. J. T. Cunningham applied it to explain the phenomena of heredity.<sup>7</sup> Nay, rightly conceived, Darwin's theory of Pan-genesis is very much of the same character as the modern theory of hormones.

## "HETEROSEROTHERAPY" IN PULMONARY TUBERCULOSIS.

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AN attack of acute pleurisy with serous effusion occurring in the course of chronic pulmonary tuberculosis, with subsequent spontaneous absorption of the effused fluid, is followed not infrequently by a prolonged period of improved health and a marked amelioration of pre-existing symptoms. This improvement has been ascribed to the mechanical action of the effusion in compressing and immobilising the subjacent lung, an action comparable to that of gas artificially introduced into the pleural cavity for this purpose or to that of the accumulated serous fluid in a case of hydro-pneumothorax. This explanation seems doubtful in view of the fact that the duration of an intercurrent attack of pleurisy with effusion is usually limited to a period of three weeks, sometimes less. It entirely fails to explain the improvement witnessed in those cases where the effusion has occurred on the side of the sounder or (in instances of unilateral disease) the apparently sound lung.

Of late years the treatment of tuberculous serous pleural effusion has become more conservative and paracentesis is reserved by many for those cases where the accumulated fluid is dangerous in virtue of its bulk or where natural absorption is unduly delayed. In fact, it is becoming recognised that the patient gains "something" from his effusion; it is difficult to be more explicit.

One of us (W. O. M.)<sup>1</sup> has pointed out elsewhere that the amount of specific antibody (as estimated by means of the "complement-fixation reaction") in the blood-serum of a consumptive individual may show marked fluctuations during an intercurrent attack of acute pleurisy with effusion. R. C. Paterson,<sup>2</sup> whose work throws fresh light on the subject of the tuberculous serous effusion, concludes that "clinical pleural effusions are caused by the infection of an allergic pleura." V. Gilbert<sup>3</sup> of Geneva, in 1896, published details of the treatment of sero-fibrinous pleurisy by "autoserotherapy." He advocated the withdrawal of a small amount of fluid from the pleural cavity and the inoculation of 2 c.cm. into the patient's own subcutaneous tissue. He stated that this procedure was followed by (a) a reaction evidenced by a transient rise of temperature of 1°-2°, (b) increased diuresis with a fall of temperature, and (c) rapid absorption of the effusion in from six to ten days. A. Jousset,<sup>4</sup> in 1912, while not admitting the value of "autoserotherapy," suggested the employment of "heteroserotherapy" in the treatment of chronic tuberculous pleurisy, stating that tuberculous pleural effusion fluid may be protective to guinea-pigs. He recommended that the fluid withdrawn from cases of acute serofibrinous pleurisy should be allowed to clot and the serum be pipetted off and sterilised by heating to 55° C. on three successive days. This sterile serum was to be employed in doses of from 20-50 g., by subcutaneous inoculation, in the treatment of other patients suffering from chronic tuberculous pleurisy.

<sup>8</sup> See Keith, THE LANCET, 1911, II., 993; 1913, I., 305.

<sup>7</sup> Dr. J. T. Cunningham, Proc. Zoo. Soc., London, 1908, p. 434.



*Details of Treatment.*

In 1917-18 we employed the method of "heterosero-therapy" in the treatment of a few cases of pulmonary tuberculosis. The following is a brief account of our experience:

*Source of the tuberculous effusion fluid employed.*—Fluid from five cases of pleurisy was used: (a) Two cases of "primary" tuberculous pleurisy with effusion, from the wards of St. Thomas's Hospital, diagnosed on clinical grounds and on cytological examination of the aspirated fluid. (b) Three cases of acute pleurisy with effusion complicating "open" pulmonary tuberculosis in patients at the Frimley Sanatorium.

*Collection and preparation of the fluid.*—The effused fluid was withdrawn from the "donors'" chests by the usual method, with aseptic precautions, into flasks containing a 2 per cent. solution of sodium citrate in normal saline, the final proportion of pleural fluid to citrated saline being roughly as 3 to 1. The fluid was examined cytologically, and in some instances a rough estimation of the number of lymphocytes to the cubic centimetre was made. Sterilisation was effected by adding to the fluid one-tenth its volume of a 5 per cent. solution of carbolic acid, the addition being made gradually with constant stirring. Even so, some coagulum forms, but it is small in amount and, if the fluid is shaken before use, the slight flocculent deposit is insufficient to block a moderately stout hypodermic needle. Finally, the fluid was stored in the cold in convenient hermetically sealed vessels. From the above it will be seen that all the constituents of an unbeat effusion were employed for inoculation.

*Dosage.*—The fluid was administered by inoculation into the subcutaneous tissues. For obvious reasons the initial dose was small (1-2 c.cm.). The amount was increased gradually up to 10, 15, or even 25 c.cm. At the commencement of a course of injections they were given twice or three times weekly; when the larger doses were reached, as a rule at weekly intervals. The injections never caused any disquieting symptoms. Occasionally a transient small rise was noted in the evening temperature on the day of administration. This occurred with some regularity in Case C alone of the eight cases treated. In another instance, where the temperature had fallen to normal during treatment, a dose was sometimes followed by an evening temperature of 99° F. In no instance was a sudden marked rise of temperature, comparable to that produced by an overdose of tuberculin, witnessed. Where improvement in the patient's condition coincided with the administration of the pleural fluid, it was most marked when a dose of about 10 c.cm. had been reached.

*Selection of cases for treatment.*—As will be seen from the subjoined clinical abstracts, all the cases treated, with the exception of D, had extensive active disease of the lungs, and in all, with the same exception, the outlook seemed very grave. The patients, C, G, and H appeared to us to be moribund at the time treatment was commenced. All, except Case C, were undergoing sanatorium treatment at the Frimley Sanatorium and had been there for some months previous to the administration of the pleural fluid. In every instance tubercle bacilli were present in the patient's sputum.

*Details of Cases Treated.*

(A) Male, 39, eight years' history. Admitted June 6th, 1917. Extensive active bilateral disease and extensive laryngeal ulceration. Evening temperature 100°-101° F. Very distressing laryngeal symptoms. Rest in bed for two months effected no improvement, and his condition steadily deteriorated. On August 13th injections of pleural fluid were commenced with a dose of 1 c.cm. gradually increased up to 15 c.cm. by the end of September and continued until Oct. 16th, when they were omitted. During this period the temperature fell gradually and remained about normal, the laryngeal symptoms disappeared in a remarkable manner, the patient gained some weight and was well enough to be up and about. His condition remained satisfactory until Nov. 22nd, when the temperature again rose to 100° F. Injections of 10 c.cm. of pleural fluid were recommenced and continued until the patient was discharged on May 8th, 1918. During the second course of injections the temperature fell rapidly and remained satisfactory, not reaching 100° F. again, and only twice exceeding 99° F. He returned to light work at his home and reported in August, 1919, that he had been constantly at work with continued improvement in his health.

(B) Male, 21, 12 months' history. Signs of active disease throughout the right lung, with infiltration of the upper lobe of the left lung. Admitted May 2nd, 1917. Evening temperature about 100° F. After 10 weeks' rest in bed the general condition showed no improvement and the temperature was higher. On July 19th a right-sided artificial pneumothorax was induced, and compression of the lung kept up until August 24th. The lung collapsed readily, and the pneumothorax was apparently complete. (No X ray examination.) This having no effect upon the pyrexia or other symptoms, injections of pleural fluid (1 c.cm.) were commenced on August 13th. The amount was increased gradually up to 25 c.cm. on Nov. 5th, on which date the injections were discontinued. The temperature began to fall when a dose of 7 c.cm. was reached, and after a few doses of 10 c.cm. rapidly assumed a more favourable type, being practically normal by Sept. 27th, and from this date until Nov. 20th rarely exceeded 99° F. and was never higher than 99·4° F. During this period the patient gained 12 lb. in weight, was able to get up for most of the day, and the symptoms and general condition were improved. On Nov. 20th, 21st, and 22nd the evening temperature was 99° or 99·2° F., and injections of 10 c.cm. of pleural fluid were recommenced and continued until Feb. 8th, 1918. During this time the temperature remained satisfactory, weight was maintained, and the patient was well enough to be up all day and to take exercise. He relapsed subsequent to discharge, and in June, 1919, was reported to be going downhill.

(C) Male, 16, two months' history. Seen Feb. 12th, 1918. Acute caseous tuberculosis of both lungs. Tuberculous laryngitis. Pyrexia (temperature up to 103° F.). After two months' rest in bed the temperature improved (ranging up to 100° or 101° F.), he had gained a few pounds in weight, and the general condition, while still grave, showed slight improvement. Between April 7th and June 12th he had 23 doses of pleural fluid from 2 to 10 c.cm. During this period the temperature fell further, the general condition improved, he gained 10 lb. in weight, and became well enough to go to a sanatorium. Subsequently the laryngeal disease increased, and he died about Christmas, 1918. In this case the administration of the earlier doses of pleural fluid was followed frequently by a slight elevation of temperature with a subsequent fall.

(D) Male, 48. Admitted Dec. 28th, 1916. Seven years' history. Chronic tuberculosis of right lung. Recent activity. Slight pyrexia and constant hæmoptysis of small amount. In March, 1917, acute bilateral tubercular epididymitis developed. One testicle was removed in April and the second in June. This was followed by a prolonged period of slight pyrexia, with occasional rises of temperature to 100° or 101° F., and persistent slight hæmoptysis. From Dec. 24th, 1917, to May 3rd, 1918, he had 35 injections of pleural fluid in doses of from 2 to 10 c.cm. (346 c.cm. in all). By February the temperature had fallen to 98·4° F. or below, and thereafter remained stable. The hæmoptysis ceased at the end of this month and did not recur. The pulmonary symptoms were reduced to a minimum, and in May he was well enough to resume active work and has remained well ever since.

(E) Male, 24. Admitted May 16th, 1917. A few weeks' history.—Acute bilateral disease. Continuous pyrexia and frequent hæmoptysis. By November the general condition had improved slightly, the evening temperature ranging up to 101° F. From Nov. 13th, 1917, to March 1st, 1918, he had 35 inoculations of pleural fluid (300 c.cm. in all). During the administration the temperature fell and remained much more stable, though he did not become actually afebrile. (Average evening temperature 99° F.) The improvement in general health was marked. In April, 1918, a prolonged period of fever set in and the temperature remains unstable at the time of writing, though the improvement in general condition has been maintained.

(F) Male, 23. Admitted Sept. 26th, 1917. Nine months' history. Extensive disease of the right lung and ulceration of the larynx. Slight pyrexia with irregular rises of temperature up to 102° F. From Nov. 21st, 1917, to Jan. 15th, 1918, had 18 injections of pleural fluid (1 c.cm. to 10 c.cm.). There was no apparent effect on temperature or general condition. He subsequently improved and reported in June, 1919, that he had returned to America and was in better health.

(G) Male, 47. Admitted Nov. 14th, 1917. Eighteen months' history. Extensive bilateral disease with advanced laryngeal and pharyngeal tuberculosis. Apparently moribund. From Jan. 18th, to Feb. 28th, 1918, had 14 doses of pleural fluid (3 c.cm. to 10 c.cm.). They had no effect, and the patient died in April.

(H) Female, 21. Admitted Nov. 30th, 1917. Eighteen months' history. Extensive bilateral disease. Pyrexia. In February, 1918, there was evidence of marked extension of disease, and the general condition deteriorated. From May 1st to July 5th 12 doses of pleural fluid were given (110 c.cm. in all) with no effect. The patient continued to go rapidly downhill, and died in the winter.



*Summary.*

In three (F, G, and H) of the above eight cases the administration of the pleural fluid was without any apparent effect upon the symptoms or course of the disease. In two (C and E), where improvement coincided with treatment, it must be admitted that these two patients had shown signs of improvement before it was commenced. Two (A and B) were going steadily downhill in spite of other measures of treatment; in both the use of pleural fluid was followed by rapid and marked improvement, in both the cessation of the injections was followed by a tendency to relapse, and in both renewed improvement followed their resumption. Both these patients received injections of the same pleural fluid (from a case of "primary" tuberculous pleurisy) used within a few weeks of its preparation.

In the remaining case (D), though the patient's general condition was good throughout, troublesome symptoms which had persisted for months disappeared within a few weeks of the administration of the pleural fluid.

While well aware of the difficulty of correlating cause and effect in a case of tuberculosis of the lungs, we are of opinion that the use of "heteroserotherapy" in this disease is worthy of further investigation, and that the results obtained in Cases A, B, and D may be ascribed fairly to the effect of the inoculated pleural fluid.

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## THE EARLY TREATMENT OF MENTAL DISORDERS.

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AT the present time, when articles are constantly being published with regard to the extraordinary good results obtained in the treatment of the psychoneuroses in special neurological hospitals, I think it will not be out of place to record the results obtained amongst the psychoses.

*The Material Examined.*

I am taking my figures from the admissions to the Mental Division of the Lord Derby War Hospital for the first two years. There were during this period 4695 admissions, all of whom were soldiers in a state of acute mental disorder, and by far the majority came from the Expeditionary Forces overseas.

Amongst this vast number of cases of acute mental breakdown all types were met with. Speaking generally, there was nothing very noticeable in the way of symptoms presented to differentiate them from those seen in pre-war experience. I have already recorded the individual types of psychoses met with in a paper published in the *Journal of Mental Science* of July, 1918, and will therefore not enter into the discussion of individual cases in this article.

A survey of the numbers of admissions and discharges at the end of two years' work discloses the fact that the recovery rate stands at 56 per cent., and I think this is sufficiently encouraging to call attention to, seeing that the percentage of recoveries amongst male admissions to county and borough asylums in England for the 10 years 1902 to 1911 inclusive was only 32 per cent.<sup>1</sup> A statistical record of the admissions from the French Expeditionary Force will be found in Table III.

Of the 1000 cases in hospital at the end of two years' admissions only 200 had been resident six months or over, and during this period the deaths totalled only 40, or 0.8 per cent.

Over 330 cases who had developed a mild psychosis under exceptionally trying conditions were considered sufficiently recovered to justify their return to military duty under the proviso that they were kept on home service for 12 months.

This step was so far justified that a great number of these ultimately again went to the front, the wisdom of which, however, is a question for speculation.

*Review of Treatment Adopted: 1. Early Observation.*

I propose, therefore, to review the treatment adopted in dealing with this vast number of cases of acute mental disorder.

In the first place, I think an important point is that all were brought under observation at the earliest possible period of their trouble and placed under medical officers with special experience of such conditions. At the same time, this segregation was as far as possible relieved of any stigma. No patient was under any certificate, and no legal formalities had to be gone through before he was placed under the special treatment. As soon as possible, after his condition improved sufficiently, he was allowed parole and all the privileges of a case in the surgical or medical wards of the hospital. The Lord Derby War Hospital was, in fact, a general hospital with medical, surgical, and mental divisions, of which the latter comprised 1000 beds. Apart from the fact, therefore, that his mental condition prevented it, just as a case in the surgical or medical wards might be similarly prevented by his disability, a patient was as soon as possible allowed to mix freely with patients from other parts of the hospital. Any distinction was avoided.

The bringing of these cases under early observation was helped considerably by the facilities in detecting premonitory symptoms. If a soldier in the army, who has been previously up to the average standard, is noticed to be unable to stand properly to attention on parade, or does not form fours properly, or in any other way does not seem up to his usual standard, it is almost certain that this will be reported by his N.C.O. to a superior officer, who will ultimately send him to be examined by the medical officer. Even off duty, when in billets or barracks, he is more or less under observation, and by night more especially so. It is therefore likely that any strange action will be noticed and reported. In civil cases, on the other hand, this early detection of symptoms is much more difficult, and patients are much more likely to be able to conceal their symptoms. This point has been brought out by my colleague, Captain O. P. N. Pearn, R.A.M.C., in his article on the Psychosis in the Expeditionary Forces, recently published in the *Journal of Mental Science*.<sup>2</sup> I feel sure that the patient, as a civilian under present conditions, knows that by disclosing his feelings he will be brought before a medical man, who will probably call in the assistance of a magistrate, that he will deprive him of his freedom, and at the same time subject him to the stigma of certification and all its necessary legal accompaniments. Under such conditions symptoms are concealed as long as possible, and in the early stages, as a rule, the patient does not find much difficulty in "pulling himself together" sufficiently to pass muster in his office as a clerk, or whatever occupation he may perform. In a city he probably does not return home to his midday meal or tea, but has these at a restaurant, where it is no one's business in particular if he does anything strange. He probably returns home late at night, and spends little time in the company of his friends or relations. This sort of thing often goes on for months or even years undetected, until he ultimately commits some act against the conventions of society by which he gets into the hands of the police. In the soldier, on the other hand, as treated during the war, no stigma was attached to the fact that he became insane. He was, as far as practicable, treated as any other casualty, and if he reported his symptoms voluntarily, was taken to a hospital in the same way as if he were suffering from any other illness.

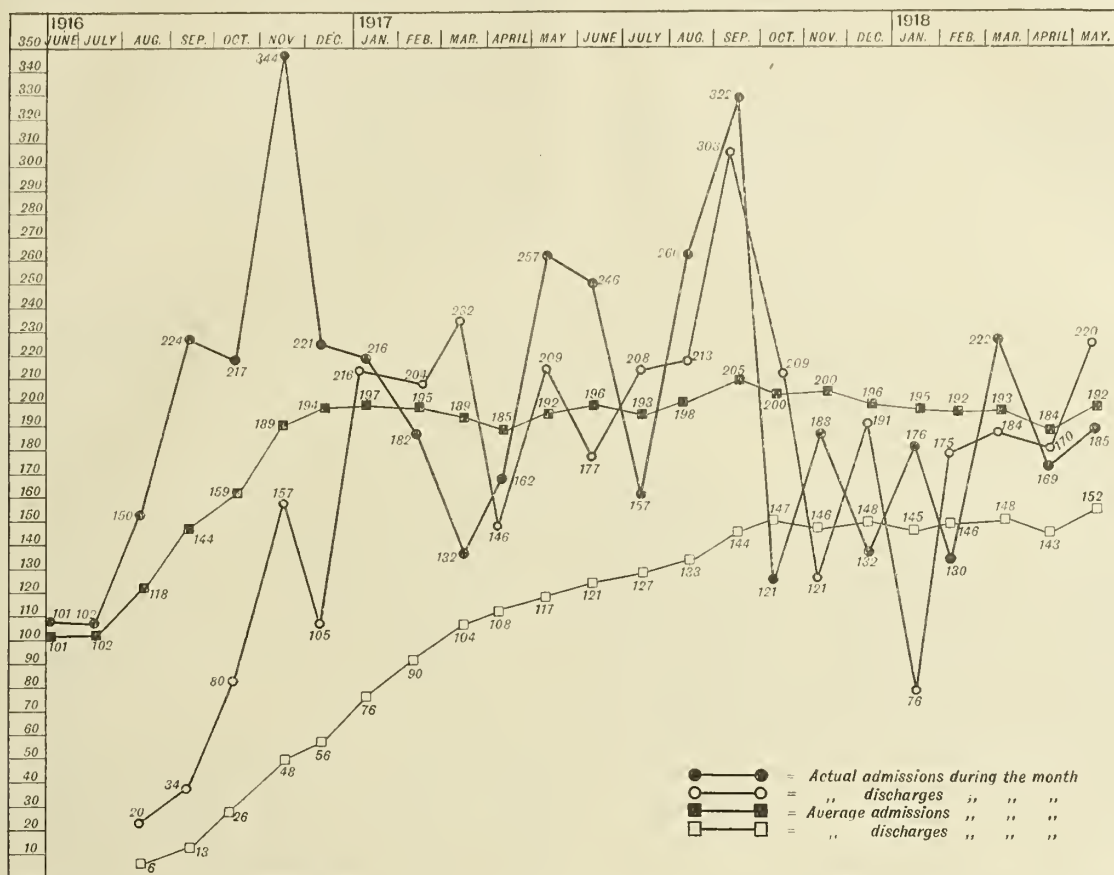
*2. Adequate Medical Staff.*

Another point is the importance of having an adequate medical staff in dealing with cases at this stage. A glance at Table I., which shows the monthly admission and discharge rate during the two years under consideration, will indicate the necessity for a large medical staff to deal with such numbers alone. At the opening of this special psychiatric section it was strongly urged that the relative strength of medical officers should be no less than 1 to every 100 patients.

Apart from the question of dealing with large numbers it must be remembered that if patients are to have adequate treatment in the early stages of mental disorder, the relative



TABLE I



●—● = Actual admissions during the month  
 ○—○ = " discharges " " "  
 ■—■ = Average admissions " " "  
 □—□ = " discharges " " "

number of doctors must be increased much above that which is customary in present-day asylum practice. From the experience I have had I would advocate that there should be no less than 1 medical officer for every 50 patients, if all that is possible is to be done for such cases.

In making this statement I am, of course, intending it to apply to a hospital dealing solely with early cases of mental disorder, and am not supposing that the chronic cases will be included or retained, if admitted.

To undertake work which, if carried out properly, meant spending many hours a week with individual cases, was quite out of the question with a staff of only 1 in 100, in addition to the fact that, at times, when medical officers were urgently needed elsewhere, even this proportion could not be maintained. As much as possible, however, was done.

A great deal has been written lately about the treatment of the psychoneuroses by suggestion and persuasion, using these terms to cover all the different modifications, such as hypnotism and treatment with the aid of electricity, which comes under their meaning. Also the amount of individual attention and time that has to be given to each case. The same applies to the treatment of the psychoses, and in many cases is the sole means of saving them from running a chronic course. It is true that some cases appear to recover with "quiet and rest," and treatment by what Dr. T. E. K. Stansfield<sup>3</sup> has called "rational" lines, but there are a great number in which every means of suggestion and persuasion must be exercised with tact and perseverance and untiring patience upon the part of the medical officer. In these cases—more so than in the psychoneuroses—comes the importance of psycho-analysis, using this term in its widest sense and not necessarily meaning Freudian psycho-analysis, as is so commonly concluded by those opposed to this method. I am certain that individual attention and analysis, as a rule, fully justified the expenditure of time necessary for such methods, the principles of which have been so aptly and ably described by Bernard Hart,<sup>4</sup> who teaches that it is becoming more and more certain that the mental factor forms the most important link in the chain of causation in

the psychoneuroses and has drawn attention to the underlying conflict between the instinct of self-preservation and the sense of duty and patriotism in the case of the soldier. (¶)

As has been pointed out by Eder,<sup>5</sup> "psycho-analysis is the only method that enables the patient to deal with the underlying state, and not merely with the symptom. In psycho-analysis the patient learns for himself the real significance of his disease, a privilege only acquired by a bitter self-realisation. The 'rest cure' affords the ideal conditions for retirement from life's duties, and strengthens the patient's motives for remaining ill, but by psycho-analysis the unconscious mind is explored and the energy hitherto wasted in internal conflict is made available for the purpose of life."

#### Usual Procedure on Admission.

On admission of patients to the Mental Section of the Lord Derby War Hospital, they were taken straight to the admission ward, where clerks obtained particulars for the admission and discharge book. Each medical officer was provided with a private room in his wards, where, at his convenience, he could interview each patient separately, with the full assurance that his statements would be treated as confidential. The case sheets of each patient in the ward were kept in this room under lock and key as confidential documents, and not hung up with the chart over the patient's bed, as in ordinary hospital wards. Everything, in fact, was done to inspire confidence between the patient and the doctor, and it is only in this way that one can expect such cases to really enter freely into examination, to coöperate with the doctor and interpret their feelings, as the result of which the benefits of psychotherapy become very strikingly obvious. It is not to be expected that such can be carried out either in an open ward with numbers of other patients listening to everything said, or in a room in which anyone else is present except the physician and the patient. Beds in the open air were provided for those to whom it was thought rest in bed would be beneficial, and as soon as possible patients were allowed to have freedom from lock and key.



No selection as to the type of case admitted was possible. Amongst such a vast number of admissions it is not surprising therefore that the number of cases of general paralysis alone came to 197.

The above facts must be borne in mind when considering the recovery-rate, in addition to which I should add that the number of cases of congenital mental defect reached no small figure. Even in these cases, however, many showed acute symptoms superimposed on this congenital defect. A number of cases received had been previously in special neurological hospitals, and were transferred to the mental section as they had not improved. These admissions also tended to reduce the percentage of recoveries.

Cases found to have been previously under asylum care in peace-time, all epileptics, and cases of G.P.I. were certified and transferred to asylum care as soon as the diagnosis had been confirmed. Similarly all cases who had been resident nine months without showing any appreciable signs of improvement, were so transferred, and in this way the hospital was kept as free as possible from chronic cases and an atmosphere of cure was prevalent. The total transferred to asylums was 452 (or 9 per cent.).

A number of cases were transferred to other hospitals in Scotland, Wales, or Ireland so as to be nearer their relatives for visiting purposes, and a larger number of Colonials were repatriated to the Colonies for final disposal. A large proportion of these cases were well on the road to convalescence before they left, but as their final condition was not determined, they have not been included in the percentage of recoveries. Whilst under treatment, any man having a special trade was given facilities for working at this in hospital workshops during his period of convalescence prior to his discharge, and in this way prepared himself for the work he would be taking up when leaving the hospital. This helped in a large measure to establish the man's confidence. Other cases, numbering about 100 daily, were encouraged to work on the farm and in the grounds. Idleness was discouraged, but absolute rest in bed in certain cases of exhaustion psychoses, on the other hand, was insisted on for purposes of treatment.

### 3. An Abundant Diet.

Next I should like to draw attention to the question of diet. A liberal nourishing diet is of the greatest importance in treating all cases of acute mental disorder. The diet as issued to the patients in the Mental Division of Lord Derby War Hospital will be seen laid out for the week in Table II. The allowances are much more liberal than those

TABLE II.—Specimen Dietary for Patients on Ordinary Diet.

—	Breakfast.	Dinner.	Tea.	Supper.
Sunday.	Tea, bread and margarine, with boiled bacon (4 oz. uncooked).	Roast beef (8 oz. uncooked), potatoes (12 oz.) and green peas (2 oz.), and milk pudding.	Tea, bread, margarine, and currant cake.	Coffee or cocoa and cheese (½ oz.).
Monday.	Tea, bread and margarine, with one egg.	Meat pies (beef, 8 oz. uncooked), potatoes (12 oz.), and haricot beans (1 oz.), with milk pudding.	Tea, bread, margarine, and jam (1½ oz.).	"
Tuesday.	Porridge, milk, tea, bread, and margarine.	Hot boiled bacon (6 oz. uncooked), potatoes (12 oz.), sufficient cabbage, and milk pudding.	"	"
Wednesday.	Tea, bread, margarine, and sausage (4½ oz.).	Steamed fish (12 oz. uncooked), potatoes and boiled suet pudding (ginger, collage, or jam roll).	"	"
Thursday.	Tea, bread and margarine, with one egg.	Roast beef (8 oz. uncooked), potatoes, and sufficient fresh vegetables and milk pudding.	Tea, bread, margarine, with currant bun or scone.	"
Friday.	Tea, bread and margarine, with sausage (4½ oz.).	Hot pot (beef, 8 oz. uncooked), peas pudding (split peas, 2 oz.), with milk pudding.	Tea, bread, margarine, and jam (1½ oz.).	"
Saturday.	Tea, bread and margarine, with one egg.	Hot boiled bacon (6 oz. uncooked), potatoes, and sufficient cabbage, with milk pudding.	"	"

Notes.—Daily allowances: Bread, 12 oz.; margarine, 1 oz.; sugar, 1½ oz.; milk, 9 oz., with 15 oz. for milk puddings and 10 oz. with porridge. Tea, ½ oz. per day; coffee, ½ oz., or cocoa, ½ oz.

allowed by the average civil asylum scale. The cost of this dietary alone in a civil institution would probably exceed 13s. per head per week on pre-war prices, whereas the average cost of maintenance up to the end of 1918, in civil asylums in this country, was only 14s. 5½d., and this is stated to be a rise of 1s. 9d. on the cost of the previous year.<sup>6</sup> It must also not be forgotten that this cost of maintenance includes provision for the salaries of the staff for these institutions. In addition to the above standard dietary, in some cases, patients were put on milk and eggs as extras, but the necessity for this did not often arise with such a substantial diet as a foundation.

### 4. Facilities for Specialist Treatment.

Another special feature which I should mention, and from which, I am certain, many patients derived much benefit, was the facility that existed for any patient being seen in consultation by a specialist for practically any bodily disorder of which he might complain. A spirit of confidence therefore existed amongst the patients that every complaint would at once receive thorough investigation. Numbers of cases on this account were sent to special departments of the hospital for examination or treatment. I would especially mention the eye department, the ear, nose, throat, X ray, electro-therapeutics, and massage. If any patient made a complaint with regard to physical symptoms, it was the invariable rule to call the medical officer in charge of the medical or surgical divisions of the hospital in consultation, and similarly with other special branches in order that the patient should receive the best possible treatment or advice. The London Hospital scheme of appointing a whole-time salaried physician of the highest standing instead of the honorary appointment, where visits are made periodically, has already been introduced in some hospitals, as it was felt that the best results could only be obtained under conditions where the doctor was on the spot. It was certainly most helpful in dealing with large numbers of acute psychoses.

A specially trained masseur was employed in the mental section to attend cases having surgical disabilities complicated by a psychosis. There were numerous cases of this kind, as would be expected, seeing that most of the admissions came direct from the firing line or front-line area. Cases in a generally debilitated exhausted state were also treated with general massage in some instances. There were 18 of these. About an hour was devoted to each case at a sitting, and treatment was given three days a week, extending in some instances to three months in duration. The improvement in general condition was very striking, and in all cases the mental condition improved with accompanying psychotherapy.

### Surgical Cases.

Amongst the surgical cases special investigations were made into a hundred cases of head injury with accompanying mental symptoms, which I have made the subject of another article.

No corroborative evidence was found to substantiate Holländer's<sup>7</sup> statements that loss of intelligence occurs in frontal injuries, melancholia in parietal injuries, mania in temporal injuries, or that in the case of occipital injuries the gregarious instinct is especially effected. On the contrary, it was clearly shown from 27 cases of frontal injury that there was no uniformity in the mental symptoms that may follow injuries to this part of the head, and this statement is applicable to the skull generally.

A large number of cases of epilepsy occurred in gross lesions of the parietal region of the skull, and my results in this respect agree with those of Roeper.<sup>8</sup> The preponderance of cases of amnesia were found in frontal injuries, but, with these exceptions, no symptoms could be definitely associated with injuries to any special region of the skull.

### Cases of Venereal Disease.

Amongst other cases, about which some special consideration might be made, are the cases of venereal disease. There were 305 cases suspected of being so infected, and tested by the Wassermann method. Of this number 249 gave a positive blood reaction and 172 a positive reaction in the cerebro-spinal fluid. The globulin test was positive in 123, and in 109 there was an increased cell count.

Prior to the discovery of this method of testing a patient's bodily fluids it was, in many cases, mere guess-work to say whether this or that person, at some time or other, had or had not suffered from syphilis. Any expressions of opinion



as to the rôle of syphilis in the causation of mental disease must have been merely speculative. At the present time, however, it must be accepted that, provided the Wassermann test is performed by a specially trained pathologist, who has had special experience in its technique, the percentage of positive Wassermann reactions in active syphilis is so high that the test may for all practical purposes be looked upon as decisive.

Major C. F. White and Captain A. T. McWhirter and Captain H. Barber,<sup>9</sup> as a result of their experience of 5800 Wassermann tests, say that they are satisfied that syphilitic serum gives a positive result and non-syphilitic negative in such an overwhelming majority of cases that any apparent exceptions must be very closely studied before they are accepted. A full course of 606 injections was given in 11 cases in which the blood only was positive. Nine of these cases were ultimately discharged recovered from their mental symptoms. The complete conversion of the positive Wassermann reaction in the blood was, however, only obtained in four of these cases. It must be remembered, however, that the history of infection was at a very remote period, and that, apart from the mental symptoms, there were no active signs of syphilis.

The method of treatment adopted was to give salvarsan or its equivalent combined with mercury as follows:—

	Salvarsan	Mercury.
1st day ... ..	0.3 g. ....	1 gr.
4th " ... ..	0.3 " ....	0 "
8th " ... ..	0.3 " ....	1 "
15th " ... ..	0 " ....	1 "
22nd " ... ..	0.4 " ....	1 "
29th " ... ..	0.5 " ....	1 "
36th " ... ..	0 " ....	1 "
43rd " ... ..	0.5 " ....	1 "
50th " ... ..	0.5 " ....	1 "

The 606 injections were given intravenously by the gravity method, and the mercury injections were given intramuscularly into the buttocks. On the 52nd day the blood was again tested, and, if negative, treatment was suspended. In cases where the reaction was still positive, however, a course of pot. iod. was given till the 68th day and then the following injections:—

	Salvarsan.	Mercury.
69th day ... ..	0.3 g. ....	1 gr.
76th " ... ..	0.4 " ....	1 "
83rd " ... ..	0.5 " ....	1 "

If the blood was still positive after this, chronic mercurial treatment was advised. The derivatives of salvarsan used were kharsivan and arsenobillon, and the solutions were freshly prepared immediately before injection. In no case was there any dermatitis or other untoward symptoms.

The treatment of syphilis of the nervous system by prolonged intravenous injection of neosalvarsan has been shown by Henry Head<sup>10</sup> to have given good results in cases where the lesion is situated in parts, such as the meninges and vessels (meningo-vascular type), easily reached by a drug circulating in the blood. He states that not only is the disease affected favourably, but the Wassermann reaction, if positive in the c.s.f., may become negative within a few months after treatment, and the pleocytosis greatly reduced. In most cases this change was effected by three doses of 0.9 g. of neosalvarsan, but in a few instances even relatively smaller doses of salvarsan were used. On the other hand, in cases which do not improve with this treatment, he considers the affection is deeper-seated and out of reach of the arsenical compounds employed by that method. The conclusions arrived at by Head were that it is impossible by bedside examination to determine whether the patient is suffering from dementia paralytica or syphilitic encephalitis. Cases of syphilis meningo-vascularis cerebri may be distinguishable from dementia paralytica solely by the fact that the cerebro-spinal fluid from the first gives a negative reaction. But if, as so commonly happens, intraspinal complication is present the cerebro-spinal fluid in both may be equally positive.

#### General Paralysis.

With regard to the cases of general paralysis, there were in all 197 cases admitted under my care. Ten of these died before their transfer to asylum care could be carried out. Transfer to an asylum was the method of disposal of all

these cases as soon as the diagnosis had been confirmed by the laboratory findings. In 180 cases in which records of the reactions were made 168, or 94 per cent., gave a positive blood Wassermann reaction and 12 a negative. Amongst the latter, however, the negative blood reaction was associated in four cases with a positive reaction in the c.s.f., a positive globulin reaction and an increased cell count, leading to the supposition that the bloods had been converted by treatment, and in only two cases were all the results negative. The c.s.f. reaction was positive in 93 per cent., the globulin reaction in 94 per cent., and there was a pleocytosis in 87 per cent. The cell count in some cases reached as high as 400 per c.mm., but anything over 10 per c.mm. was looked upon as abnormal.

Captain Barker Charnock, R.A.M.C., pathologist to the hospital, has very kindly given me the following brief observations: "In general paralysis of the insane it is my experience that, as a routine, the blood serum and the cerebro-spinal fluid should be examined, together with the globulin content and the cell estimation of the latter. As an aid to the differential diagnosis of general paralysis, cerebral syphilis, and tabes, Lange's colloidal gold reaction is of great use; the only difficulty being the preparation of the water triply distilled from glass. A good glass still is required in the up-to-date laboratory. In spite of what is said to the contrary, I have found that the routine globulin reaction has been useful in early cases. It has been my experience that the globulin reaction may appear before the positive Wassermann reaction in the cerebro-spinal fluid. As a reliable test the Pandey method gives good results and is free from the obnoxious odour associated with the Noguchi reactions. The Alzheimer method has been of great use in demonstrating the plasma cells diagnostic of G.P.I. The quantitative method of performing the Wassermann test has been useful in judging the effects of treatment. This method has been controlled by the modified complement-fixation tests with and without the destruction of complement. Observations based upon the modified tests pointed out that the sera possessing the most potent complement usually reacted best to arsenical treatment."

These reactions are of the greatest importance in dealing with incipient cases of general paralysis of the insane, the correct diagnosis of which in this stage cannot be given unhesitatingly without their aid. In quite a number of cases the reactions to these tests changed from a negative to a positive finding whilst the patients were under observation, showing the early stage in which the condition existed. On the other hand, in cases in which the medical history sheet (A.F. 187) covered that period, the date of primary infection could be shown to be as long as 15 years before the onset of the symptoms.

A few of the early cases of general paralysis of the insane were given intrathecal injections of mercurialised serum, but in no case was a positive converted into a negative fluid reaction by this treatment, and hence no success can be claimed for it as far as my experience goes. All types of general paralysis of the insane were met with, and the impression gained was that the symptoms developed more rapidly than in the cases seen in pre-war days. A few died in a state of acute mania, with little to justify the diagnosis had not the reactions of the blood and fluid been tested, and I feel sure that many cases in the past who have died from so-called "acute delirious mania" belong to this category.

#### Lumbar Puncture.

The importance of performing a lumbar puncture and testing the spinal fluid reactions, especially in cases which in any way cause one to suspect incipient symptoms of general paralysis, cannot be over-emphasised. Up to the present cases are rarely diagnosed before the brain has undergone extensive and irreparable damage. Sir Charles Ballance and Dr. H. Campbell<sup>11</sup> have recently published an instructive article on this subject advocating treatment by introduction of salvarsanised serum into the lateral ventricles in the pre-clinical stage of the disease. They point out also that the demobilisation of the British Army and the probable increase of syphilis in this country make it highly desirable that any means which may have a remedial influence on syphilitic infections of the nervous system should receive careful study.

This all tends to emphasise the importance of any institution dealing with early cases of mental disorder being in close association with an up-to-date laboratory and



pathologist especially experienced in the technique necessary to perform this work. It also shows the importance of any institution for the early treatment of mental diseases being provided with adequate means for treating syphilitic affections by modern methods, and the need for closer coöperation between clinician and pathologist than has been customary in the past.

TABLE III.—*Showing Total Admissions of Cases from the French Expeditionary Force Classified according to their Mental Diseases, and their Disposal. (a) June, 1916-17; (b) June, 1917-18.*

Form of mental disease.	Totals.		Discharged home.	Sent to asylums.	To other hospitals.	Home duty.	Died.	Still in hospital.	Progressive totals.						
	First year.	Seco id year.													
N.A.D. mental ...	20	16	—	1	—	14	11	4	4	—	2	—	36		
Neurasthenia ...	145	64	71	51	4	—	11	8	27	3	—	32	2	209	
Psychasthenia ...	—	13	—	7	—	—	1	—	—	—	—	5	13		
Concussion of the brain ...	1	—	1	—	—	—	—	—	—	—	—	—	1		
Tumour of the brain	1	—	—	—	—	—	—	1	—	—	—	—	1		
Epilepsy ...	20	5	14	5	—	—	4	—	—	—	2	—	25		
Hysteria and Shell shock ...	4	6	3	5	—	—	1	1	—	—	—	—	10		
Locomotor ataxia ...	63	12	25	8	—	6	4	20	—	1	11	—	75		
Mental deficiency*	1	—	—	—	—	—	—	—	—	—	—	—	1		
Mania... ..	233	190	89	104	2	15	14	42	14	4	1	114	24	423	
Melancholia ...	135	81	37	55	3	5	12	9	16	7	5	4	62	1	216
Mental stupor...	309	143	114	84	4	16	18	24	31	5	—	3	142	11	452
Delusional insanity	33	16	3	9	2	—	7	6	1	—	—	20	1	49	
Epileptic insanity...	242	102	73	39	5	25	20	26	17	2	—	1	127	9	344
Moral insanity ...	11	7	6	5	—	2	1	—	—	—	—	4	—	18	
Impulsive insanity	3	10	2	6	—	1	—	2	—	—	—	1	1	13	
Acute delirium ...	3	1	—	—	—	1	1	2	—	—	—	—	—	4	
Insanity† ...	14	5	6	2	—	—	—	1	1	—	2	7	—	19	
Confusional insanity ...	—	2	—	1	—	—	—	—	—	—	1	—	—	2	
Alcoholic insanity	179	182	60	121	—	5	18	30	29	9	1	2	71	15	361
Cerebral syphilis ...	19	10	5	6	1	1	4	2	2	—	—	7	2	29	
G.P.I. ...	3	2	1	2	—	—	—	—	—	—	2	—	—	5	
Mental instability	78	50	4	3	48	35	2	3	—	—	1	4	23	5	128
Dementia præcox...	39	21	21	14	2	2	3	2	4	1	—	9	2	60	
Secondary dementia	127	97	26	27	6	36	13	22	9	1	—	1	73	10	224
N.Y.D. ...	20	8	9	5	—	3	2	—	—	—	—	9	—	28	
Morphinism ...	1	—	—	—	—	—	—	—	—	—	—	1	—	1	
Totals ...	—	1	—	1	—	—	—	—	—	—	—	—	—	1	
Totals ...	1704	1044	570	560	77	146	146	194	183	37	11	19	717	88	2748

\* Including feeble-mindedness, idiocy, and imbecility.

† Associated with acute infective disease.

#### Correction of Refractive Errors.

A large number of cases complaining of persistent headache were sent to the ophthalmic department of the hospital for special examination, and on the refractive errors being corrected rapid improvement resulted in the accompanying mental symptoms.

Captain R. Richards, R.A.M.C., ophthalmic surgeon to the hospital, has very kindly given me the following particulars with regard to 129 cases examined. Of these cases, he states that "myopia accounted for 7; hypermetropia, 15; simple astigmatism, 11, myopic astigmatism, 14; hypermetropic astigmatism, 15; mixed astigmatism, 26; anisometropia, 41. In addition to the above 9 cases of presbyopia were corrected. The 41 cases specified under anisometropia were of a more or less pronounced character, but there were others which showed a much lesser degree of unequal refraction. Examination of the fundi revealed in many of the eyes conditions associated with pathological and traumatic factors, such as choroiditis, retino-choroiditis, choroidal atrophy, opaque nerve fibres, macular changes due to high myopia, ruptured choroid, and myopic crescents. There were also cases of nystagmus, corneal nebulae, corneal scars following perforating wounds, occlusion of pupil, &c. The cases proved quite an interesting series, and it is satisfactory to find that the improvement in the visual acuity of

those corrected added to their well-being and corresponding improvement in their mental condition. Ophthalmoscopic examination under the best conditions is not an easy matter, and one would be quite justified in coming to the conclusion that it would be much more difficult in patients mentally afflicted. This conclusion was, however, completely falsified; for, with only a very few exceptions, the very best of coöperation and assistance was obtained."

In the cases with refractive error I have little doubt that an error of refraction which had previously caused no trouble had given rise to severe headache, and superimposed mental symptoms in a man whose nervous system was exhausted as the result of active service.

#### Conclusions.

I should like to lay stress again on the benefit derived by the system of parole which was granted to convalescing cases. Although in the period of the two years on the average 300 cases daily were getting parole, only one case of concealed delusions managed to escape detection by the system adopted. I am quite certain that could such facilities be granted to convalescing patients in civil asylums and mental hospitals throughout the country a much healthier atmosphere would be created in these institutions. The granting of permission to these patients to go out for walks, not under supervision, for a couple of hours in the afternoon, would, I am certain, promote mental "well-being" and hasten convalescence. It would be looked upon as a privilege and would be seldom abused if sufficient care was exercised as to whom it was extended.

The experience I have gained by dealing with such a vast material of early mental cases has convinced me more than ever of the importance of early treatment. The fear of being certified and sent to an asylum existed as a prominent feature in many cases, and I cannot help feeling that a step in the right direction will be made if the lunacy laws are so amended as to allow of the treatment of early cases occurring amongst civilians on similar lines prior to certification. If this were possible, and such institutions were under the control of specially experienced medical men, I feel sure that a large number of cases of early mental disease would be provided with a much needed opportunity of obtaining advice and treatment at a time when there were some prospects of it being of some value. It was remarkable to see how cases cleared up with individual attention.

As things exist at present, however, a patient suffering from early mental trouble is denied treatment by a doctor who has specialised in that branch of medicine, for it rests with the private practitioner, with no special knowledge of the subject, to certify the patient. This, in the early stages, he naturally never does, owing to the stigma attached to such a procedure. The result is that such cases drift on from bad to worse for months or even years, and are prevented from being able to obtain the advice of those interested in their condition until the certificate stage is reached. In the case of the majority the damage has been done by this time. There was a similar state of affairs with consumptive disease in the old days, before the local authorities were given the power to appoint specially trained men to treat this condition in its early stages. I strongly maintain that the need is just as great now for the "mental clinic," especially as we are face to face with a tremendous reduction of the male population of the country through the ravages of war and also an emotional epidemic, which is quite common after a period of stress and strain such as the world has recently been through. Are all these cases, which might be directly or indirectly attributed to the war, to be deprived of treatment until they are so advanced as to be recognised as certifiable by the general practitioner?

No progress can be made in psychiatry in this country till Receiving Hospitals for psychoses in the early stages are introduced as a preliminary step to certification. It will be in these hospitals that the curable cases should be treated. The chronic cases should be sent to asylums, which have already become vast store-houses of chronic mental conditions. An atmosphere of cure, which is all-important in the early stages of treatment, is not possible in such an institution where the powerful force of imitation and suggestion by contact with chronic cases can only have harmful influence. To detach such a department from the soil in which it has grown for generations, and to effect a considerable change



in procedure which has hitherto been in vogue for so many years in order to bring this about, is going to be no easy matter. But if it is agreed that the task is worth undertaking, these difficulties must be overcome, and now, when the Ministry of Health Act is in its infancy, the time seems favourable for considering these changes seriously. For acute cases every modern method of psycho-therapeutic treatment should be available in order to hasten the return of the patient's mental condition to the normal. We want the best surroundings we can get with free access to consultative advice in all the other special branches of medicine, for it is only after a searching clinical, as well as psychological, examination that the particular lines of treatment for individual cases can be determined. For the chronic cases, on the other hand, nothing more can be done than to place them in as comfortable conditions as circumstances will permit. For the latter, there already exists a plentiful supply of asylums, which in this country rank amongst the best in the world for care and comfort, but for the former there is at present almost nothing at all.

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## "TWILIGHT SLEEP" IN GENERAL PRACTICE.

By G. HAMILTON WINCH, M.B., CH.B. EDIN.

HAVING administered scopolamine-morphine anæsthesia to a series of 435 cases of parturition in private practice, I now record my results and experience of this treatment from a general practitioner's point of view. These cases were attended by me during a period of five years and nine months. During the first two years I was in a country practice in the Midlands, and during the remainder of the time I was in a London practice.

The method employed of producing anæsthesia was that developed by Gauss of Freiburg, which has become the standard, and to which he applied the term of "Dämmer-schlaf" (twilight sleep). The object of this method is to obtain not only a condition of analgesia, but also one of amnesia, or loss of memory for recent events. The importance of amnesia is, that it saves the mothers from physical and mental suffering and from fear of a succeeding labour. This state of amnesia does not cause loss of memory for previous events, but only an inability to remember what is happening while the patient is under the influence of this anæsthesia.

### *Technique.*

It is, of course, necessary to know the general condition of the patient, her pelvic measurements, and the position and presentation of the child. The only absolute contra-indication to this form of anæsthesia is primary uterine inertia. Contracted pelvis, dry labours, rigid cervix, eclampsia, and heart disease are not contra-indications. On the contrary, in some of my complicated cases, where operative treatment demanded chloroform, I very definitely found that much less was needed than in cases where "twilight sleep" was not used. Junker's apparatus has always been used by me in midwifery cases, and careful notes of the amount of chloroform used were taken. The amount used in "twilight" cases was, on an average, half the amount used in non-twilight cases.

As soon as labour begins the patient is put in the room chosen for her labour. When labour pains have caused dilatation of the cervix to the extent of admitting two fingers, and recur every five minutes in primiparæ, and not less than every seven in multiparæ, the treatment is commenced. First, the room is darkened, and the patient's ears are plugged with cotton-wool in order to help in the exclusion of any disturbing sounds. The first hypodermic

injection is then administered, consisting of morph. hydrochlor. gr.  $\frac{1}{4}$  and scopolamine hydrobromide gr.  $\frac{1}{150}$ . Here one may mention that it is important to use freshly prepared solutions of these drugs, which should be absolutely pure. I used tablets made by the following firms: Messrs. Evans, Sons, Lescher, and Webb, Messrs. Burroughs and Wellcome, and Messrs. Parke, Davis and Co., and always found them reliable. After this injection has been given, as a rule, in 20 minutes time the patient becomes drowsy and sleeps between the pains. During the pains she may still complain, but less so than before. At this stage it is advisable to carefully watch the patient's condition and frequently auscultate the fetal heart sounds. All being well, the second injection is given about one hour after the first; this and all succeeding ones consist of scopolamine hydrobromide gr.  $\frac{1}{450}$  only. In this series of cases I found that these subsequent injections were required every one or two hours, the interval becoming longer as the number of injections increased.

### *The Memory Test.*

The method of determining the depth of the anæsthesia and the need of a further injection was the application of the memory test. This was carried out as follows: One wishes to find out the stage at which the patient's memory for present events is absent, but on the verge of returning. The patient's temperature was taken in the axilla, and a few minutes later a pretence of taking it in the same way was made. If on inquiry immediately after the pretended act she did not remember the previous real act, she was deemed to be sufficiently "under." The least sign of returning memory indicates another injection. The number of these subsequent injections is of no importance. I have given 14 in one case without any harmful effect.

### *Important Points Noted During the Anæsthesia.*

In the great majority of cases the patient's face was decidedly flushed, and dryness of the throat was common. The latter condition was treated by administering frequent sips of water. In practically all the cases the patients never expressed any desire to pass urine. This was due, I think, to the fact that the amount of analgesia present nullified any pain caused by bladder distension. It is necessary, therefore, to note the condition of the patient's bladder and use a catheter when required.

The first stage of labour in these cases was nearly always definitely shortened as compared with non-twilight cases, especially in primiparæ. My experience is that this form of anæsthesia promotes dilatation of the cervix. On the other hand, the second stage of labour was nearly always prolonged; most of the delay occurring after the head had reached the perineum. This delay was not found to be in any way harmful to mother or child, even if of five or six hours' duration. In fact, owing to the gradual dilatation of the vaginal outlet, lacerations of the perineum were distinctly fewer than in non-twilight cases. In many of the cases I terminated the labour either by the use of the forceps or by the intra-muscular injection of pituitary extract. The former operation was in most of my cases carried out without the use of chloroform, and was done slowly and carefully. With regard to those cases, terminated by injection of pituitary extract,—I always used pituitrin (P., D. and Co.),  $\frac{1}{2}$  c.cm. in an ampoule—injecting a  $\frac{1}{2}$  c.cm. at first, and repeating it if necessary. It was distinctly observed that pituitary extract had not the same powerful effect in causing uterine contractions in these cases that it has in non-twilight cases. No bad effects on the fetal heart sounds were noted—that is to say, in none of my cases did the fetal heart-rate become unduly rapid (above 170) or unduly slow (below 100). Some of the patients exhibited a certain amount of restlessness and slight delirium, but not of sufficient account to interrupt the administration.

### *Birth of the Child.*

As soon as the child was born and the cord had been tied and separated it was removed to another room in order that its crying should not disturb the mother. This was always done when the child was born not cyanosed nor apnoic, but breathed and cried out spontaneously; in this series of cases such were in the majority. A comparatively small number—11.9 per cent.—were born cyanosed, and some were treated by artificial respiration; they all recovered. I found in a few of the cases where the baby was born



cyanosed that if simply left alone it returned to a normal condition after a considerable time.

#### Third Stage of Labour.

The mother was always carefully watched for atonic post-partum hæmorrhage, but this condition only occurred in 3.03 per cent. Two were cases of partially adherent placenta, where manual extraction was necessary. One other case occurred in a transverse presentation, where the version necessitated a good deal of manipulation and also the administration of chloroform in addition to the "twilight sleep." In all three the bleeding was controlled and good recoveries ensued. These cases were all multiparæ, the average number of injections per case being three. Perineal tears were remarkably few, the percentage being: primiparæ, 12.61 per cent.; multiparæ, 4.03 per cent. When they did occur they were immediately sutured without the use of chloroform.

#### Puerperium.

In the majority of the cases of this series the mother slept well for from two to six hours immediately after the completion of labour. The absence of shock was a most noteworthy feature in these cases. I was particularly struck by the excellent general condition of the mothers 24 hours after delivery. Lactation and involution proceeded quite as normally as in non-twilight cases, and apparently were in no way affected by the drugs administered; no other bad effects of this form of anaesthesia on the mothers were observed.

#### Conclusions.

"Twilight sleep" is of great value in obstetric practice, provided that it is administered in strict accordance with the technique laid down by Gauss of Freiburg. It certainly saves the mother from much pain, fright, and from shock. There are no ill-effects to mother or child.

Having been able to follow up the after-history of my cases, both as regards mother and child for a period of four years, I can confidently assert that I have not seen any harmful effects on either the mother's or the child's health which could be attributed to the use of this "twilight sleep" method.

The main disadvantage of the method in private practice is that it requires far more time and careful personal attention than are needed in ordinary labour cases. It has always seemed to me, however, that the extra time and trouble are well spent, for surely any woman has the right to be protected from unnecessary pain and suffering during parturition. I am not in agreement with those who state that labour is a normal physiological process and should be left to Nature as much as possible. Modern civilisation has so changed the average woman of to-day that parturition is no longer the easy process it was reputed to be in less civilised times. I am quite convinced that "twilight sleep" can be just as efficiently carried out in the patient's own home as in a hospital or nursing home. The following case, as being unique in many respects, is quoted in full:—

Mrs. —, primipara, age 43 years. Healthy. Pelvic measurements normal. Labour commenced at 9 A.M. on Sept. 29th, 1917. Examination revealed normal position of child; vertex presentation; L.O.A. At 11 A.M., when pains recurred every five minutes and cervix admitted two fingers, the first injection was given. Twenty minutes later patient was drowsy and sleeping between pains, but moaning during pains. The following injections were given after memory test: second, at 11.45; third, at 1.5 P.M. (patient at this stage—face flushed, very little thirst, and during uterine contractions quiet); fourth, at 2.35 (patient's condition as above); fifth, at 4 P.M.; sixth, at 5.45; seventh, at 7.15; eighth, at 8 P.M.; ninth and last, at 10 P.M. Baby girl born at 10.30 P.M. Placenta 11 P.M. No forceps or pituitrin used. No post-partum hæmorrhage. No perineal laceration. Baby breathed and cried out spontaneously. Mother slept for six hours after completion of labour.

The chief interest of this case was the fact that during the latter part of the labour—i.e., from about 7.30 P.M. onwards—one of the worst enemy air-raids over this district of London was taking place, and some bombs were dropped within a short distance of this particular house. Careful inquiry from the patient afterwards revealed the fact that she did not know until some hours after her labour was over that an air-raid had taken place. Mother and child made splendid progress, and at the present time are both in

excellent health. The baby is now 1 year and 7 months old. [A photograph of the child was submitted bearing out this statement.]

#### "Twilight Sleep" Statistical Table.

Total number of cases .. .. .	435
Number of primiparæ .. .. .	179
" " multiparæ .. .. .	256
Average age of primiparæ .. .. .	25 years.
" " multiparæ .. .. .	32 "
Maternal mortality .. .. .	Nil.
Fœtal .. .. .	Nil.
Vertex presentation .. .. .	422
Breach .. .. .	8
Face .. .. .	2
Transverse .. .. .	3
Average duration of labour in primiparæ .. .. .	18½ hours
" " multiparæ .. .. .	8½ "
Average number of injections in primiparæ .. .. .	9 "
" " multiparæ .. .. .	4 "
Average interval between injections .. .. .	1½ hours
Highest number of injections in 1 case, 14 (in a primipara)	
Lowest " " 1 (in a multipara)	
Cases in which "twilight sleep" was successfully obtained—i.e., amnesia and analgesia were complete ..	76 per cent.
Cases where amnesia was imperfect, but analgesia was marked .. .. .	17 "
Cases of partial analgesia only .. .. .	5 "
Cases of complete failure—i.e., neither amnesia nor analgesia obtained .. .. .	2 "
Condition of child at birth—	
(1) Breathed and cried out spontaneously in .. .. .	88.1 "
(2) Cyanosed in .. .. .	11.9 "
Perineal lacerations in primiparæ .. .. .	12.61 "
" " multiparæ .. .. .	4.03 "
Placenta delivered half an hour after birth of child in ..	66 "
Placenta delivered by Crede's method in .. .. .	33.2 "
" manually extracted in .. .. .	0.8 "
Post-partum hæmorrhage severe in .. .. .	3.03 "
" slight in .. .. .	5.15 "
Labour completed by use of forceps in .. .. .	18 "
" " injection of pituitary extract .. .. .	22 "
Chloroform used as an additional anaesthesia in .. .. .	7.01 "
Lactation—	
Mothers with good supply of milk and able to nurse ..	69 "
" " unable to nurse .. .. .	31 "

## HYPERKERATOSIS OF THE HAIR FOLLICLES IN SCURVY.

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In dealing with some 3000 cases of scurvy which occurred amongst Serbian troops it was noticed that a condition of hyperkeratosis of the hair follicles was commonly present, in addition to those skin changes which are generally described as proper to this disease. The latter are: (a) an increase in dryness and roughness of the whole skin; and (b) a petechial rash due to small hæmorrhages occurring mainly in connexion with the hair follicles.

#### Occurrence of the Skin Changes.

**Frequency.**—The frequency of these follicular changes in scurvy is shown by the following analysis of 78 consecutive cases, which were under special observation with reference to another point<sup>1</sup>:—

Changes of petechial type only .. .. .	9 per cent.
" keratotic .. .. .	32 "
Both petechial and keratotic types present in ..	55 "
same individual .. .. .	1 "
No abnormal follicles .. .. .	4 "

From this it is seen that the proportion showing follicular hyperkeratosis amounted to no less than 87 per cent.

**Distribution.**—The follicles which showed this change were usually limited to the lower extremities, the favorite sites being the front and inner aspects of the thighs and the upper parts of the legs. When they were numerous in these regions—and in some instances nearly every follicle was affected—those of the pubic hairs were often affected as well (20 per cent. of the cases mentioned above), and sometimes those of the backs of the wrists and forearms (2.5 per cent.).

**The individual follicle.**—Each affected follicle presented a hard conical swelling about the size of a pin's head, owing to a collection of horny epithelial debris which had accumulated at the follicle mouth. In some a thin atrophic hair, or a broken hair stump, projected from the summit of this cone; in others, the hair was wanting, having been shed or broken off flush with the surface. When dirt was present it tended to be incorporated with the material forming the cone, which then, on superficial examination,



resembled an ordinary sebaceous comedo. By degrees the conical projection flattened down into a scale, under which, on examination with a lens, a new developing hair could be seen coiled up like a watch spring. At this stage, also, the appearance on casual examination resembled that of a comedo. Later the flattened scale was shed, the new hair erupted and was seen to be growing from a pink recovering follicle. These changes were not simultaneous in all the follicles. When a patient was admitted to hospital it was the rule to find some follicles in the stage of conical swelling with the hair still present, some in the stage of flattened scale covering a new developing hair, and others in intervening stages of broken or shed hairs.

*Duration.*—The whole process took place gradually and was spread over many weeks. Owing to the fact that these changes caused no symptoms and never attracted the patient's attention their duration before admission could not be ascertained. Since, however, it was common to find some follicles in the stage of new developing hair when the patient came into hospital, it must be concluded that the abnormal process had commenced a month or even six weeks before. Under treatment recovery was gradual. As a rule, at the end of six or eight weeks, when the patients passed from observation, all the scales were shed, and young hairs could be seen growing from pink healthy follicles. It is probable that a further period of six to eight weeks elapsed before the normal condition became fully re-established, the whole process thus taking from four to six months in a marked case.

*Degree of recovery.*—Though it is possible that some few follicles were permanently destroyed, complete recovery must be the rule. All those which were watched in 1918 were seen to recover to the stage of commencement of a new hair, and no deficiency of leg hairs was ever noticed to follow the severe epidemic of scurvy from which the Serbians suffered in 1917.

#### *Causation and Value in Diagnosis.*

*The cause of hyperkeratosis of the follicle.*—The question was raised whether these keratotic changes could be due to a minute hæmorrhage having taken place into the deep part of the follicle, sufficient to impair its nutrition, but too small to be recognised as a hæmorrhage upon the surface. In the follicles of the petechial type the appearances were quite different. In these the follicle formed the centre of an intra-dermal hæmorrhage which showed as a flat round spot, 1 or 2 mm. in diameter, bright red in colour when recent, fading to a dull brown later. Although the hair of this follicle might be thin and atrophic or shed, there was never any heaping up of epithelium or keratosis, the spot remaining flat. Intervening types between the petechial and the keratotic were not seen, and the presence of hæmorrhage could never be demonstrated in one of the latter, so that it is safest to conclude that the keratosis was caused by a simple scorbutic impairment of the nutrition of the follicle.

Friction and irritation from dirt were taken into consideration as possible contributing causes and both dismissed. Friction seems to be ruled out by the frequency with which the pubic hairs were affected and by the fact that the infantry suffered as much as mounted troops. As regards cleanliness, the skins of these men were as well kept as those of any other troops on active service.

*Value in diagnosis.*—When this follicular hyperkeratosis had been recognised as occurring in the vast majority of cases of undoubted scurvy it was searched for in patients admitted for other diseases and at other seasons, as a result of which it was found that: 1. Follicular hyperkeratosis was unusual except during the scurvy season (January to June). When seen at other times it was usually in conditions involving marked wasting and debility, such as chronic dysentery, in which a deficiency of antiscorbutic vitamine might well have existed. 2. During the scurvy season, when the Serbian Army as a whole was suffering from deficiency of antiscorbutic vitamine, follicular hyperkeratosis was found to be present in a large proportion of patients admitted for other diseases. This was most striking in the case of men admitted to the surgical side for conditions which had not impaired the general health, such as gunshot wounds, herniæ, fractures, &c. Although these men might have no other signs or symptoms of the disease, we came to regard them as definitely scorbutic, and my surgical colleague, Major R. V.

Slattery, postponed operating upon them, whenever possible, until they had received some weeks of antiscorbutic treatment.

In consideration of these two points, and of the fact that most definite cases of scurvy, though admitted within a few days of the onset of symptoms, show a stage of keratosis which must have taken some weeks to develop, it seems obvious that the presence of this follicular hyperkeratosis may afford a valuable means of early diagnosis. I am under the impression that, given another scurvy epidemic among Serbian troops, it would be possible to pick out most of the men who were on the road to clinical scurvy by a brief inspection of the hair follicles of their legs, and to do this in the pre-symptomatic stage when preventive measures would still have time to succeed.

*The relation of hyperkeratosis to skin nutrition in general.*—Dr. A. Whitfield tells me that he recognises general dryness and roughness of the skin with follicular changes similar to those described above as occurring in all sorts of mal-nutritional states, but most commonly in association with wasting. He regards it as a general stagnation process which shows most in the follicles, the cells being incompletely matured and consequently cohering to make a flake which is shed en masse, instead of by individual cells as an imperceptible process.

As noted by Johnson Smith,<sup>2</sup> wasting—that is to say, simple loss of fat and muscle—does not occur in uncomplicated scurvy. Certainly some of my cases which showed these follicle changes in marked degree were amongst the finest specimens of physical manhood I have ever seen; and, excluding complicating factors such as dysentery and malaria, the majority were above rather than below the average of physical development. In the case of these Serbians it seemed that nothing was lacking save antiscorbutic vitamine—a fact which invites speculation concerning the pathogeny of the similar skin condition which occurs in other malnutritional states.

It is to be remembered that with our modern habits of cooking the intake of antiscorbutic vitamine of the average individual falls considerably below the ration which was intended by nature.

#### *Conclusions.*

1. Follicular hyperkeratosis occurs in the vast majority of cases of clinical scurvy.

2. In a large proportion of cases it formed the first recognisable sign of the scorbutic tendency, and would have enabled a diagnosis to be made before the onset of symptoms.

3. It is similar in appearance to the hyperkeratosis of follicles which occurs in other malnutritional states.

4. It appears to be due to altered nutrition of the follicle produced by simple deficiency of antiscorbutic vitamine.

I am indebted to Dr. Whitfield for information concerning follicular hyperkeratosis in general malnutrition, and to Miss Ahern for careful clinical notes of the cases quoted.

#### *References.*

1. Wiltshire: The Value of Germinated Beans in the Treatment of Scurvy, THE LANCET, 1918, ii., 811.
2. Johnson Smith: Article, Scurvy, Allbutt and Rolleston, System of Medicine, 2nd ed., vol. v., 886.

Welbeck-street, W.

**CENTENARIANS.**—Mr. W. C. Vivian died on August 29th at his residence, Reskaldinnick, Camborne. He celebrated the one hundredth anniversary of his birthday on June 6th last.—Miss S. E. Selden, daughter of the late Mr. W. C. Selden, M.R.C.S., of Melksham, died recently at Bath. She was born in Bath on Feb. 3rd, 1819.

**GUY'S HOSPITAL WAR MEMORIAL.**—The fund for the Guy's Hospital Memorial will be closed at the end of the present month and a general meeting of the subscribers will be held in October to decide upon the form or forms which the memorial shall take. The first charge on the fund will be the education of the children of Guy's men who have fallen in the war, should such help be required, as well as assistance to widows and to Guy's men permanently disabled. Fortunately the help required in this direction will not demand much of the fund, and it is proposed to devote a portion of the subscriptions to a War Memorial Clinical Ward, the adornment of the Dining Hall of the College, and the formation of a nucleus for endowment of a Dental Research Scholarship.



## FOREIGN BODIES IN THE ŒSOPHAGUS AND RESPIRATORY PASSAGES.

### REMARKS ON THE DANGERS ARISING FROM THEIR IMPACTION AND SOME DIFFICULTIES WHICH MAY BE MET WITH IN THEIR REMOVAL:

A PLEA FOR THE ABOLITION OF THE COIN-CATCHER, THE BLIND USE OF THE BOUGIE AND PROBANG, AND THEIR REPLACEMENT BY THE DIRECT ENDOSCOPIC METHODS OF EXTRACTION.

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It is very well known that many obsolete methods of treatment persist in various departments of medicine and surgery at the present day and are still described in recent text-books. In the case of foreign bodies in the air- and food-passages the use of such out-of-date instruments as the coin-catcher, bougie, and probang still persists, much to the chagrin of the specialist, whose preaching of the dangers and risks of such unsurgical methods of treatment by blind working in the dark appears in many instances to have passed unheeded. Though old habits die hard, yet it appears incomprehensible how such procedures can still continue in the face of the accumulated experience and repeated warnings of the entire body of laryngologists. Since improvement in the "direct vision" method of per-oral endoscopy has placed at our disposal the more exact means of treating such cases, one would have thought that the coin-catcher at least would have been banished from our instrumentarium once and for all. The following cases, however, show that this haphazard and dangerous instrument is still being used, often with disastrous results.

#### THE BLIND USE OF THE COIN-CATCHER AND ITS DANGERS.

*A Halfpenny accidentally Swallowed and Impacted in the Œsophagus for Six Days, Removed by the Œsophagoscope, after Repeated Attempts with a Coin-Catcher had Failed.*

Though this case is only one of many others, in which coins and various foreign bodies have been successfully removed by endoscopic technique, yet it would appear to be of sufficient interest to merit publication in view of the importance of the discussion to which it gave rise when reported at a meeting of the Laryngological Section of the Royal Society of Medicine.<sup>1</sup>

On August 8th, 1915, at 4 P.M., a little girl, aged 4 years, was taken to a suburban general hospital, having swallowed a halfpenny at mid-day whilst playing with it in her mouth. With the exception that she had been sick three or four times there were no other symptoms. Examination showed no difficulty in breathing and as the patient appeared to be quite comfortable she was sent home. The following morning she was

in front of it. (Fig. 24.) On withdrawal of the tube and again passing it carefully down the posterior wall the coin was easily located and removed without any difficulty with forceps. The child returned home next day, and no complaints were afterwards made of soreness of the throat, difficulty in swallowing, or any other symptom. Fortunately, in this case no damage had been done to the œsophageal wall by the coin-catcher.

The case gave rise to considerable discussion at the above meeting in connexion with the dangers of this old-fashioned and out-of-date instrument. Mr. D. R. Paterson referred to the case of a child who had been sent to a general hospital with a coin in its œsophagus, and because a coin-catcher "failed to bring anything away" the child was sent home. It was not until 18 months later, when "tracheal symptoms" arose, that the case came under his notice. The coin was discovered in the gullet by œsophagoscopy and was safely removed. He remarked that these cases were now common, and he thought it was time that the authorities at general hospitals recognised that the direct method was the proper one, and that



FIG. 1.—Skiagram showing a halfpenny impacted in the œsophagus of a child aged four years. Posterior view.

such cases should not be submitted to a coin-catcher. Sir William Milligan associated himself with Mr. Paterson's remarks. He thought that hospitals should give definite instructions to house surgeons not to use the coin-catcher, and that it was lamentable the state the œsophagus was brought into sometimes by the inexperienced trials at removal of foreign bodies. He had several times seen fatal cases as the result of the wall of the œsophagus being torn by the coin-catcher. If these cases were at once sent to the proper department the right method would be used. He suggested that a

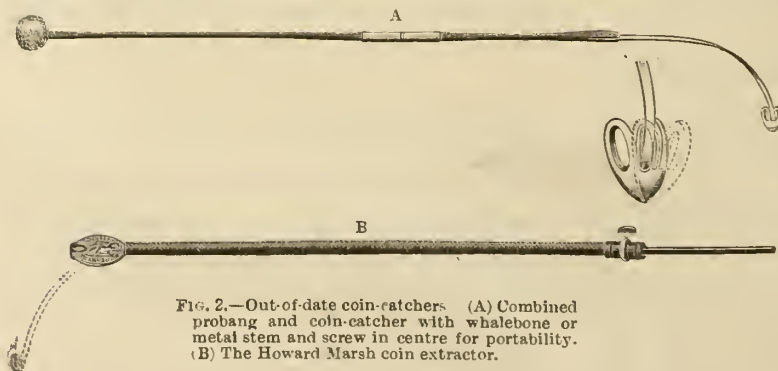


FIG. 2.—Out-of-date coin-catchers. (A) Combined probang and coin-catcher with whalebone or metal stem and screw in centre for portability. (B) The Howard Marsh coin extractor.



FIG. 3.—Semi-diagrammatic view of a coin impacted against the posterior wall of the œsophagus, leaving sufficient room in front for a coin-catcher to pass up and down without touching the coin.

brought back to the hospital as she had been sick during the night, and was unable to swallow anything but liquid food. On this occasion she was admitted and X rayed by Dr. David Arthur, when the coin was distinctly seen to be impacted in the œsophagus at the level of the seventh cervical vertebra—i.e., just below the cricoid cartilage. (Fig. 1.) Three or four attempts to extract the coin with a coin-catcher (Fig. 2) without a general anæsthetic failed. It was not till six days later that it was considered advisable to send for a laryngologist, and the writer was asked to attend. The child was placed under chloroform anæsthesia, an endoscopic tube of 10 mm. diameter was passed into the œsophagus, but the coin could not at first be seen, since the tube had passed down

resolution should be framed and forwarded to the various teaching hospitals in this country. Mr. W. Howarth related a case which occurred at his hospital, illustrating Sir William Milligan's remarks, where attempts were made to extract a halfpenny from a child's œsophagus by means of a coin-catcher. The child bit the coin-catcher, broke off the end, and this was swallowed. It became impacted in the pylorus and had to be removed by laparotomy, and the coin, which remained impacted in the œsophagus, was removed by the direct method. Since this occurrence the coin-catcher had

<sup>1</sup> Proc. Roy. Soc. Med., 1915, ix. (Laryngol. Sect.), pp. 39-41





FIG. 4.—The cricoid-pharynx and upper part of oesophagus seen from behind. A portion of the posterior wall has been removed to show the coin-catcher which has caught a coin, but on withdrawal has itself been caught under the posterior inferior edge of the cricoid cartilage, so that neither the coin-catcher nor the coin can be extracted.

2 years, who had a penny lodged in the oesophagus five days previously and where forceps had been blindly passed without an oesophagoscope, which he considered an "utterly unjustifiable procedure." When seen "the temperature was 104° and the pulse uncountable, sloughs were being vomited, and the child was sinking away in the profound shock of a traumatic oesophagitis. Its death

been banished from the casualty department at his hospital. Dr. F. de Havilland Hall expressed his opinion that it was very desirable that the members of the Section of Laryngology should draw up a communication and send it to the members of general hospital staffs—that the time had come for pronouncing that the direct method should be employed in these cases instead of using the coin-catcher.

*Some Reported Cases showing the Disastrous Results following Attempts at the Blind Extraction of Foreign Bodies.*

The following are a few of many cases reported in the medical press which are here referred to in order still further to emphasise the disastrous results of the blind probing in the dark with forceps, the coin-catcher, or probang:—

Chevalier Jackson<sup>2</sup> (Philadelphia) mentions that he had seen a child, aged



FIG. 5.—The same in sagittal section. The coin is seen lying in the posterior half of the coin-catcher, whilst the anterior portion has been caught under the lower projecting edge of the cricoid cartilage.

Thomas Guthrie<sup>4</sup> (Liverpool) reports a case in which a halfpenny was impacted in the oesophagus and a previous unsuccessful attempt at removal with the coin-catcher failed. On examination with the oesophagoscope the coin was found to have been forced upwards and buried under the mucous membrane at about the level of the cricoid. Removal was performed by tearing through the mucous membrane, but recovery was fortunately uneventful.

E. D. Davis<sup>5</sup> supplies the following notes of two cases not yet recorded:—(1) A girl, aged 4½, swallowed a halfpenny, which became impacted in the gullet immediately below and overlapped by the lower edge of the cricoid cartilage. Several unsuccessful attempts were made

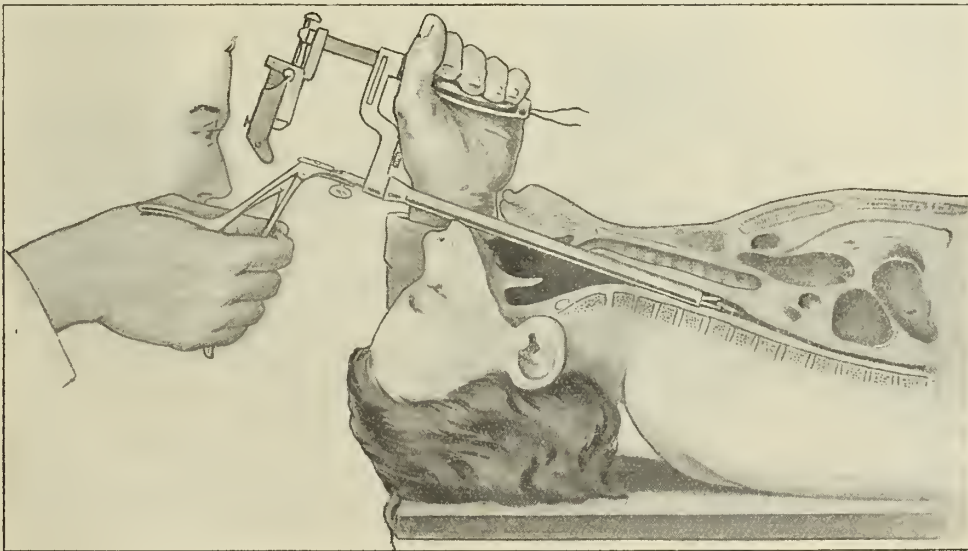


FIG. 6.—This diagram shows the disadvantageous and strained position commonly employed for the passage of endoscopic tubes through the buccal cavity, pharynx, and oesophagus, with over-extension of the head and neck, causing anterior curvature of the cervical vertebrae; it also shows the faulty position of the tube in the middle line of the mouth and in contact with the incisor teeth.

was really due to the absolute ignorance of the family physician, who had never heard of oesophagoscopy and its safety in trained hands."

Logan Turner<sup>3</sup> (Edinburgh) refers to a case where a halfpenny had remained in the oesophagus for only one week, and the patient died as a result of the injury caused by the old-established method used for the removal of the coin, and not from the presence of the coin itself.

to remove it by experienced and skilful surgeons accustomed to the use of the coin-catcher. The coin was finally removed without difficulty by oesophagoscopy. (2) Report of an inquest in the lay press on a boy where the coin-catcher was used to extract a penny. The coin-catcher broke and the child died with the penny and piece of the coin-catcher fixed in the gullet.

Norman Patterson<sup>6</sup> gives the particulars of an unreported case which occurred at one of the London hospitals. A child, aged 4 years, had a

<sup>2</sup> Journ. Amer. Med. Assoc., 1909, liii., p. 1009.

<sup>3</sup> Proc. Scot. Otol. and Laryngol. Soc., Nov. 22nd, 1913; Abstract Journ. Laryngol., Rhinol., and Otol., 1914, xxix., p. 98.

<sup>4</sup> Liverpool Med. Chlr. Journ., 1912, xxxii.; Abstract Journ. Laryngol., Rhinol., and Otol., 1913, xxviii., p. 219.

<sup>5</sup> Personal communication to the author.



halfpenny impacted in its œsophagus at the level of the cricoid cartilage—as shown by X rays. During attempts to move it with the coin-catcher the basket portion broke off from the stem and passed into the stomach. Both coin and coin-catcher had to be removed the same evening by gastrotomy. The coin-catcher employed had been in use at this hospital for 20 years, and had become weakened by rust and old age.

G. L. Richards<sup>7</sup> (Fall River, Mass.), at a meeting of the American Laryngological Association in 1909, in describing the coin-catcher as almost obsolete, mentions that a child of 2 or 3 years of age was brought to one of his colleagues with a coin in the œsophagus, and he used the coin-catcher. After catching the coin and trying to remove it, he found this was impossible on account of urgent symptoms of suffocation. He had to do a tracheotomy first, and was then able, but

Donald Armour<sup>8</sup> refers to the case of a boy, aged 5 years, who swallowed a coin, which was seen by X rays lodged in the pyriform fossa. A house surgeon passed a coin-catcher and engaged the coin, but on traction being made to remove it the coin-catcher broke off at the junction of the metal part with the whalebone handle. The portion of the coin-catcher, 5 inches in length, passed down and lodged in the lower end of the œsophagus. The coin was easily extracted through the mouth with a pair of forceps, whilst it was necessary to perform laparotomy and gastrotomy in order to remove the portion of the coin-catcher.

Gordon King<sup>10</sup> (New Orleans, U.S.A.) protests against the indiscriminate use of the coin-catcher, which he says may be the cause of serious injury to the œsophagus. He cites a case reported by Schileau

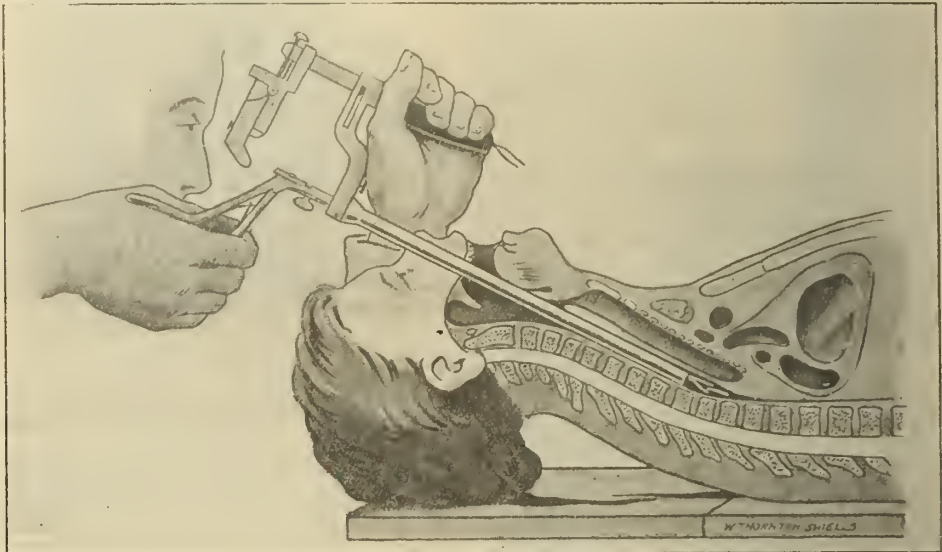


FIG. 7.—This diagram shows the correct position for the easy insertion and passage of endoscopic tube into the œsophagus when the upper two-thirds are under examination.

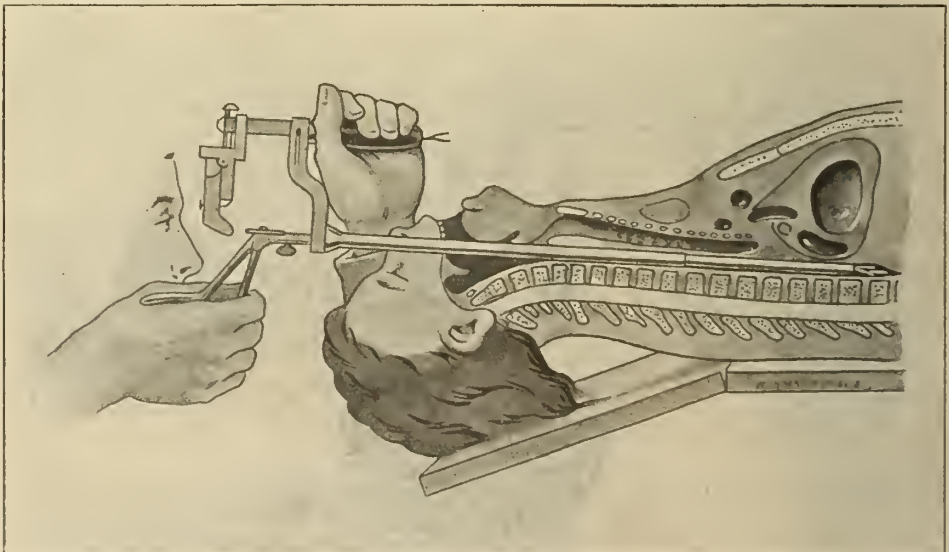


FIG. 8.—The same when the lower third of the œsophagus is under examination: the head being lowered by means of the movable table flap, the axis of the endoscopic tube is brought into line with and parallel to the œsophagus in the horizontal plane.

with difficulty, to remove the coin-catcher, since it had got caught under the cricoid cartilage (Figs. 4 and 5 have been specially drawn for the writer to illustrate how this danger can occur).

Chevalier Jackson<sup>8</sup> (Philadelphia), in a discussion which followed, said he was sorry to say the coin-catcher was not an obsolete instrument. A patient was brought to his hospital a few weeks previously with a penny in the œsophagus. A coin-catcher had been previously passed down to take out the penny, the position of which was demonstrated by a radiogram, but the coin-catcher entered the trachea and on being drawn out had torn out the inside of the larynx. The child was in a very serious condition. It took him but a moment to remove the penny safely and easily by aid of the œsophagoscope.

of death occurring from tearing through the œsophageal wall in efforts to extract a coin. He also cited another case reported by Felizet, where the basket end had been broken off and lodged in the gullet with the coin.

#### *Frequency of Lodgment of Foreign Bodies.*

Statistics show that the lodgment of foreign bodies in the air and food passages is much more common than generally supposed, especially amongst children, on account of their habit of placing things in their mouth, and these foreign bodies are exceedingly likely to make their way into the

<sup>7</sup> Trans. Amer. Laryngol. Assoc., 1909, xxxi., p. 371.

<sup>8</sup> Discussion on G. R. Richards's case, *ibid.*, p. 372.

<sup>9</sup> Rept. Soc. Study Dis. Child., 1904, iv., p. 116.

<sup>10</sup> Trans. Amer. Laryngol. Assoc., 1905, xxvii., p. 203.





FIG. 9.—Approach to the lower sphincter orifice of the pharynx (closed) as seen through Hill's 18 mm. diameter oesophagoscope.

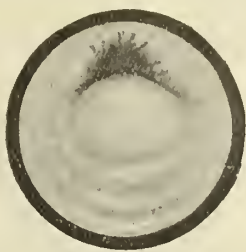


FIG. 10.—The lower pharyngeal orifice partially open. Note the alteration in the shape of Killian's lip. The pharyngo-oesophageal junction and the mouth of the oesophagus is out of sight in deep shadow. Note also the pharyngeal "lip" forming a distinct ledge posteriorly. Hill has pointed out that Killian inaccurately described this lip as forming the posterior boundary of the mouth of the oesophagus.

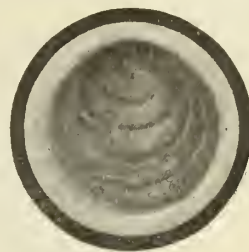


FIG. 11.—View of the cervical and upper thoracic oesophagus after passage of the tube through the lower sphincter orifice of the pharynx.

oesophagus. Though in some cases a coin when it has entered the oesophagus may safely pass through the alimentary tract and be evacuated without causing any symptoms, few foreign bodies, if inspired into the respiratory tract, are voluntarily expectorated. It has been shown by innumerable cases that the risk of the sojourn of a foreign body is greater than the risk of early per-endoscopic removal. Therefore when the fact of the accidental swallowing of a foreign body is recognised no time should be unnecessarily lost before it is sought for and removed, since if not removed as soon as possible it may give rise to local irritation, oedema, septic infiltration, ulceration, perforation, and death.

#### Pre-endoscopic Days.

A. E. Durham<sup>11</sup> refers to Adelman's<sup>12</sup> analysis of 314 untreated cases of foreign bodies in the oesophagus during the pre-endoscopic days, in 109 of which cases fatal results ensued. In 31 of the fatal cases death was due to perforation either of the heart, aorta, or one of the great vessels; in 43 to lesions of the respiratory organs; and in 25 to ulceration of the oesophagus and septic inflammation set up in the neighbouring parts.

Chevalier Jackson<sup>13</sup> states that 105 deaths were recorded in North America alone in five years from foreign bodies in the air and food passages, from ill-advised efforts at removal—e.g., blind groping with forceps or bougies. McKinney<sup>14</sup> adds: "There are also many more unrecognised and unreported cases which would increase the high mortality rate."

#### Brilliant Results of Endoscopy.

The introduction of straight endoscopic tubes has placed at our command the means by which removal of foreign bodies from the air and food passages can now be efficiently carried out by

FIG. 12.—Coin impacted partly in the cervical pharynx and partly in the cervical oesophagus (after Guisez).

expert endoscopists under direct vision by forceps with hardly any risk to the patient; and in this way the death-rate has been greatly reduced so that many valuable lives have been saved.

Chevalier Jackson<sup>15</sup> gives the mortality and results of bronchoscopy in the removal of foreign bodies from the air passages during recent years as ranging from 5.3 to 1.7 per cent., while that of oesophagoscopy as 3 per cent. to nil. He states that in his own clinic in 182 cases of bronchoscopy the foreign body was removed in 177 cases, whilst in 203 cases of oesophagoscopy the foreign body was removed in 198 cases, and escaped downwards in 8. There were only 4 deaths, 1 due to chronic disease of the kidneys, the other 3 the result of previous laceration due to improper attempts at extraction.

Friedberg<sup>16</sup> (Chicago), from the analysis of 50 cases of foreign bodies in the oesophagus since the introduction of endoscopic methods, shows that the age period varies from 7 months to 63 years, but that the greater number—viz., 42—occurred between the ages of 7 months and 10 years, 13 of which were between 1 and 2 years of age. Of the 50 cases of foreign

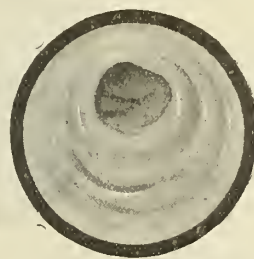


FIG. 13.—The cervical oesophagus with its lumen open (during the inspiratory stage).



FIG. 14.—The same closed (during the expiratory stage) with the endoscopic tube centralised.



FIG. 15.—The same with the endoscopic tube tilted anteriorly.

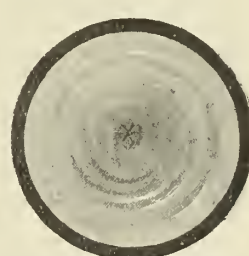


FIG. 16.—The same, showing extreme closure (stellate rosette)—uncommon.

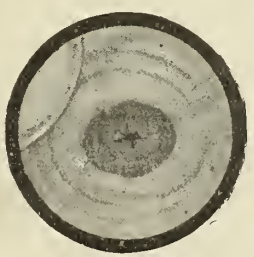


FIG. 17.—The oesophagus in the cervical or thoracic region opening in its upper and closing in its lower part during respiration. To the left is seen a loose fold of the oesophageal wall, pushed downwards by the tube.

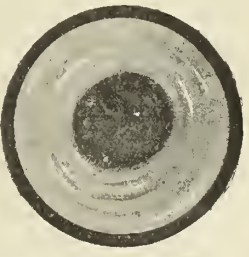


FIG. 18.—The thoracic oesophagus seen during the inspiratory stage more widely open and its lumen more circular than in the cervical region.

bodies it is interesting to note that 29 were coins or disc-shaped bodies, and that 40 were impacted below the crico-pharyngeus and only 4 above—i.e., in the deep pharynx. Successful extraction by endoscopy occurred in 47 cases and only 2 became dislodged and passed into the stomach. The only fatal cases amongst these 50 foreign bodies was in that of an impacted coin in which considerable traumatism had previously been caused by indirect methods, resulting in death from infection following a trachea-oesophageal fistula.

That the medical profession in general have not yet fully recognised the dangers which may accrue from the swallowing of foreign bodies, nor realised the brilliant results obtained by oesophagoscopy and bronchoscopy methods, is shown by many cases of death reported in the lay press. For example,

<sup>11</sup> Foreign Bodies in the Oesophagus, Holmes's Surgery, 1883, i., p. 789.

<sup>12</sup> Vierteljahrsschr. für Prakt. Heilkunde, 1867.

<sup>13</sup> Journ. Amer. Med. Assoc., 1909, liii., p. 1009.

<sup>14</sup> Ibid.

<sup>15</sup> Trans. XVIIth. Internat. Cong. Med., London, 1913 (Laryngol. Sect.), p. 3.

<sup>16</sup> Ann. Otol., Rhinol., and Laryngol., 1917, xxvii., p. 772.





FIG. 19.—The same during the expiratory stage; incompletely closed—i.e., it does not close as completely in the thoracic as in the cervical region during endoscopy.



FIG. 20.—Mid-thoracic region showing bulging of left bronchus.



FIG. 21.—Lower end of thoracic gullet showing the phrenic or diaphragmatic constriction.

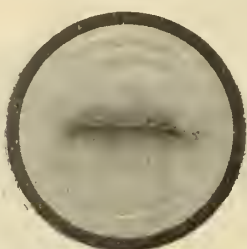


FIG. 22.—The endoscopic appearance of the inflamed œdematous lumen of the œsophagus just above the position of an impacted coin. Note the dark transverse slit.



FIG. 23.—Appearance of upper edge of a coin when located by the endoscopic tube.

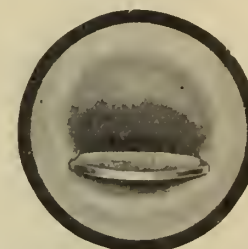


FIG. 24.—Semi-diagrammatic view of a coin lying on the posterior wall of the œsophagus, the flaccid anterior wall being stretched as the tube descends allowing endoscopic tubes to pass in front of the coin.

in the same week as the writer's case previously referred to there was reported<sup>17</sup> the "Death from misadventure" of a child aged 11 years, who, while playing with her father and performing a conjuring trick, accidentally swallowed a penny which stuck in its throat. Attempts on the part of the father to remove the coin having failed, the child was taken to a cottage hospital, where it died some days later of "septic poisoning." At the inquest it was stated that there was a difficulty in obtaining the services of an X ray expert to locate the coin! Though the use of the Roentgen rays may prove of great service both in settling the presence of a foreign body and in determining its exact position, yet if it is not available there is no reason why the endoscopic tube alone should not be used to locate and extract a foreign body so long as it is passed under direct vision. The X rays should only be considered as an accessory in endoscopic work and not as an absolute necessity. It is important to remember, however, that a button if made of vegetable ivory and some kinds of vulcanite may not be revealed by X rays. Again, "Death by misadventure" was the verdict<sup>18</sup> recently given at another of the many inquests on children who have died from swallowing foreign bodies—in the case of a two-year-old child who swallowed a halfpenny. The coin perforated an internal organ and set up inflammation of the lungs. A more correct verdict, the author suggests, would have been "Manslaughter" for neglecting to send for an experienced endoscopist.

*The Danger of Foreign Bodies, with reference especially to Coins in the Œsophagus and some Difficulties which may be met with in their Extraction by Endoscopy.*

Since this article is mainly concerned with the use and abuse of the coin-catcher, reference has been chiefly confined to cases of coins and allied circular bodies.

**Œsophageal measurements.**—The œsophagus is 10 inches long in the adult. It commences just below the lower border of the cricoid cartilage—i.e., below the lower sphincter orifice of the pharynx, its opening or mouth being in the adult about 6 inches distant from the upper incisor teeth. From the latter to the crossing of the aortic arch the distance is 10 inches, whilst to the level of the diaphragm it is 16 inches. These measurements vary somewhat in adults, and in children may be reduced to one-half.

The so-called mouth of the œsophagus is often described as a transverse slit bounded in front by the lower border of

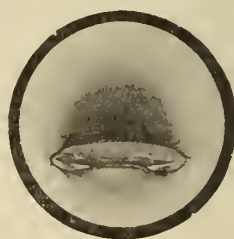


FIG. 25.—The same, showing commencing folding of the swollen post-œsophageal mucosa over an impacted coin. The anterior wall is seen well distended by the endoscopic tube.



FIG. 26.—The same, showing a later stage of folding of the swollen post-œsophageal mucosa over an impacted coin, which is securely grasped, and almost completely hidden from view.

the cricoid cartilage and behind by the vertebral column, but, as emphasised by William Hill,<sup>19</sup> this is usually confused with the lower sphincteric orifice of the pharynx.

The average measurements of this orifice in the adult cadaver are 23 mm. in the transverse and 17 mm. in the sagittal diameter. The average transverse diameter of the unstretched œsophagus in the living adult is 25 mm. (1 inch) all the way down; the antero-posterior diameter varying from 19 mm. ( $\frac{3}{4}$  inch) at the cricoid to 25 mm. (1 inch) at the cardia. The œsophageal lumen, however, is capable of much greater distensibility both in the infant and adult, as shown by the passage of circular foreign bodies—e.g., coins, buttons—of much larger diameter.

D. R. Paterson<sup>20</sup> (Cardiff) has safely removed from the œsophagus of a soldier by means of a 20 mm. tube the disc of a bully beef tin measuring 35 mm. ( $1\frac{3}{8}$  inch)—i.e., rather larger than a half-a-crown, which was impacted at the level of the sternal notch, whilst Whale<sup>21</sup> had previously reported an exactly similar disc with the same diameter which he was obliged to remove by œsophagotomy.

Luschka<sup>22</sup> reported a post-mortem case where the œsophagus was dilated to 46 cm. in length ( $18\frac{1}{2}$  inches) and 30 cm. (12 inches) in circumference at its widest part—i.e., a diameter of  $3\frac{1}{2}$  inches. This case is interesting in so far that it shows to what an enormous extent the œsophagus may become pathologically dilated.

*The chief sites of impaction of foreign bodies in the œsophagus and adjacent portion of the deep pharynx.*—

1. In the post-cricoidal pharynx, or hypopharynx—i.e.,

<sup>19</sup> Journ. Laryngol., Rhinol., and Otol., 1916, xxxi., p. 164.

<sup>20</sup> Proc. Roy. Soc. Med., 1916, ix. (Laryngol. Sect.), p. 41.

<sup>21</sup> Ibid., 1915, viii. (Laryngol. Sect.), p. 70.

<sup>22</sup> Archiv. f. Path. Anat. (Virchow), 1863, xlii., pp. 473-477.

<sup>17</sup> News of the World, August 29th, 1915.

<sup>18</sup> Ibid., May 19th, 1918.



above the lower sphincter orifice of the pharynx. 2. At the junction of the pharynx and oesophagus, being partly in each. 3. The loose cervical portion of the gullet entirely below the sphincter. 4. At the constriction in the thoracic gullet where the left bronchus crosses it. 5. According to Stark there is a constriction where the aorta crosses it. 6. At or just above the phrenic level where there is narrowing of the gullet.

*The Direct Endoscopic Method of Extraction of Foreign Bodies.*

In examining the oesophagus it is advisable to employ as large a tube as possible, since not only a more extensive view of the field may be seen, but also there is more room for the manipulation of instruments, and consequently more successful results may be obtained with celerity and certainty, especially when dealing with foreign bodies. Experience has shown that much larger tubes than those first employed may be used with safety and without causing traumatism, provided the operator has acquired the necessary skill and technique.

While Chevalier Jackson employs endoscopic tubes of 7 mm. in infants and 10 mm. as the largest size in adults

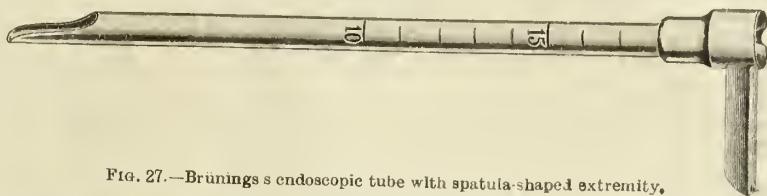


FIG. 27.—Brunings's endoscopic tube with spatula-shaped extremity.

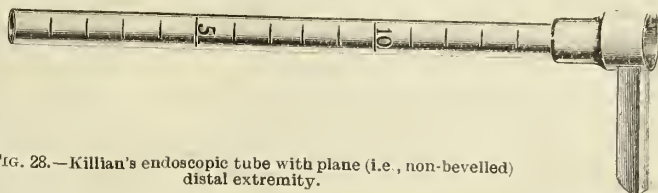


FIG. 28.—Killian's endoscopic tube with plane (i.e., non-bevelled) distal extremity.

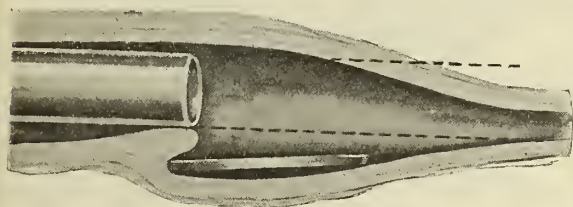


FIG. 29.—Semi-diagrammatic sectional view of the oesophagus showing how a small-sized endoscopic tube may override a loose fold of the posterior wall, which may conceal and partly cover a foreign body—e.g., a coin. The foreign body is consequently out of the line of vision.

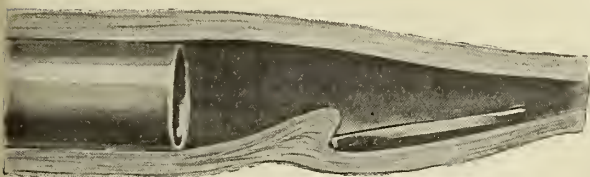


FIG. 30.—The same, showing a large tube about to negotiate and obliterate a fold. The lower edge of the coin is here seen in the line of vision.

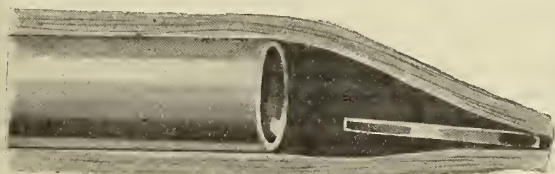


FIG. 31.—The same, showing a large-sized tube stretching the oesophageal walls, as it descends, so obliterating any folds which may be present. In this way the upper edge of a coin lying on the posterior wall becomes tilted forward towards the centre of the advancing tube and its upper edge is easily seen and seized by forceps.

for oesophageal work, Brunings<sup>23</sup> uses tubes that are larger and considers that the largest should not exceed 14 mm. though he has opened an expanding tube to 30 mm. (1 3/16 inch). D. R. Paterson<sup>24</sup> has shown that much larger tubes of 18 and 20 mm. diameter may be passed with safety, and are especially to be commended in the removal of large foreign bodies. His opinion has been confirmed by William Hill, who has used and advocated larger tubes up to 18 mm. diameter for some years.

When using a small or medium-sized tube its distal end has to be moved about from side to side and orientated in order to thoroughly expose the oesophageal walls and foreign bodies are likely to be overlooked, whereas the passage of a large tube circular on section, or, as recommended by Mosher, oval on section, causes distension of the walls, and as the tube is advanced any transverse folds in the walls are obliterated (Figs. 29, 30, 31), and the oesophagus may be seen standing open for some inches ahead of the tube. The tubes should never be passed except under the direct vision of the eye and no force whatever should be used. It is harder to insert a large tube past the cricoid, but the difficulty is easily overcome if the patient is placed in the proper posture, so that the buccal cavity and neck are in a straight line with the thoracic portion of the oesophagus.

*Position of Patient for Oesophagoscopy.*

The dorsal recumbent position with slight extension of the head at the occipito-atloid joint is the correct position for the easy insertion of the tube. (Fig. 7.) This position was first described by William Hill in 1912, who showed that the axis of the oesophagoscope more nearly approaches an angle of 45° with the horizontal when the upper two-thirds of the gullet are under examination. (Fig. 7.) He points out that in endoscopy of the lower fourth of the oesophagus the axis of the tube becomes more or less horizontal. (Fig. 8.) If the lumen of the tube is not seen several inches ahead we are not in the right axis, and the head may require raising or lowering, according as to whether the oesophagoscope is up against the anterior or posterior wall.

The patient lies in the natural recumbent position on the table—the head is extended by placing the finger in the mouth and making traction on the upper alveolar region horizontally away from the head of the table; this extends the head at the occipito-atloid joint without interfering with the position of the cervical spine which slopes gently downwards. This extension of the head without altering the curve of the cervical and upper dorsal spine serves to bring the axis of the bucco-pharyngeal cavity into line with that of the upper half or two-thirds of the oesophagus, and it is then an easy matter to pass an endoscopic tube and all obstruction is avoided (Hill),<sup>25</sup> whereas if the tube is passed in the middle line it will hitch against the teeth, also the arytenoid cartilages or posterior surface of the cricoid plate. (Fig. 6.) The head can be raised or lowered as necessary during the passage of the tube by means of a movable table flap. This is a much better posture than the Rose position

<sup>23</sup> Direct Laryngoscopy, Bronchoscopy, and Oesophagoscopy, 1912, p. 237.

<sup>24</sup> Proc. Roy. Soc. Med., 1916, ix. (Laryngol. Sect.), p. 41.

<sup>25</sup> Journ Laryngol., Rhinol., and Otol., 1916, xxxi., p. 107.



or the modified Rose position of Boyce and Jackson, where the posterior part of the vertex and occiput is hanging over the end of the table and occupies a lower plane than the trunk—causing anterior curvature of the cervical vertebra and over-prominence of the sixth cervical vertebra—so obstructing the passage of the tubes. To get over the difficulties of this position some operators employ an assistant to raise or lower the head while it is extended—at the occipito-atlantal joint—this not only brings the air passages into line, but also the cervical vertebrae parallel to the œsophagus in the horizontal plane. This latter is termed the Boyce position, and is used by Chevalier Jackson.

*Introduction and Passage of the Œsophagoscope.*

The tube should be inserted through the right angle of the mouth, advancing by the right side of the tongue through the buccal cavity and pharynx to the right pyriform fossa, then through the hypo-pharynx or post-cricoid pharynx to its lower sphincteric orifice. This orifice, as previously stated, has been wrongly referred to in the past as the mouth of the œsophagus, and is often described as a transverse slit, bounded in front by the lower border of the cricoid cartilage and behind by the vertebral column, but, as so frequently emphasised by William Hill, this is really the lower sphincter orifice of the pharynx, and the mouth of the œsophagus is situated immediately below.

Coins or similar circular bodies, such as large buttons or discs, when accidentally swallowed, are not always easy to find. They generally enter the œsophagus flat, being so directed by the transverse shape of the lower sphincter orifice of the pharynx (Fig. 9), and almost invariably retain their original position as they descend—i.e., lie flat against the vertebral column, so that when they become impacted they are found lying against the posterior wall (Figs. 23 and 24) or in a band or recess of the œsophagus—anywhere from the cricoid to the cardia (Figs. 25 and 26),

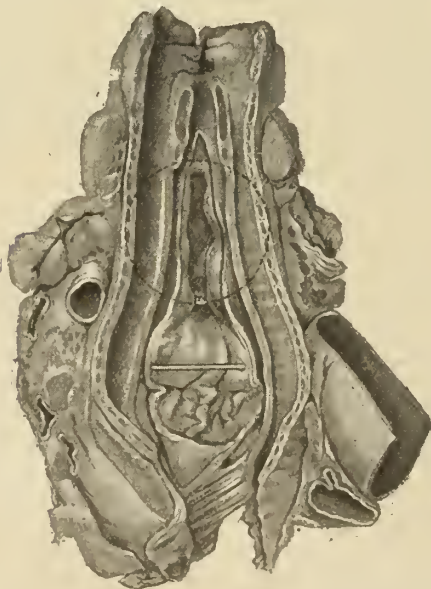


FIG. 32.—Shows a halfpenny encysted in the post-œsophageal wall of a child aged 1 year and 10 months. The dotted circle represents the position of the buried coin. In the specimen the trachea and anterior wall of the œsophagus have been slit open from the front exposing the coin lying in its bed. The dotted line represents the buried circumference of the coin. Note the irregular folds of the œsophageal wall surrounding and nearly completely hiding the coin, only 1/5 of the centre being seen. The remarkable distensibility of the œsophagus at this age is also well seen. (Mr. Jewell's case, from a life-sized drawing specially made for the author, from the specimen, by kind permission of Mr. Jewell.)

and forceps must open antero-posteriorly in order to grasp them. The exact opposite occurs when they are aspirated into the trachea, the antero-posterior position of the vocal cords causing them to enter the trachea edge on—i.e., antero-posteriorly—in which position they are generally found.

The appearance of the œsophagus, as seen through the œsophagoscope, not only varies somewhat in different



FIG. 33.—Shows portion of halfpenny which has perforated the post-œsophageal wall into the posterior mediastinum. This illustration is from a photograph showing posterior view of Fig. 32. (Mr. Jewell's case.)

individuals, but also according as to whether a large or small tube is used in the examination. It also varies according to the position of the tube—i.e., of its distal end—for at one time the lumen may appear centralised (Fig. 14), whilst at others it may be seen in the anterior part of the field with a considerable area of the posterior wall showing posteriorly (Fig. 15), or vice versa. That is to say, in examination of the œsophagus we necessarily obtain a composite view. When an endoscopic tube is passed down into the hypo-pharynx or cricoid pharynx, the lower sphincter orifice is seen to be closed and is represented by a slit consisting of an anterior and posterior lip, the latter being more prominent. (Fig. 9) A short delay may occur here on account of spasm. There is a depression behind on the upper surface of the posterior lip (of Killian) against which the posterior edge of the tube may rest and pressure on which may increase the sphincteric spasm and cause the advancing tube to be held up. By gentle pressure downwards and anteriorly the spasm becomes relaxed and the sphincter opens (Fig. 10), allowing the examining tube to enter the cervical œsophagus. This entrance is the narrowest part of the œsophagus in the living subject.

Figs. 9, 10, 11 represent composite extended endoscopic views of the lower pharynx and œsophagus, drawn from life, by orientation of the distal end of the largest calibre œsophagoscopic tube (18 mm. diameter).

A coin impacted below the sphincteric orifice may have its upper edge hidden by the projecting forward of the posterior pharyngeal wall—i.e., by Killian's lip. This is due to the spasmodic contraction of the lower sphincter of the pharynx—i.e., the lower horizontal bundle of fibres of the inferior constrictor muscle (crico-pharyngeus), which, as before stated, is situated just above the œsophageal mouth. As the endoscopic tube enters the sphincteric orifice it tends to ride down over this lip and may easily pass in front of a foreign body which remains out of the line of vision. Chevalier Jackson in his latest work "Per-oral Endoscopy," 1915, shows an œsophagoscopic view of a coin wedged in this



position, with forceps retracting the subjacent cricopharyngeal fold, preparatory to removal of the coin. (Plate, iii., No. 10, p. 708.)

After passing through the pharyngeal sphincter the tube enters the cervical oesophagus, the lumen of which in the normal condition may be seen to contract and expand more or less with the respiratory movements—i.e., opening during inspiration (Fig. 13) and closing during expiration (Fig. 14), the latter having the appearance of a small dark rosette which, according to the position of the tube, may be either centrally or peripherally situated. (Figs. 14 and 15.)

Below the top of the sternum as far as the cardiac orifice of the stomach, the expansion and contraction of the thoracic oesophagus is usually found to be more marked than in the cervical region. In consequence of opening wider during inspiration (Fig. 18) it may be possible to see ahead for some distance; especially is this the case when a large tube is employed, for the movements of the oesophagus are less active because of stretching of its walls, and the oesophagus stands open for a distance of an inch or two beyond the end of the tube before it narrows down to the customary expiratory contracture (central rosette).

In the thoracic region the closure of the oesophagus is not, as a rule, so complete as it is usually in the cervical region (Figs. 14 and 19), when tubes of moderate calibre are employed.

These oesophagoscopic views have been carefully drawn from life, during the examination of a large number of cases and with various sized endoscopic tubes. I am much indebted to my friend, Dr. William Hill, for material and for assistance in my endeavours to attain pictorial correctness.

When a coin has passed the pharyngo-sphincteric constriction there is a tendency for it to be caught and impacted in the loose and collapsed walls of the cervical oesophagus before it reaches the second constriction caused by the crossing of the left bronchus.

James E. Logan<sup>26</sup> (Kansas, U.S.A.) states that foreign bodies usually lodge at the second constriction of the oesophagus, and there is no doubt that this is the commonest situation in children.

Scanes Spicer<sup>27</sup> says "It is remarkable that foreign bodies such as coins should pass the lower sphincter orifice of the pharynx and yet get lodged in a wider part of the gullet just below. It was, no doubt, the prominence of the first dorsal vertebra behind the manubrial notch in front, and the first ribs externally, which, forming the superior orifice of the thorax, provided a sufficiently narrow channel at the best of times when packed with the trachea, gullet, thyroid gland, great vessels, nerves, and lymphatic glands."

If a coin becomes so impacted, and this applies equally to the thoracic oesophagus, on approaching it with the endoscopic tube the normal opening and closing of the lumen is seen to have disappeared, and its place taken by a dark horizontal slit (Fig. 22) somewhat similar to that seen at the pharyngo-sphincter constriction. (Fig. 9.) This dark slit is caused by the coin stretching and holding apart the oesophageal walls. When this is observed we know that the coin is close by, and a careful search should be made especially along the posterior wall. The upper edge of the coin may be hidden by a folding over of the swollen or collapsed mucous membrane of the posterior and lateral walls (Figs. 25 and 26), so that it is possible for the examining tube to ride over and slip past it without it being observed or even touched by the tube, just as may occur at the pharyngeal sphincter. Especially is this the case when a tube with a spatula extremity is used (Fig. 27), the upper edge of the coin being either imperfectly seen or not seen at all, and it is therefore impossible to grasp it with forceps. When, however, a tube with plane or non-bevelled extremity is used (Fig. 28), and of the largest size that can be passed with safety, as it descends it straightens out any loose folds, thus tilting the upper edge of the coin forwards and causing it to become more central and to appear across the opening of the tube, when it can be easily seized.

This was well exemplified in a case where I was recently asked to assist a colleague.

A child, aged 1 year and 3 months, swallowed a bone button the same size as a halfpenny—i.e., 25 mm. diameter. It had been impacted for three days in the cervical oesophagus and its upper edge was so covered by the loose folds of the posterior wall that it was found impossible, after many attempts with a spatula-shaped tube, to see the coin properly and to grasp it. The following day a short tube of 12 mm. diameter, with non-bevelled extremity was used, with the desired effect of stretching out the folds, so that the upper edge of the button at once pre-

sented in front of the tube and was easily removed. A stricture caused by a foreign body may require to be dilated before the foreign body can be reached and removed.

In some cases the swollen and oedematous mucous membrane may cover an impacted coin so as to hide it not only partially but completely, or the coin may become encysted.

Tappey<sup>28</sup> reports the case of a child, 2½ years of age, with a silver quarter of a dollar in the oesophagus. The presence of the coin had caused hyperplasia of the wall in which the coin had become embedded. It was removed by oesophagotomy.

Halsted<sup>29</sup> (Syracuse, N.Y.) refers to the case of a child, aged 5 years, who had swallowed a penny during infancy. It was found encysted in the post-oesophageal wall, and was only released after curetting the wall through the endoscopic tube.

Munro<sup>30</sup> mentions a case in which a halfpenny was retained in the oesophagus of a boy for three years. After death from consumption the coin was found closely embraced by the gullet.

Jewell<sup>31</sup> reported the very interesting case of a child, aged 22 months, who swallowed a halfpenny ten days before admission to hospital, and it became impacted against the post-oesophageal wall. The coin was located by X rays just below the sterno-clavicular articulation, but all attempts to remove it both by forceps and hooks failed, nor could it eve-



FIG. 34.—Skiagram showing lateral view of a farthing impacted partly in the cricoid-pharynx and partly in the cervical oesophagus of a child aged 2 years.

be moved from its bed. Death occurred on the thirteenth day after the swallowing. Post mortem examination showed that the coin had become almost completely embedded in the post-oesophageal wall, the circumference of the coin and four-fifths of its anterior surface being enveloped by folds of swollen mucous membrane (Fig. 32), and that it had caused death by perforation into the posterior mediastinum. (Fig. 33.)

Kent Hughes<sup>32</sup> had a case in which a halfpenny was swallowed by a child five months previously, and the patient was brought to a children's hospital on account of broncho-pneumonia. There was a history that something had been swallowed, and X rays showed a halfpenny in the posterior mediastinum, and it had ulcerated through the right posterior wall of the oesophagus. He managed to remove it by cutting away part of the clavicle and two ribs. The child, however, died of the pre-existing broncho-pneumonia.

McKinney<sup>33</sup> (Memphis, U.S.A.) reports the case of a girl, aged 2 years, who swallowed a button (the same diameter as a halfpenny) three or four days previously. Fluids only could be swallowed and with great difficulty. It was impacted just above the sternal notch and caused considerable congestion and swelling of the oesophageal mucosa followed by oedema of the glottis and death.

Friedberg<sup>34</sup> (Chicago) reports the case of a boy, aged 3, from whom a nickel and two pennies (U.S.A.) were removed from the oesophagus at the same time, as they were all stuck together. A foreign body may also be hidden from view by particles of impacted

<sup>28</sup> Cited by Shurley, "Dis. of Throat, Nose and Ear," 1900, p. 664

<sup>29</sup> Laryngoscope, 1912, xxii., p. 1227.

<sup>30</sup> Cited by Durham in Holmes's Surgery, 1883, i., p. 788.

<sup>31</sup> Proc. Roy. Soc. Med., 1915, viii. (Laryngol. Sect.), p. 108.

<sup>32</sup> Journ. Laryngol., Rhinol., and Otol., 1916, xxxi., pp. 150-151

<sup>33</sup> Laryngoscope, 1912, xxii., p. 1227.

<sup>34</sup> Ann. Otol., Rhinol., and Laryng., 1914, xxii., p. 123.

<sup>26</sup> Trans. Amer. Laryngol. Assoc., 1905, 204.

<sup>27</sup> Discussion on Tilley's case of a penny removed from the gullet in a young girl aged 14. Proc. Roy. Soc. Med., 1910, iii. (Laryngol. Sect.), p. 135.



food—e.g., H. J. Davis<sup>35</sup> reported a case where a penny was impacted in the oesophagus of a woman aged 25. The patient was unable to swallow anything for four days. The coin was hidden by grape skins which obscured its view, and was firmly grasped by the oesophageal wall. After removal of the grape skins the coin was successfully removed by oesophagoscopy.

The frequent impaction of small coins—e.g., farthings—accidentally swallowed, which have a diameter of only 10 mm., shows that it is not always the size of the foreign body that determines its stoppage and lodgment:—

Tilley<sup>33</sup> reports a case where he removed by the oesophagoscope a farthing which had been impacted for five hours in the oesophagus of a boy aged 5 years.

H. J. Davis<sup>35</sup> reports a similar case in a child aged 2 years.

Edward D. Davis<sup>38</sup> mentions a third case in a child aged 19 months, where a farthing was impacted in the oesophagus at the level of the bifurcation of the trachea for one month. The child appeared to be unwell, was wheezy, and frequently vomited. By X rays the coin was localised and by means of the oesophagoscope was easily extracted.

The writer has removed a farthing in a child, aged 2 years, which had been impacted at the level of the second dorsal vertebra for 13 days. (Fig. 34.) Neither liquids nor solids could be swallowed for the first seven days, everything being regurgitated; during the last six days, however, the child was able to swallow milk, and even bread and milk with perfect ease, and there was no regurgitation. Beyond being very fretful and constantly crying, the child appeared to be quite well.

Such cases show that the oesophagus may so adapt itself to foreign bodies that food may pass by without giving rise to any marked trouble.

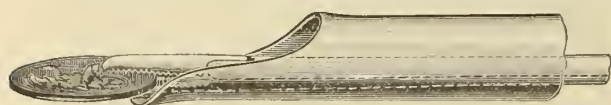


FIG. 36.—Extraction of coin, first position.

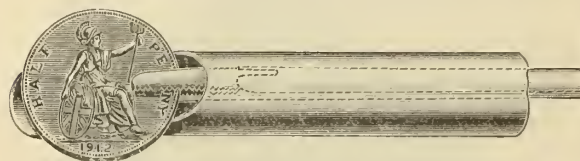


FIG. 37.—Extraction of coin, second position.

Figs. 36 and 37 show the extraction of a coin by the non-slipping forceps with a spatula extremity endoscopic tube.

#### *Tolerance of the Oesophagus to Foreign Bodies.*

That the mucous membrane of the oesophagus is most tolerant to foreign bodies, and especially to pieces of money, is shown by the length of time a foreign body may be impacted without doing any material harm or causing any marked symptoms. Though coins may have been impacted for months and even years with only slight inconvenience, and the disturbance caused by them attributed to other causes, yet, on the other hand, serious complications may occur—i.e., oesophagitis, peri-oesophageal abscess, mediastinitis, ulceration and perforation of the tracheo-oesophageal wall, contractures and strictures (from long-continued presence).

Guisez<sup>39</sup> (Paris) reports the case of a 10-centime coin which he extracted by means of the oesophagoscope, and which had been in the oesophagus for four years. (Fig. 12.)

Balstead<sup>40</sup> mentions the case (previously referred to) of a child aged 5 years, from whom he extracted a 1-cent piece (penny, U.S.A.) which had been impacted in the oesophagus since infancy. It had become absorbed to such an extent that it had lost 25 per cent. in weight, and was not more than two-thirds of its normal thickness. It had lodged in the posterior wall of the cardiac end of the oesophagus and had become embedded or encysted. At the rate of absorption it might have been absorbed in 20 years. In this case but for the X rays the cause of the obstruction could never have been discovered, since the oesophagoscope failed to show it until the wall covering the coin was removed.

<sup>35</sup> Proc. Roy. Soc. Med., 1913, vi. (Clinical Sect.), p. 152.

<sup>36</sup> Ibid., 1914, vii. (Laryngol. Sect.), p. 20.

<sup>37</sup> Proc. Roy. Soc. Med., 1914, vii. (Laryngol. Sect.), p. 20.

<sup>38</sup> Ibid., 1910, iii. (Laryngol. Sect.) p. 136; THE LANCET, 1914, ii., p. 493.

<sup>39</sup> Maladies de l'Oesophage, 1911, p. 270.

<sup>40</sup> Laryngoscope, 1909, xix., p. 520; Trans. Amer. Laryngol. Assoc., 1908, p. 168.

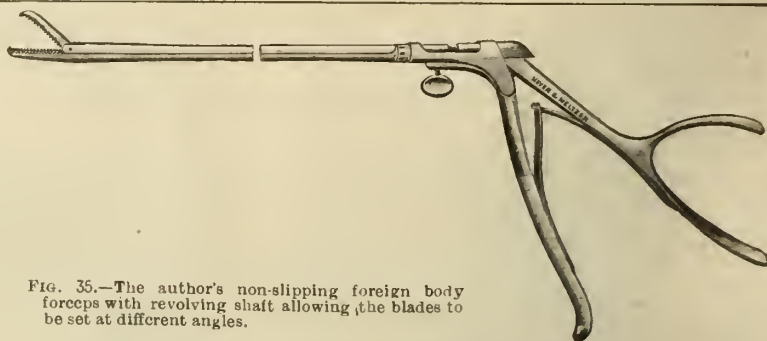


FIG. 35.—The author's non-slipping foreign body forceps with revolving shaft allowing the blades to be set at different angles.

Monro<sup>41</sup> reports a case (previously referred to) in which a halfpenny was retained in the oesophagus of a boy for three years.

Kellock<sup>42</sup> has removed a halfpenny with the coin-catcher from the oesophagus of a little girl which had been impacted for three years, and had caused no symptoms.

D. R. Paterson<sup>43</sup> reports a case where a halfpenny had been in the oesophagus for 18 months, and when removed by oesophagoscopy it looked as if it had been dug out of a Roman ruin; yet it had given rise to no ulceration.

Walker Downie<sup>44</sup> had a similar case, where he removed by oesophagoscopy a halfpenny lodged in the oesophagus of a child. When first swallowed the story was not believed, since nothing passed per rectum, and it was not till 18 months later that the case came into his hands, and the X ray was used and located the coin. No permanent injury to the oesophagus was observed.

Singletary<sup>45</sup> has reported the case of a child, aged 2 years and 3 months, who swallowed a 5-cent piece (21 mm. diameter), which became impacted in the lower part of the pharynx and gave rise to two or three attacks of pneumonia yearly for eight years. Finally, a large amount of blood and pus was vomited and the coin passed per anum, eight years and two months after it had been swallowed.

Porter<sup>46</sup> reported the case of a boy, aged 11 years, who had complained of indefinite gastric symptoms for three weeks. He was small for his age, poorly developed and weighed only 2 st. 10 lb. The father stated that the boy had swallowed a halfpenny at the age of 4, and had never been the same since. An X ray showed the coin lying between the fifth and sixth dorsal vertebra. On introducing forceps it slipped away, passed into the stomach, and was evacuated later in the stools. On careful endoscopic inspection no lesion or ulceration of the oesophageal wall could be detected. In two weeks the boy improved so markedly in health that he had put on 5 lb. in weight.

#### *Perforation of the oesophagus and aorta by foreign bodies.*

Are not very rare. Adelman<sup>47</sup> has recorded 14 such cases, Poulet<sup>17</sup>, and Krause<sup>21</sup>. Fatal laceration of the oesophageal walls and perforation, especially of the aorta, has occurred in from a few days to four years. Early perforation, however, according to Poulet, is very rare, only 2 cases having been recorded. Generally the foreign body wounds the oesophagus, or as a result of continued pressure may excite inflammation, followed by ulceration, suppuration, and perforation.

Tilley<sup>48</sup> described a case in which a halfpenny had lodged just below the cricoid region in the gullet for five days. On direct examination the coin was seen lying in an ulcerated area, surrounded by oedematous granulations. It was removed with little difficulty, but the child died the same night from collapse. Post-mortem showed that the oesophagus had ulcerated right through into the trachea, and this had occurred in five days.

Wishart<sup>49</sup> (Toronto) states that a 5-centime piece has caused perforation of the oesophagus within 24 hours.

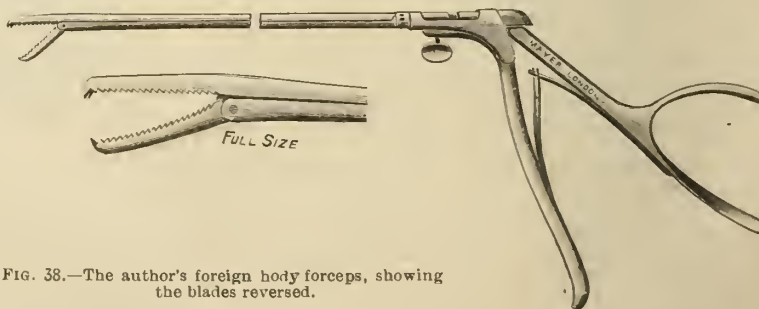


FIG. 38.—The author's foreign body forceps, showing the blades reversed.

<sup>41</sup> Cited by Durham in Holmes's Surgery, 1883, i., p. 788.

<sup>42</sup> Trans. Med. Soc. Lond., 1911, xxxiv., p. 454.

<sup>43</sup> Proc. Roy. Soc. Med., 1915, ix. (Laryngol. Sect.), p. 40.

<sup>44</sup> Proc. Scot. Otol. and Laryngol. Soc., Nov. 22nd, 1913; Abstract Journ. Laryngol., Rhinol., and Otol., 1914, xxix., p. 98.

<sup>45</sup> Louisville Med. News, vol. x., p. 254, cited by Bosworth, Diseases of Nose and Throat, 1892, p. 322.

<sup>46</sup> Proc. Scot. Otol. and Laryngol. Soc., Nov. 22nd, 1913; Abstract Journ. Laryngol., Rhinol., and Otol., 1914, xxix., pp. 97-98.

<sup>47</sup> Quoted by H. Chiari, Bert. Klin. Woch., Jan. 5th, 1914.

<sup>48</sup> Proc. Roy. Soc. Med., 1912, vi. (Laryngol. Sect.), p. 42.

<sup>49</sup> Corps Étrangers du Tube Digestif, St. Pierre l'Union Médicale du Canada, December, 1914.



Grey-Turner<sup>50</sup> reports a case where a halfpenny was impacted in the oesophagus of a boy, aged 4 years, for 1 year and 10 months, the boy being able to take his ordinary food and having no difficulty in swallowing. The coin ultimately perforated the aorta and death from hæmorrhage ensued.

E. D. Davis<sup>51</sup> reports the case of a child, aged 2 years, who swallowed a halfpenny. Five years later a little blood was vomited, followed the same night by a profuse hæmorrhage and death occurred. Post mortem it was found that the coin had caused ulceration into the aorta. Also he reports another case<sup>52</sup> where a child, aged 5, swallowed a halfpenny. One week later a radiogram showed the coin in the gullet. It was removed by a skilled oesophagoscopist, but ulceration had already occurred into the left bronchus, and the child died from bronchopneumonia.

Bradley<sup>53</sup> records the case of a man who swallowed a counterfeit half-crown. Eight months afterwards death occurred from sudden

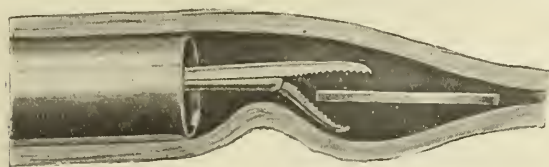


FIG. 39.—Semi-diagrammatic sectional view of the oesophagus, showing the forceps with reversed blade insinuating itself between an oesophageal fold and an impacted coin.

profuse hæmorrhage, and the coin was found to have produced ulceration of the gullet extending into the aorta.

In Jewell's<sup>54</sup> case, already referred to (Figs. 32 and 33), a coin perforated through the oesophageal wall into the posterior mediastinum in 13 days, and caused death. A counterfeit coin<sup>55</sup> has been reported which was impacted for 12 months in the oesophagus of a convict and caused ulceration and perforation of the aorta.

Kellock<sup>56</sup> refers to the case of a lead weight—the diameter of which was just that of a halfpenny—impacted low down in the oesophagus. It ulcerated through and formed an abscess in the mediastinum, eventually causing death in 10 days. He also had a case where a button had been swallowed, and within 10 days it had caused perforation of the aorta.

While it is easy to understand why sharp or angular foreign bodies may give rise to inflammatory and destructive changes in the oesophagus, it is not easy to explain why smooth and circular objects, such as coins, should in some cases cause ulceration and perforation and in others remain harmless and give rise to no symptoms, even though worn and corroded by long sojourn. It is likely that impaction in the neighbourhood of the constrictions, and especially the dangerous regions of the aortic arch, along with excessive spasm of the oesophageal walls, may be the chief predisposing causes. A septic condition of the foreign body and alteration in the secretions may also be a determining factor. D'Este Emery,<sup>57</sup> in discussion, has suggested that the chemical composition of the substance impacted may have something to do with the condition set up, and he considers that whereas copper is a strong antiseptic, as shown by the fact that typhoid cultures placed in a vessel of pure copper become sterile in a few hours, in the case of lead this would not be so. It is interesting to note, however, that metallic poisoning may occur owing to the impaction of copper coins, as shown by the following cases:—

Lee<sup>58</sup> reports the case of a child, aged 5 years, who swallowed a halfpenny. It was forced into the stomach with a bougie. Enteritis followed and death, which was due to the mechanical irritation produced by the passage of the coin through the intestine and to poisoning by the copper, evidence of the existence of the latter in considerable quantities being discovered on testing the mucous membrane and contents of the intestines.

Faucon<sup>59</sup> (Paris) records a similar case.

<sup>50</sup> THE LANCET, 1910, i., p. 1335.

<sup>51</sup> Proc. Roy. Soc. Med., 1915, viii. (Laryngol. Sect.) p., 40.

<sup>52</sup> THE LANCET, 1914, ii., p. 493.

<sup>53</sup> Med. Times, 1868, ii., p. 447, cited by Durham in Holmes's Surgery, 1883, i., p. 787.

<sup>54</sup> Proc. Roy. Soc. Med., 1915, viii. (Laryngol. Sect.), p. 108.

<sup>55</sup> New York Med. Jour., Dec. 10th, 1869, p. 335.

<sup>56</sup> Trans. Med. Soc. Lond., 1911, xxxiv., p. 454.

<sup>57</sup> Ibid.

<sup>58</sup> St. George's Hosp. Reports, 1869, iv., p. 219.

<sup>59</sup> Bull. de la Soc. de Chir., 1877, iii., p. 158.

### Distensibility of the Infantile Oesophagus.

It is remarkable what large objects may be introduced even into the infantile oesophagus, and the extent to which its walls are distensible, as shown in the cases reported. The oesophagus of a child aged 4 years, which is no wider than 10 or 12 mm. ( $\frac{3}{8}$  to  $\frac{1}{2}$  inch), can be so distended that it is capable of admitting an object of much greater diameter—e.g., a halfpenny, which measures 25 mm. (1 inch)—whilst in addition it will permit the free passage of a metal tube of 10 mm. ( $\frac{3}{8}$  inch) diameter, and even one of 11 or 12 mm. This is not unusual and is possible even with larger coins and at a much earlier age.

In Halstead's<sup>60</sup> case of a child, aged 5 years (already referred to), from whom he extracted a one cent piece measuring 20 mm. in diameter, it was impacted at the cardiac end of the oesophagus. The child had swallowed it during infancy, and was supposed to be suffering from a congenital stenosis which had caused constant regurgitation of food and almost starvation since infancy. The coin was so encysted that it was necessary to corette the posterior oesophageal wall before it was possible to seize the coin with forceps.

McKinney<sup>61</sup> also reports the case of a halfpenny removed from the oesophagus of a child, aged 15 months. It had been firmly impacted just above the suprasternal notch for six days, and only liquids could be swallowed. It required considerable force to dislodge it.

### Rate of Passage of Non-impacted Foreign Bodies.

In those cases where foreign bodies do not become impacted, but safely pass through the food passages, it is interesting to note their rate of passage.

Mosher<sup>62</sup> refers to the case of a baby, aged 1 year, who swallowed a button measuring 25 mm. (1 inch) in diameter. It travelled through the entire alimentary canal, safely negotiated the pylorus, and in 24 hours was evacuated per rectum. It took three days from the time it was swallowed before it was discharged. He also records another case<sup>63</sup> where a mother-of-pearl button, measuring 27 mm., i.e., 1 1/16 inch—diameter, was swallowed by a child 8 years of age, which passed in a few days and gave rise to no symptoms. Also a metal button in a child aged 1 year and 7 months, which remained at the level of the clavicle for three days, was dislodged by the endoscopic tube, delayed at the cardiac orifice of the stomach, and entered the stomach in 24 hours. In 48 hours it had passed the pylorus and was at the brim of the pelvis. Here it was delayed for three days and was then discharged.

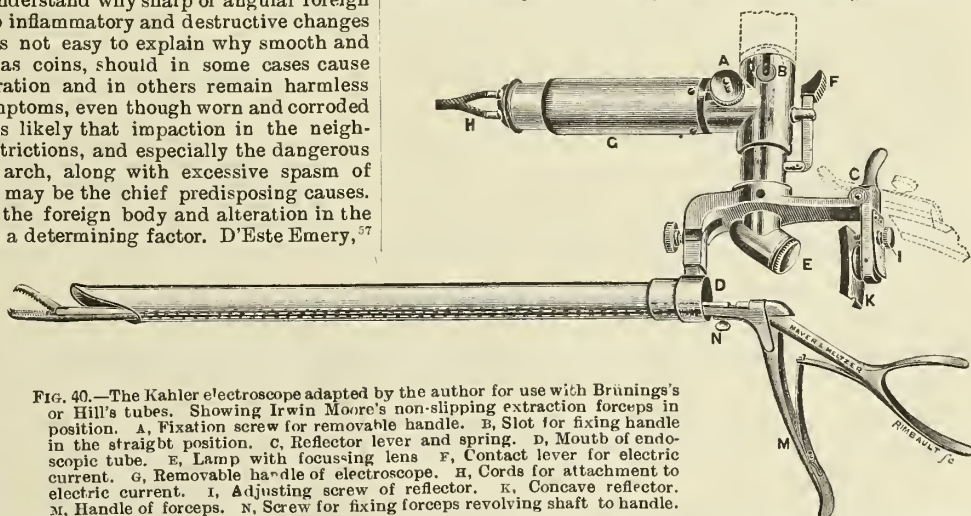


FIG. 40.—The Kahler electroscope adapted by the author for use with Brunings's or Hill's tubes. Showing Irwin Moore's non-slipping extraction forceps in position. A, Fixation screw for removable handle. B, Slot for fixing handle in the straight position. C, Reflector lever and spring. D, Mouth of endoscopic tube. E, Lamp with focusing lens. F, Contact lever for electric current. G, Removable handle of electroscope. H, Cords for attachment to electric current. I, Adjusting screw of reflector. K, Concave reflector. M, Handle of forceps. N, Screw for fixing forceps revolving shaft to handle.

Chevalier Jackson<sup>64</sup> reports the case of a penny located at the level of the cricoid cartilage, dislodged by examination with the examining tube, and passed per rectum in nine days.

It would appear that coins lodge longest of all at the level of the cricoid cartilage, next in the region of the clavicles, and, lastly, at the upper and lower parts of the intestinal canal. They seldom stop at the cardiac orifice, and pass easily and quickly through the pylorus. It is easy to understand why they stick at the back of the cricoid whilst at the sternal level, the thymus gland or arch of the aorta causes constriction of the gullet and may hold them up in this situation.

These cases show the serious dangers of delay, even though in many instances serious symptoms have been long postponed, and that no time should be lost before steps are taken before their removal by endoscopic methods.

(To be continued.)

<sup>60</sup> Laryngoscope, 1903, xix., p. 520.

<sup>61</sup> Ibid., 1912, xxii., p. 1226.

<sup>62</sup> Ibid., 1909, xix., p. 414.

<sup>63</sup> Ibid.

<sup>64</sup> Cited by Ballenger: Diseases of Throat and Ear, 1908, p. 566.



## WHEAT CULTURE-MEDIA.

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SINCE Pasteur<sup>1</sup> and Koch<sup>2</sup> suggested the use of malt extract for culture-media, many bacteriologists have made a trial of the same, but this has not been successful and malt extract has not come into general use. My own studies of the employment of grain extracts cover a period of nearly 10 years. Wheat is not only much cheaper than meat, but it is more convenient to get and to carry about. It is necessary, too, to keep in mind the sporadic influence of pathogenic bacteria and to prepare both vaccine and immune serum, if possible, at the place where the epidemic broke out and from the actual strain of bacteria which caused the epidemic at that locality. For this purpose the first requisite is to get suitable culture-media. In some places it is difficult to get meat or its extract, though it is easy to preserve them, while wheat can readily be obtained almost everywhere and as readily preserved. My experimental results show that there is no more value in meat-extract culture-media than in wheat-extract culture-media.

*Method of Making Wheat Media.*

1. *Wheat broth*.—A. Roast the wheat (with or without husk) in an iron pan until it becomes brown. B. Put 1 lb. of the roasted wheat without washing into 1600 c.cm. of distilled water. C. Boil this in Koch's boiler for half an hour. D. Strain through a clean cloth. E. Make up to 1000 c.cm. with distilled water if under this quantity. F. Add 0.5 g. of taka-diastase or ordinary diastase and shake the flask well. The temperature of the contents at this time should be maintained at 30° to 40° C. for half an hour. G. Filtration. The resultant fluid ought to be quite transparent with yellowish colour, almost the same as ordinary meat broth. The fluid has a sweet smell, the reaction being slightly alkaline. H. As we make usual broth, add 5 g. of sodium chloride and 10 g. of peptone albumin, then boil and filter.

2. *Wheat agar*.—Add 15 g. (in winter) or 20 g. (in summer) of agar to the above quantity. For the rest the preparation is almost the same as that of meat agar as usually prepared. Many special culture-media can be made of the wheat broth and agar media.

*Cultural and Agglutination Tests.*

To compare the rate of bacterial growth on the various media I used *Staphylococci albus* and *aureus*, *B. coli*, *B. typhosus*, *B. dysenteriae*, *Vibr. cholerae*, and others, and found almost the same growth in each case on the different media.

The difference of agglutination reaction of the bacteria cultivated on two different culture media was then tested.

*Staphylococcus.**B. coli.*

Dilution of serum.	Cultured on—		Dilution of serum.	Cultured on—	
	Wheat agar.	Meat agar.		Wheat agar.	Meat agar.
10	+	+	25	+	+
50	+	+	50	+	+
100	+	+	10	+	+
200	+	+	200	+	+
300	—	—	400	+	+
			600	—	—

Agglutination positive, +; negative, —.

For therapeutic purposes I have made autogenous vaccines from cultures of the above-mentioned bacteria on wheat media and observed good results.

*Summary.*

The experimental results given prove that wheat can be used instead of meat for culture media. As the wheat-



Growth of *B. coli* on wheat culture media and ordinary meat media compared. A, Wheat broth; B, Ordinary broth; C, Ordinary agar; D, Wheat agar.

extract culture-media contains maltose, they can be used as special media for particular bacteria and for diagnostic purposes.

## Reviews and Notices of Books.

*Trench Fever: a Louse-borne Disease.* By W. BYAM, J. H. CARROLL, J. H. CHURCHILL, LYN DIMOND, V. E. SORAPURE, R. M. WILSON, and LL. LLOYD. With an Introduction by Sir T. H. GOODWIN, K.C.B., a Foreword by Sir DAVID BRUCE, and a Summary of the Report of the American Trench Fever Commission by R. H. VERCOE. London: Henry Frowde and Hodder and Stoughton. 1919. Pp. 196. 10s. 6d.

THE findings of the War Office Trench Fever Investigation Committee have now been made available in an attractive volume of the Oxford Medical Publications. The committee, under the chairmanship of Sir David Bruce, was composed of the following workers: Lieutenant-Colonel D. Harvey, Mr. A. W. Bacot, Major W. Byam, Lieutenant-Colonel H. French, Mr. J. A. Arkwright, Sir W. M. Fletcher, Lieutenant A. F. Hird, and the late Professor H. Plimmer; their results are adequate testimony to the great possibilities of well-coordinated research work. It is certainly true that much remains to be found out about trench fever. We are still completely ignorant of the causal organism, as of any efficient means of treatment, but the positive incrimination of the louse as the carrier of the disease points us well on the road.

It has been argued that trench fever is a war disease and will perish unaided when the trenches are filled in. Sir Charles Burtchall, in a recent address dealing with disease as affecting success in war, said: "With the cessation of hostilities the disease [trench fever], for the moment at all events, ceased to be of any immediate practical importance, as it was only under the conditions of trench life that there were real difficulties in keeping troops free from lice." The authors do not agree with this view. There is evidence, they say, that the disease has existed since the twelfth century, and certainly so long as lice are allowed to dwell in security among men there will always be the danger of its reappearance. Neither can we afford to overlook the possibility of the human race being again confronted with the horrors of warfare, minor as well as major.

In a foreword written in May, 1918, Sir David Bruce reviews the research work carried out in England, France,

<sup>1</sup> Études sur la bière, Paris.

<sup>2</sup> Mitth. a. d. K. Gsndhtamte., i., I., Berlin.



and Germany up to that date, and shows that no satisfactory evidence on the transmission of the disease had been brought forward when the British and American commissions began their task at the end of 1917. He pays a warm tribute to the courage of those who volunteered as experimental subjects, and without whose self-sacrifice no progress could have been made. The account of these experiments in the chapter on transmission makes romantic reading. By means of the very exact work done in the laboratory at Hampstead several conclusions of vital importance to prophylaxis were finally arrived at. Trench fever is not a disease caused by normal lice, but the excreta from pediculi fed on trench-fever patients, applied to an abraded skin area, are capable of producing a febrile illness similar in its relapsing character and general clinical picture to the disease at present known as trench fever. Louse excreta may be virulent without the presence of vermin, and this virulence is retained in the excreta even after so long a period as 120 days. The infection is not communicable by the mouth, but it has taken place through the unbroken conjunctiva. The excreta can infect when introduced subcutaneously, and although the causative organism has not been isolated the outline of its life-history is beginning to take shape. When lice are fed on patients during an afebrile stage of the disease they become capable of conveying the infection. This infection is therefore present in the peripheral blood of the human subject during the afebrile intervals. It is also claimed that the number of trench fever organisms passed by the lice increases as the time from the infecting blood-feed lengthens. The incubation period in the human subject was never less than seven days, but varied up to 16 days as the infecting dose was decreased.

The chronic disease is carefully described, particular attention being devoted to the vagal disturbances of the circulation. There is a short chapter on prognosis which should be useful to members of pensions boards. The main suggestions in regard to treatment are concerned with prophylaxis, and as the most important measure of prophylaxis is the extermination of lice this chapter has a wider application than any other part of the book. It will, for example, be read with interest by those who are at present engaged in suppressing typhus in Central Europe.

The report of the Commission of the American Red Cross Research Committee on Trench Fever—a review of which appeared in THE LANCET of Oct. 12th last year—is summarised by Lieutenant R. H. Vercoe in the concluding appendix. That the louse is the main ætiological factor in trench fever is common to the conclusions of both British and American Commissions, but whereas the British regard the louse-bite as an uncommon mode of infection, this is looked upon as the most frequent origin of the disease by the American Commissioners. The agreement is, however, more important to preventive medicine than the difference. The publication of this work should stimulate thought and lead to further important discoveries.

*Massage and the Original Swedish Movements.* By the late KURRE W. OSTROM. Edited by P. SILFVERBERG, G.D. Eighth edition, illustrated. London: H. K. Lewis and Co., Ltd. 1919. Pp. x.-196. 5s. net.

THE author admits that "several movements belonging to the Swedish system have been omitted," and so the reader of this little book will not expect to find in its pages all that is to be known of Swedish massage and movements. It is, in fact, a compendium of elementary lectures. The fundamental positions and Swedish exercises described are clearly expressed and well illustrated. But in other respects the medical man will find much to criticise. For example, almost equal space is devoted to what can only be described as "beauty massage" and to the treatment of all types of recent injury, while the elementary doctrine of inhibiting the action of antagonistic muscles when treating a case of paralysis is referred to as a "recent experiment." The best section is that which deals, very shortly, with spinal curvature, but differentiation is lacking between cases of advanced scoliosis and static or postural curvatures. A short chapter on massage treatment in America leads the reader to the conclusion that the sooner some recognised standard of training is established the better it will be for the general public. The bibliography is unusually full and satisfactory.

*Essentials of Surgery.* By ARCHIBALD L. McDONALD, M.D., The Johns Hopkins University, Lecturer on Surgery, Nurses' Training School, St. Luke's Hospital, Duluth, Minnesota. With 46 illustrations. London and Philadelphia: J. B. Lippincott Company. 1919. Pp. 265. 8s. 6d. net.

THIS volume is an addition to the Lippincott Nursing Manuals. It is designed for the use of senior nurses and is written in the belief that a nurse can assist in the care of her patient more intelligently if she be primarily equipped with a reasonable knowledge of the injuries and diseases with which she is likely to meet. The notes make no attempt to discuss technical nursing details or to provide an elaborate treatise on anatomy, physiology, or bacteriology. The advantage of this is seen in the fact that in so small a volume the author is able to deal adequately with the essentials of surgical disease.

The diagrams are very simple and clear, the subject matter is laid out well, according to systems. At the end of each chapter is a list of demonstrations suitable for illustration of the various points detailed therein which will be of great practical value to those who lecture to nurses. A brief but useful glossary of medical terms is to be found at the end of the volume.

To compile a book of this nature requires knowledge of nurses as well as nursing. It is, moreover, a matter of difficulty to strike the happy medium between a treatise on surgery and a guide-book to the intelligent nursing and treatment of disease. In our opinion the author has succeeded in both these respects. The nurse who is really keen will be able to satisfy her thirst for knowledge of surgery in this book alone; while to the surgeon who is called on to give lectures to nurses this book will be invaluable for both junior and senior courses.

*A Manual of Gynecology.* By JOHN COOKE HIRST, M.D., Associate in Obstetrics, University of Pennsylvania. With 175 illustrations. London and Philadelphia: W. B. Saunders Company, Ltd. 1918. Pp. 466. 12s.

IN this little manual the author has presented the arrangement of the subject he has used for the last 20 years in his teaching. The book contains a considerable amount of information in a concise and clear form. We may not agree with all the author's teaching or methods of treatment, but the work is a good example of its kind and should prove helpful to the students for whom it has been written. Whether it is wise, or, indeed, necessary, to increase the size of such a book by including chapters on diseases of the breast, the urinary tract, and the rectum is a matter upon which there may well be some difference of opinion; we do not think it is. The illustrations are fair, and the index is a good one.

*The Exact Diagnosis of Latent Cancer.* By O. C. GRUNER, M.D. London: H. K. Lewis and Co., Ltd. 1919. Pp. 79. 7s. 6d.

THIS book is essentially one for the clinician and clinical pathologist, but in many places the meaning is obscure from the arbitrary use of newly-coined technical terms. Although it would be impossible without voluminous quotations to give a summary of Dr. O. C. Gruner's book, we must remark that statements such as "lymphocytosis indicates relative alkalinity, lymphopenia relative acidity, of the serum," are freely introduced without evidence to support them. The author is an enthusiast, but, we fear, has little prospect of becoming a pioneer until he enshrines his views in less cumbersome language, and is more detailed in his evidence.

**FREEMASONS' HOSPITAL FOR PAYING PATIENTS.**—Under the presidency of the Lord Mayor a meeting was held at the London Mansion House on Sept. 19th to discuss a scheme for the utilisation of the Freemasons' War Hospital (formerly the Chelsea Hospital for Women) as a nursing home for paying patients of limited means who are members of their craft and their families. It was decided to submit the matter to a meeting of representatives of the lodges which had taken part in the founding of the war hospital, and other supporters, to be held at the Mansion House on Oct. 10th, at 4 P.M.



# FRENCH SUPPLEMENT TO THE LANCET

Under the Editorial Direction of

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AND

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## DYSIDROSIS: ITS PARASITIC NATURE.

By J. DARIER,

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ACADEMY OF MEDICINE.

DURING the war I have noticed that whenever a soldier, either from the armies or the interior, presented himself at a dermatological consultation for a vesiculo-bullous or squamous eruption limited to the hands and feet, three diagnoses were usually considered: eczema, occupational dermatitis, or dysidrosis; very exceptionally a parasitic mycotic affection was thought of.

It is necessary, first of all, to examine what these diagnoses mean. What is understood by *eczema*? Standing by itself, this term entirely lacks precision. Do we mean *true* or *diathetic eczema*, which I have suggested calling *eczematosis*? It would then be a matter of a disturbance of metabolism, thanks to which the skin possesses an exaggerated vulnerability and reacts in *eczematous* form to the slightest and most various irritants. It must be remarked that this morbid state is hardly ever found in the case of adults enjoying good general health, and that there is no reason for the eruption to be confined to the extremities.

Have we got *seborrhoeic eczema* in our mind? It prefers to localise itself on the head and trunk, and only reaches the palmar and plantar regions exceptionally, never exclusively. On the other hand, the professional *eczemas*, whether caused by medicaments or otherwise, grouped under the name of *artificial dermatites*, have their seat in the hands, and are far rarer on the feet. It is well known that the particularly exposed professions are those of mechanic, factory, and laundry hands, scullions, masons, painters, photographers, hairdressers, grocers, and gardeners; that these artificial dermatites can be provoked by a crowd of irritant substances, such as the various forms of mercury, phenol, antiseptics generally, reducing agents, distilled oils, &c. The initial topography of the lesions and inquiry about the occupation of the patient very quickly make it clear whether one can stop at this interpretation. Very rarely one will have to deal with intentionally provoked dermatitis, the origin of which is concealed by the patient. As for *Tilbury Fox's dysidrosis*, *Hutchinson's chiropompholyx*, or simply *pompholyx*, it is a vesiculo-bullous dermatitis, later on squamous in type, which has as essential character its limitation to the hands and feet. According to the authors, the eruption comes on in recurring attacks, especially in spring and summer. It appears symmetrically on both hands or both feet, or on all four extremities at once; it announces itself by a feeling of "burning or tingling." It often comes on after profuse perspirations, violent exercise, or a nervous shock, in both sexes and in adolescents and adults. The authors very generally make it appear that dysidrosis patients are almost always overworked, dyspeptic, neurasthenic, nervously depressed people. According to these data dysidrosis would be a particular kind of eczema arising from sudation or a hyperidrosis in subjects predisposed to it by their general state.

## Characteristics of Eczema and Differential Diagnosis.

The following characteristics are specially given as distinctive marks of "*eczema*": the topography of the eruption; the deep seat of the vesicles, which, especially on the lateral faces of the fingers, resemble "boiled sago grains embedded in the skin"; the fact that the vesicles, and the blisters resulting from their coalescence on an only slightly inflamed basis, have little tendency to burst, do not run plentifully when opened, but on the contrary dry up within 10 or 15 days, leaving circles or polycyclic surfaces edged with an epidermic collar. The relation which T. Fox believed to exist between the vesicles and the sudoriparous canals has been shown to be only accidental by Hutchinson, Robinson, R. Crocker, W. Williams, and myself. In none of the publications with which I am acquainted is any mention made of the state of the nails, which I have always found intact in cases labelled dysidrosis.

Within the last 15 years it has been found that various *epidermomycoses* can more or less exactly imitate dysidrosis and the *eczemas* of the extremities. There is firstly *palmar and plantar trichophytosis*, which Djelaleddin Mouktar was the first to describe clearly to the French Society for Dermatology and in the *Annales de Dermatologie* in 1892, based on the cases which he had observed when working under our master, Professor A. Fournier. As marks distinguishing it from dysidrosis he indicates the following: habitual unilateralness, vesicles less numerous and less scattered, less pruritus; in the period of desquamation extensive erythematous-squamous blotches clearly circumscribed, edged with a very clean epidermic collar, with frequent reproduction of some vesicles within the area of the blotches or on their circumference. Finally, and above all, microscopic examination of the roof of the vesicle and the squamous cells reveals the presence of a spore-like mycelium, sometimes very abundant, sometimes hard to discover. In short, this palmar and plantar trichophytosis presents itself in a very special aspect; it ordinarily resembles psoriasis or the syphilides usually found in those regions rather than dysidrosis. Then there is *epidermophytosis*, with which the works of Sabouraud from 1907 to 1910 have made us acquainted. This mycosis is due to a parasite nearly allied to the trichophyton, the *Epidermophyton inguinale* *sensu intertriginis*, which does not attack the hairs. *Epidermophytosis* has two favourite seats. In the groin and at the top of the thigh it causes the eruption known as *Hebra's eczema marginatum*; there are bright rosy, round or polycyclic patches, extending rapidly, with clear edges, scalloped and often delicately vesicular. This *eczema marginatum* may invade the abdomen, the arm-pits and other parts of the trunk, but this is not common. The other very common habitat of the *epidermophyton* is the interdigital space between the toes. It produces what is known as *intertrigo of the toes* or *intertriginous eczema of the toes*, and betrays itself by a macerated epidermis, covering a red base and sometimes raised by vesicles and blisters. In his article in the *Annales de Dermatologie*, June, 1910, Sabouraud points out that, starting from this centre, the lesions may reach the instep in *eczematous* form, but according to him they would not invade the smooth epidermis of the fore part of the foot; they are endless in duration. He believes *epidermophytosis* to be much rarer on the hands; it betrays itself on the lateral faces of the fingers by irregular vesicles, scattered, disorderly, without forming any trace of a circle; their appearance is so exactly like eczema, and in some cases like dysidrosis, that the differential diagnosis with eczema and dysidrosis can only be established by microscopical examination. This reveals in the squamæ and in the roof



## PHOTOGRAPHS ILLUSTRATING TRICHOPHYTOSIS AND DYSIDROSIS OF DIFFERENT TYPES.



FIG. 1.—Palmar trichophytosis.



FIG. 2.—Parasitic dysidrosis of the sole of the foot, vesiculo-bullous type.



FIG. 3.—Parasitic dysidrosis of the hand, squamous type.

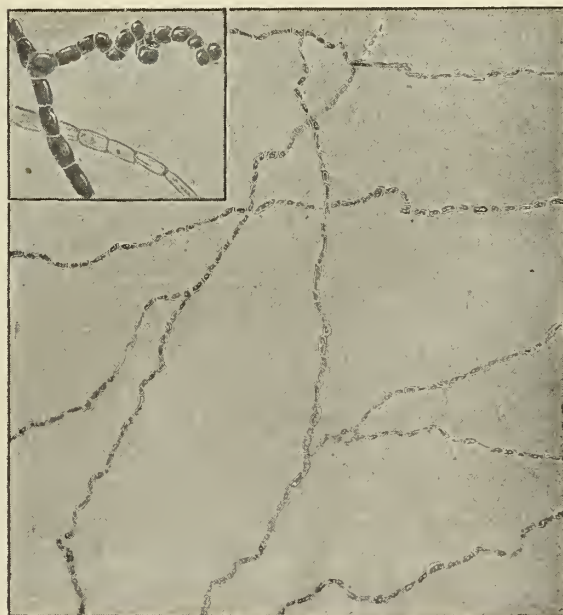


FIG. 4.—Mycellum of the trichophyton in the squamous cells of the epidermis.



of the vesicles delicate filaments of mycelium, slightly *cloisonné*, or on the contrary divided into short, almost cubical elements, sometimes very numerous, sometimes rare and hard to find. In short, the lesions of epidermophytosis of the extremities bear slight resemblance to those of trichophytosis, but great resemblance to those of eczema and dysidrosis.

During the war the ætiological conditions to which dysidrosis is attributed have been realised on a large scale. A huge number, young and adult, of all temperaments, from all classes of society, have been subjected year in year out to repeated exertions, with profuse sudations, and in a word to prolonged overwork; moreover, the causes of dyspepsia have not been wanting, any more than occasions of nervous shock or depression of spirits. In such circumstances one might expect to meet with numerous cases of dysidrosis, especially in certain groups which have been particularly overworked. Now this has not been the case.

#### *Experimental Investigation of Typical Skin Lesions.*

Amongst soldiers attacked by vesiculo-bullous or squamous eruptions on hands or feet I have found: 1. A huge majority of secondary eczema due to scabies, sometimes to pediculosis, often to boils, ecthyma, impetigo, and suppurating wounds. 2. A fairly high number of *professional dermatitis* explained by the occupations of the patients. 3. Some exceptional cases of *palmar trichophytosis*, an example of which I reproduce here (Fig. 1), verified by microscopic examination and culture, in which I was never able to find out the origin of the contagion. 4. Finally, a respectable number of cases of eruption reproducing the picture of dysidrosis. When I observed them these cases affected one of the following types:—

(a) *Vesicular and bullate type*.—On the hands there were generally delicate, clear vesicles scattered or vaguely grouped on the palmar and lateral faces of the fingers, on the palm, and sometimes also on the back of the hand; lenticular or bullous vesicles, often with puriform contents, occupying the fore part or the whole sole of the foot, as in the case depicted here (Fig. 2). Sometimes blisters may have been burst on the march, and I have seen some of them become the origin of lymphangitis.

(b) *Vesiculo-squamous type*.—The lesions consist of erythematous-squamous blotches, multiple and scattered, or confluent into sheets, circinate in certain places only, and usually with crumbling edges; these blotches are sprinkled and surrounded with a few vesicles or small brownish crusts resulting from the drying up of the vesicles.

(c) *Squamous type*.—There are dry circumscribed desquamations, delicately lamellar or thicker, disclosing rosy and smooth or squamous epidermic surfaces; it is an exception when their shape is circinate or polycyclic, being usually irregular, with wavy edges, which recalls that of eczema rather than that of a parasitic affection. (Fig. 3.) On the feet erythematous-squamous blotches fill the fore part of the foot, often the back of the toes and the neighbouring region, as also the plantar arch, more rarely the heel. They constantly coincide with intertrigo of the toes.

The three types, which I mention here separately in order to emphasise the various aspects which I have met with, are evidently only stages in the evolution of the same eruption, but these stages can coexist at various points of the same extremity. Further, it seemed to me certain that every desquamation does not necessarily follow on a visible vesicular process, and that the affection can persist and progress in the form of dry desquamation. Is this dermatosis really T. Fox's dysidrosis, Hutchinson's pompholyx? Is there not amongst these dysidrosiform or eczematoid eruptions a certain number of cases of epidermic mycoses, and especially of epidermophytosis? In order to find out I have submitted the roofs of the vesicles or the squamæ of these dysidrosiform eruptions on hands and feet to microscopic examination as often as possible. Besides negative cases I have found positive ones, exactly identical with the others, in which I have found, either easily or sometimes with great difficulty, a mycelium analogous to that on Fig. 4.

All the examinations were made by me or under my control in my own laboratory.<sup>1</sup> When the first attempt

proved negative we adopted the following method: The shreds of epidermis were fixed and the fat removed in alcohol-ether, then separated with needles in acetic acid, finally cleared on the slide in 40 per cent. caustic potash with gentle heat. It was sometimes necessary for success to make several examinations at an interval of some days and to spend several hours in examining the preparations. I have kept a record of the cases from February onwards. My return refers to 20 patients, three-quarters of whom presented themselves during June, July, and August. In 5 of them all four extremities were affected, 9 had dysidrosiform lesions of the hands, and 6 dysidrosiform lesions of the feet. The total positive results were 11 to 14 for hands and 6 to 11 for feet. I must draw attention to the fact that negative results became more and more rare in proportion as we employed improved technique and greater patience in our investigations; in fact, since September we have only had positive cases, one of which required altogether four hours of work. If I were asked what my general impression is, I should say that I believe to-day that T. Fox's dysidrosis does not exist as a distinct cutaneous disease with a nosological individuality; that the clinical picture portrayed with great perfection by Fox and Hutchinson corresponds to a parasitic dermatosis—epidermophytosis of the extremities. It will be necessary, however, for further investigations to confirm or upset this conclusion, which I fully acknowledge at present goes beyond the range of the facts observed by me. It will also be necessary to make sure by cultural methods which is the parasite in question and whether it always belongs to one and the same species or not. The morphological aspect of the mycelium in the squamæ does not allow of settling the question; this is true of the one depicted in Fig. 4, which is taken from my "Précis de Dermatologie." Sabouraud himself, whom I consulted on this point, told me that he could not say whether it is the mycelium of an epidermophyton that is in question or some species of trichophyton, which alone would certainly be the case if we are in presence of a mycosis of the epidermis.

#### *Mycotic Nature of so-called Dysidroses.*

I should like to close by pointing out how the hypothesis set up by me as to the probably constantly mycotic nature of the so-called dysidroses fits in with the clinical facts and, on the other hand, with the classic data of dysidrosis and epidermophytosis. It is said that attacks of dysidrosis usually last for from 10 to 20 days and often recur in the same subject. This is true of epidermophytosis of the extremities, but it must be added that one also sees continuous or subintraut attacks prolonged for six months or more. I have met soldiers who have been made useless for more than half the war by parasitic dysidrosis. Of the ætiological conditions to which dysidrosis is attributed, those which relate to the nervous state, overwork, or dyspepsia are too banal to be considered. The influence of the seasons and the effect of profuse perspiration might consist in the fact that they favour parasitic vegetation. As for the topographical distribution of the lesions, epidermophytosis, like dysidrosis, attacks hands, feet, or all four extremities symmetrically at the same time. Epidermophytosis has in addition a favourite seat in the interdigital spaces of the toes, where it is very common; it may persist there for very many years, causing only slight annoyance or even without the patient being at all aware of its existence; thence it proceeds to invade the rest of the feet and doubtless the hands also by auto-contagion, thus producing dysidrosiform attacks under the influence of occasional causes. The inguinal site of epidermophytosis, where it betrays itself by Hebra's eczema marginatum, is perhaps nourished from the same source; but the fact that this eczema marginatum often occurs in the form of small epidemics in boarding-schools, asylums, agglomerations of young people, seems to indicate that it is due rather to hetero-contagion by the linen or the water-closets. But it must be remarked that if the coexistence of eczema marginatum in the groin with parasitic dysidrosis on the hands and feet is not very common, its coexistence with parasitic intertrigo of the toes is, as a rule, nearly general.

Lesions of the nails have not been noticed in dysidrosis, nor have I observed them either in epidermophytosis of the hands and feet, save as chance coincidence. But, on the contrary, it is noticed that the nails are very commonly affected in eczemas and professional dermatitis of the

<sup>1</sup> I desire to thank Miss Eliacheff, my assistant, whose experience and devotion have been invaluable to me in these investigations.



extremities. It follows that the good or bad state of the nails can, in my view, serve as a retrospective diagnosis of a dysidrosiform attack which would be healed at the time of seeing the patient.

As for the treatment of dysidrosis internal medication is advised, using tonics, and especially arsenic, which can obviously only be intended to improve the general state; soothing dressings and refreshing or slightly disinfectant ointments are recommended. Epidermophytosis, on the contrary, demands repeated rubbing for several weeks with iodised alcohol (from 1 in 60 to 1 in 30) or strong chrysarobin ointment (from 1 in 300 to 1 in 100), together with persistent removal of the desquamating epidermis. I have been able to assure myself that the treatment with iodised alcohol has relieved, and even cured, cases of dysidrosiform eruption in which we have not found the mycelium, probably for lack of enough perseverance in our microscopical investigations.

#### Conclusion.

T. Fox's dysidrosis or Hutchinson's pompholyx is not a distinct illness; what has been called by that name is only a clinical picture, a symptom-complex which may be called *dysidrosiform*. When they are not artificial, professional, or medicamentous dermatitis, the dysidrosiform eruptions are mostly, and probably always, of mycotic nature, and due to the epidermophyton; careful and sometimes very laborious microscopical examination will provide the proof; they must be treated as such. If we want to retain the term dysidrosis it must not be considered as giving a precise diagnosis, but must be completed by some qualifying term, as done, for example, with the term sycosis. Therefore, when one is faced with a dysidrosiform eruption, the problem is to decide between the following two diagnoses: (1) parasitic epidermophytotic dysidrosis; (2) non-parasitic dysidrosis or occupational dysidrosiform dermatitis.

## THE CONTAGIOUSNESS OF FAVUS IN MAN.

BY R. SABOURAUD.

MOST doctors and all dermatologists are acquainted with the name and symptoms of tinea favosa, its persistence, the characteristics of its straw-coloured crusts, forming a rocky protuberance on the scalp and in consistence, appearance, and method of crumbling away suggesting baked earth or dry clay.

I am not going to dwell on the clinical description of this malady, as I should like to consider it from another point of view. The problem of the contagiousness of human favus and its prophylaxis has presented itself in a specially urgent way during the war on account of the utilisation of African colonial troops, amongst whom favus is of frequent occurrence. It is therefore not without interest to face this question as it actually presents itself, not according to theories or preconceived ideas, but according to the facts.

Nowadays, when the parasite causing the disease is known by all, one is always inclined to conclude that because it is parasitic this disease is very contagious. But one must not *pre-judge* a question, one must *judge* it. History tells us that the contagious character was just as much in doubt before as after the discovery of the parasite.

In general—in our country and colonies and adjacent territories, at least—what one sees are sporadic cases scattered amongst an immune population, amongst which there have always been a few cases. And if we call to mind the ætiological conditions in the midst of which the cases arise, it is poverty, filth, promiscuousness, and destitution which seem to constitute the usual environment necessary to bring them about.

When one examines an accumulation of crusts, or pits, of favus, and sees under the microscope the enormous felted mycelium which forms them, when one thinks what an amount of seed such crusts could produce to create new cases, the conclusion is inevitable that favus is very slightly and very rarely contagious, and that it calls for very special

and very rare circumstances for it to be able to implant itself in the human skin. In the midst of a rural, pastoral, poor population, where no ideas of hygiene exist, and where the human being lives very much in the same way as his domestic animals, 10 or 15 cases may be seen, and the number hardly increases. These cases are scattered. If a single family will sometimes produce two or three, there will usually be also healthy children in the very same family who will escape contagion. Most frequently some direct ancestor, father, mother, or grandfather, will be found who has been affected with favus for 30 or 50 years, and has been the origin of the contagion. In this way small centres exist from generation to generation, and no doubt one might find families in which favus has continued for several centuries without having brought any real epidemic. This means that, when not treated, favus is of illimitable duration. The favus patient who is not treated for the disease will die a favus patient; and in the course of an illness of 30 years or more the patient will have created one or two new cases. But these are just the conditions which favour the endemicity and perpetuity of the malady. Each case lasts indefinitely, and produces one or two others in its neighbourhood. Going back a century one would find practically the same picture in the same families. In this connexion nothing is more instructive than Ciarrochi's most circumstantial work on favus in the Transiberian region.<sup>1</sup> On turning over the pages of the register of the hospital of San Gallicano he was able to ascertain that 5374 cases of favus were treated there during the whole of the nineteenth century, all these cases coming from the province of Rome, and nine-tenths of them from the south-eastern part of the province situated below the Tiber. Nearly all of them came from rural districts. Two-thirds of the patients were boys, one-third girls. The age of contagion, the second stage of infancy; extreme cases from 2 to 18 years. In this way Ciarrochi has traced families which have been producing cases of favus for three generations. And this country which has given birth to 5374 cases of favus—evidently an incomplete return—had at the end of the century just about as many as at its beginning. Extend Ciarrochi's survey and you will have the normal story of favus all over the world. It is always the same whenever observations are made.

#### Rare Occurrence of Contagious Type.

But can we say "always"? To speak the truth, no, not always; and I must describe the very rare occasions when I have been able to see favus of a contagious, and even very contagious and epidemic type. And as on all three occasions the story has been identically the same, it is probable that it will be found in a similar form again. But it must be emphasised that the facts have been seen only three times in 30 years of close and daily observation. They are therefore exceedingly rare. Even if he gives special attention to these questions, a specialist might never have met with similar cases. They are so rare that some experienced dermatologists who have not witnessed such facts will be inclined to doubt them. But I can guarantee their absolute correctness. A 6 to 12 years old child is brought to the doctor for a crust adhering to the middle of the scalp and refusing to disappear. This crust, grey, flat, as thin as the nail, without relief, very adherent, cannot be moved to and fro on the skin. If you make a fold in the skin the crust breaks and a little serous fluid exudes through the cracks. The colour of this crust is an ash-grey, recalling the colour of wasps' nests in the woods. It is from  $\frac{1}{2}$  to 1 mm. thick. If it is removed with the curette, it leaves beneath it the red, moist, bleeding skin, similar to what is found beneath the old conglomerated cups of favus. Examination of this crust in small portions under the microscope shows that it is formed exclusively of felted mycelium like the cup. Culture gives the common Schönlein's *Achorion*, without any peculiarity to explain the strange behaviour of this clinical form, for its behaviour does indeed differ widely from ordinary favus. This crust, which is 2, 3, or even 5 cm. across at its greatest diameter, is formed in a few weeks and increases visibly from day to day. When you meet with this clinical type you may rest assured that in the school to which the

<sup>1</sup> G. Ciarrochi: La répartition géographique du favus dans la province de Rome. C. R. du IV<sup>ème</sup> Congrès international de dermatologie, Paris, 1900, p. 439.



child goes you will see five, six, ten cases of contagion arise, ten cases which will develop with the same rapidity. If the disease is allowed to extend, the crust will thicken at isolated points which will be milium cups, and later on there will be a rock of crusts. It is therefore a squamous favus at the outset. If favus always behaved like that it would be the most formidable of tinea. Nothing could be more contagious. But these cases are so exceptional and abnormal that if I had not seen them with my own eyes I should be tempted to charge this description with being exaggerated.

Under certain undetermined conditions, then, common favus may give place to this *papyroid* type, very contagious amongst children and extending rapidly. And as one, so to say, never sees favus at its very beginning, it might be that it begins in this way more often than one thinks and that an old case of favus can pass through a period of reproduction after a long period of apparent stagnation. But that is only a hypothesis. We know nothing of the precise conditions which govern the cases of which I have just been speaking, any more than of the conditions which cause the habitual inertia of the others. In any case it must be clearly noted that these facts have never been observed except in children, and that this form of favus seems, like all favus, to be contagious only in the case of children.

The rare cases in which one can surprise favus at its beginning are mostly cases of favus on the body with circles recalling ringworm, on the circumference of which little golden-yellow cups are scattered. But nearly always in such cases an animal favus of a special species is concerned. Now, nobody has ever seen a single case of favus of the scalp caused in human beings by any other achorion than Schönlein's achorion, human species. Consequently these accidental inoculations of favus from animals to man, which may be observed even in adults, are of little practical importance.

#### *Importance of Age and Hygienic Conditions in Favus Contagion.*

I must again insist on the importance of age in favus contagion. Since we have to deal with a disease of indefinite duration and we find it in adults or even old men, we might think that every individual at every age can contract favus. That is a mistake. Ask all the patients you meet and they will all tell you that they contracted favus at school age. From this special point of view of the age of contagion, favus belongs therefore to that class of tinea the inoculations of which into the scalp are not found after puberty. Doubtless animal favuses are an exception, such as the animal trichophytoses, but they are found only on the body, where they are easily curable. When, therefore, it is considered necessary to isolate soldiers attacked with favus, for fear that they might infect their comrades, it seems to be a precaution which may appear a luxury in time of war. It would be more logical to cure them after the war, before they return home, rather than to deprive the army of men who are otherwise normal, for they will not spread contagion amongst their adult comrades. I am not aware of a single exception to this rule having been observed amongst all our North African troops, or of a single case of the transmission of favus having been discovered in adults.

Another general remark, not without importance, results from observation of our North African Colonial troops. In those regions tinea are hardly found except amongst the poor and subject populations, both Arab and Jewish; they are not found amongst white colonists, not by reason of any immunity, but on account of the different hygienic conditions. In Fez and South Morocco tinea are innumerable and favus very common. For until we occupied the country they were considered incurable and were not treated at all. The number is now decreasing daily. Favus is, therefore, more than other tinea, a morbid type which civilisation ought to remove gradually. Our municipal dispensary in Fez, installed by my collaborator and friend, Dr. Noire, is a model from this point of view. Three radiotherapeutic apparatus are permanently at work, and the natives now present themselves for treatment of their own accord. If this practice is continued there will not be a single case of tinea in all the region a few years hence.

It is not intended in this place to study the treatment of favus, but this much may be recalled. The treatment,

briefly, involves local prophylaxis in the shape of scraping with the enrette and 1 per cent. iodine in alcohol. Superficial cleansing having been thus performed, one passes on to curative treatment by means of X rays and 1 per cent. chrysophanic ointment, when it can be borne without irritation. It must not be forgotten that in favus, when the hair grows again after application of X rays, some hairs still remain affected with the parasite, so that complementary epilation in detail is necessary. This can be performed with tweezers, for the eye of a skilled worker can distinguish the doubtful hairs (centring in a red point) amongst the healthy growth. But I will not pursue the matter further, for this is not a therapeutic article but a simple note laying down the conditions ordinarily governing the transmission of favus and the considerations which must guide its prophylaxis.

The French Supplement to THE LANCET—under the Editorial Direction of Professor Charles Achard, Professor of Pathology and Therapeutics in the University of Paris; and Dr. Charles Flandin, D.S.O., Médecin-Major de 2me Classe, Chef de Clinique à la Faculté de Paris—has appeared on the dates given in the following list, which sets out the titles and authors of the contributions:—

Sept. 21st, 1918: (1) The Microbic Diversity of the Enteric Fevers, by Professor Achard. (2) Post-Typhoid Atony of the Cæcum, by Maurice Loeper, Professor of the Faculty of Medicine and Physician to the Paris Hospitals.

Oct. 19th, 1918: (1) What the War has Taught Us about Tetanus, by Louis Bazy. (2) Tetanus Consecutive to Superficial Wounds and to Trench Foot: Treatment and Prevention, by Professor Raymond, Médecin Principal de 2me Classe.

Nov. 30th, 1918: (1) General Review of French Cardio-Pathology during the War, by Ch. Lanby, Physician to the Paris Hospitals, Médecin Major de 2me Classe. (2) Methods of Estimating Augmentation in Depth of Volume of Left Ventricle, by Dr. Bordet, Director of the Radiological Laboratory of the Centre of Cardiology of Professor Vaquez, Hôpital St. Antoine.

Jan. 11th, 1919: (1) Gunshot Concussion of the Spinal Cord, by Henri Claude, Professor in the Paris Faculty of Medicine, Physician to the Paris Hospitals; and Jean Lhermitte, formerly Chef de Clinique in the Paris Faculty of Medicine. (2) Contribution to the Study of the Manifestations of Emotional Shock on the Battlefield, by Cl. Vincent, Physician to the Paris Hospitals, formerly Medical Officer to the 46th and 98th R.I. and to the 44th B.C.P.

March 1st, 1919: The Surgical Complications following Exanthematic Typhus, by Dr. Paul Moure and Dr. Etienne Sorrel, Prosecutors to the Faculty of Medicine, Paris, Médecins Aide-Majors de 1er Classe, Surgeons to the French Hospital at Jassy.

April 5th, 1919: (1) Nervous Complications of Exanthematic Typhus, by A. Devaux, formerly Interne of the Paris Hospitals, Médecin-Major de 2me Classe. (2) Note on the Epidemic Diseases Observed in Rumania during the Campaign of 1916-17, by Dr. Henri Vuillet, late Interne of the Paris Hospitals.

May 3rd, 1919: (1) Malaria During the War, by G. Paisean, Médecin-Major de 2me Classe. (2) Distribution of Soldiers, Temporarily Unfit through Malaria, in Agricultural Colonies, by Professor E. Jeanselme. (3) Studies on Renal Function in Chronic Nephritis, thesis by Pasteur Vallery-Radot, reviewed by Professor Charles Achard.

June 21st, 1919: (1) Recent Work on Cerebro-spinal Fever, by C. Dopter, Professor, Val-de-Grâce, Médecin-Chef to an Infanterie Division. (2) Meningococcal Rheumatism and Arthritis, by Dr. Paul Sainton, Physician to the Paris Hospitals.

Aug. 23rd, 1919: Radiological Examination of Pseudarthroses before and after Operations of Bony Grafts, by Paul Aubourg, Professor Agrégé, Cuneo's Laboratory for Radiology. (Centre for Surgery of Bones, Hospital 75, Cannes.)

THE LANCET can be ordered through any Library in France, or through the following special agents:—

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M. CHOISNET, 30, Rue des St. Pères.

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VIGOT FRÈRES, 23, Rue de l'Ecole de Médecine.

MARSEILLES.—TACUSSEL AND LOMBARD, 54, Rue Paradis.

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# THE LANCET.

LONDON: SATURDAY, SEPTEMBER 27, 1919.

## Temporary Officers in the R.A.M.C. : The New Contract.

WE published recently the terms upon which the War Office is willing to accept the services of medical practitioners, including those who have been demobilised, who are desirous of undertaking duty with the Army. These terms are, to our thinking, so favourable that we have no hesitation in recommending young medical men to apply to the Secretary, War Office, Cornwall House, Stamford-street, London, S.E., for prompt temporary engagement. There are, indeed, two reasons why we bring forward the invitation of the War Office in what is meant to be a marked manner. The first, which we have already alluded to, is the satisfactory nature of the terms. Having only the recently qualified man in our mind, we would point out that if his application for employment for six months or a year is successful, he will have at the expense of his country an admirable opportunity for travel; he will have nothing to pay; and he will find himself at the end of a short period with £300 or £600 to his credit. It is difficult to imagine a pleasanter as well as a more instructive way of beginning professional life. But secondly, there is to our mind upon some of the newly qualified men almost an onus to assist their country in this way. The medical staffs in India, Mesopotamia, and Egypt are distinctly short, and the result is that the medical officers of the R.A.M.C., both Temporary and Territorial, have to be retained in these areas. Many of these men have surrendered practices at home to serve their country abroad, and they cannot return to those practices until efficient substitutes have been found for them. This is a very hard position for them, as well as for the War Office, whose sympathy for the practitioners in exile is quite sincere. Those at the head of the Royal Army Medical Corps frankly feel the unfairness of keeping these practitioners month after month, and, indeed, year after year, away from home, family, and a suspended career. The situation is unavoidable for the moment, as the men cannot be spared until they are replaced by others. The strain is probably temporary, new men only being urgently required for six, or perhaps 12, months; but for such a period they are needed. Some of the newly qualified men, who have not served in the Army, were absolved from combatant service in order to obtain their medical qualifications, the idea certainly being that, when they were qualified, they would be at the disposal of the country. A large proportion of these may be fairly expected to take temporary commissions now in order to relieve their seniors in the profession, many of whom have served during the last four or five years at great personal sacrifice and in circumstances of high risk. This is still a patriotic call, for the position in the R.A.M.C., as elsewhere, depends on the fact that war conditions do not and cannot cease at the moment of the declaration of peace.

## A Defence of Urbanisation.

URBANISATION has been credited with many ills. At every period of life it has been blamed—and, doubtless, rightly blamed—for its maleficent influence. In infancy, for a heightened mortality from zymotic enteritis and the exanthems; at school age, for affections of the nose and throat, and for dirt diseases in general; in adolescence, for the rapid spread of venereal maladies; in adult life, for alcoholism, hyperpiesis, neurasthenia, and phthisis. It takes some courage, therefore, to break a lance in favour of urbanisation, as has been done by Lieutenant-Colonel A. G. LOVE, U.S.M.C., and Professor CHARLES B. DAVENPORT in the *Archives of Internal Medicine* for August, 1919, who boldly contend that life in urban communities produces a general resistance to disease. This opinion is based upon a study of the immunity of city-bred recruits observed during the last four months of 1917 in the 16 large army camps of the United States of America. It rests upon no mere general impression, but upon the records now available in the Medical Department of the U.S. Army, which they have analysed with the equipment of practised statisticians.

The population of the camps consisted of men at ages from 21 to 30 years, taken from their homes and placed in barracks where they slept in beds only some few yards apart, or in tents where they often had an average floor space of less than six square yards. Men from rural districts had, for the most part, never lived thus congestedly, and it was to be expected that their reaction to the new environment should be different from that of town dwellers. The authors report in detail on the incidence of the six principal communicable diseases—measles, mumps, pneumonia, cerebro-spinal fever, scarlet fever, influenza—in the various camps according to their "urbanity," that is to say, according to the proportion of their population drawn from urban communities. The results were similar in each case. We give the actual words of the report in regard to measles, which within three months provided 47,000 cases to study among the enlisted men:—

".....the incidence of measles varied greatly in the different camps. This ranged in 1917 all the way from a mean annual admission-rate of 500 per 1000 at Camp Wheeler, Ga., to about 1 at Camp Wadsworth, S.C. The climatic and housing conditions at these two National Guard camps, located about only 100 miles apart, were very similar. Measles was present at both camps. The tremendous difference in the history of the epidemic seems clearly to be due to a difference in the constitution of the population. The soldiers at Camp Wadsworth were seasoned National Guard troops from New York City and vicinity. The soldiers at Camp Wheeler were mainly newly inducted National Guard troops from Alabama, Florida, and part of Virginia, sparsely settled States."

Put into technical language, the correlation between (1) the proportion of men in the Army born in any State who were admitted to sick report for measles, and (2) the urbanity of their respective native States, was found to be —0·80—a high correlation as correlations go, but inverse (as the minus sign signifies), meaning that the more urban the native State the less susceptible to measles its native-born sons in the Army. The correlation figures for the other epidemic diseases were found to be: mumps, —0·58; pneumonia, —0·37; cerebro-spinal fever, —0·44. What held for measles held in large degree for the other members of the group.

Turning to the explanation, the obvious hypothesis is the one formulated by Surgeon-General



GORGAS himself that (almost in the words of the old riddle) the recruits coming from densely populated areas were immune from measles and mumps because they had had them. Good so far as it goes, but inapplicable to scarlatina, pneumonia, and cerebro-spinal fever. The second hypothesis, that a selective elimination of susceptible individuals has occurred in the urban areas, is also turned down by the authors as not fitting mumps. Mumps does not kill off New York children. A third hypothesis of increased susceptibility in the south for exanthems, as for malaria and hookworm, has no basis in experience or experiment. The only remaining hypothesis is that to which the authors give their adherence, and which we have already enunciated: a general increased resistance to disease enjoyed by urban dwellers. They go on to give a closely reasoned support of the related assumption that any one of the communicable diseases leaves the body in a state of heightened resistance to all micro-parasites. Arising out of the work of J. W. JOBLING and W. PETERSEN<sup>1</sup> in America it will be fresh in the minds of our readers that Sir ALMROTH WRIGHT<sup>2</sup> drew this "collateral" immunisation as one of the pathological lessons of the war, a conclusion to which experience had been pressing him ever since the allegation, made before the Indian Plague Commission 20 years ago, that antiplague inoculation had cured eczema, gonorrhœa, and other ills. A number of quite trite observations point in the same direction: the city dweller's immunity from habitual catarrh which attacks him at once on his return from a long holiday in pure air; the added risk of a post-mortem prick at the end of the long vacation. It may not be much, but urbanisation has something to be said for it

### Nurse Anæsthetists.

To use the best that was available was the war maxim, and among other directions the maxim has been applied to anæsthetics, with the result that on many occasions it has proved expedient to utilise the services of the nurse as anæsthetist. Concerning this procedure, in reply to a query, "What do you think of nurse anæsthetists?" addressed by Brigadier-General FINNEY and Colonel G. W. CRILE to the American Base Hospital staff, the answers received were: Very satisfactory, 25; satisfactory, 8; unsatisfactory, 1 (for prolonged operations). It may fairly be deduced that the makeshift gave results agreeable to American surgeons under war conditions. In America, Switzerland, Uganda, the nurse anæsthetist is accepted; she found a place in some of our own hospitals during the war. Is this the beginning of a practice which may become the rule? There is no question that the usual rule-of-thumb technique can be acquired by any nurse of average intelligence, and that after proper instruction she can learn to induce anæsthesia slowly, to prevent respiratory complications, to maintain regularity of dose and therewith of depth of anæsthesia, and to give the needed relaxation. Is this enough for the safety of the patient and for the ease of mind essential for the operator, if he is to exercise all his skill? An anæsthetist is a pilot, who steers the ship of life over a reef-abounding sea to the port of safety. His eyes must be trained to detect dangers at a distance and, ever on the alert, he must spy out rocks before the

vessel has touched them. His motto should be: "Me duce, tutus eris." Kismet has no place in his vocabulary. Can the non-medical though trained nurse reach this standard? If not, is it wise to introduce a less equipped order of practitioners, as nurse anæsthetists would be, when, if proper encouragement were given, a sufficient number of qualified doctors, men and women, would take up anæsthetics as a specialty?

In support of the claims of the trained nurse as an anæsthetist it has been pointed out that although nitrous-oxide-oxygen as a routine anæsthetic for long operations counts as dangerous, yet CRILE and LOWER report close on 35,000 cases without a fatality, a nurse in most cases administering the anæsthetic. In 1916 the authorities of Charing Cross Hospital, having decided to broaden the basis of the nursing curriculum, introduced a series of lectures on anæsthetics, including the preparation and observation of patient, general principles, methods, post-anæsthetic sequelæ complications and their treatment. These lectures have since been published in book form,<sup>1</sup> and mark a move in the right direction of education, although difference of opinion may arise in regard to the remark:

"It is a question whether surgical sisters should not have practical instruction in administering anæsthetics. We move slowly here and guardedly. Our laws are strong to endure, but hard to alter. Many signs seem to me to indicate the approach of a day when chosen nurses will, in their final year, be taught not only the science but the art of anæsthesia."

No one would doubt the desirability of teaching the nurse to give an emergency anæsthetic in case a professional administrator should be unprocureable, and the example of Charing Cross Hospital might with advantage be noted in the curriculum of the Central Midwives Board. When a midwife obtains medical aid for difficult labour, she gives the anæsthetic, but, be it remembered, whatever her ability the doctor is responsible. Some measure of instruction for the midwife would stand him in good stead here, but those who advocate the innovation are, we hope, not blind to the risky side of the advice.

The administration of anæsthetics is not merely the putting of a patient to sleep. The selection of the method and means to be employed in a surgical case are now arrived at after an exchange of opinion between operator and anæsthetist. The surgeon states what he wishes to do, and the anæsthetist, after examination of the patient, suggests how he proposes, with due regard to the patient's condition, to meet the surgeon's needs. The operator, engrossed in his own work, cannot watch the progress of the anæsthesia; for this the anæsthetist is responsible. Even so casualties do occur, and at trivial operations. Would they not be more frequent with a less skilled type of administrator? The position may perhaps be put fairly thus: Trained nurse anæsthetists would do in England as excellent work as they have done in the States or elsewhere; complications must, however, occur; with these the doctor anæsthetist must be able to deal more efficiently than the nurse. Extreme advocates for the latter have said in effect: Doctors order medicines, but they do not administer the dose themselves; with the inference, the operator orders chloroform or ether, it can be dropped on a bit of gauze held over the patient's face by a nurse under the surgeon's direction. There may be surgeons who still desire to be chief of the anæsthetic, as well as of the

<sup>1</sup> Journ. A.M.A., June 3rd, 1916; Arch. Int. Med., June, 1917.

<sup>2</sup> THE LANCET, March 29th, 1919.

<sup>1</sup> Anæsthesia and the Nurses' Duties, by the late A. de Prenderville. LL.B., M.R.C.S.



operating field, but they must be very few. So few that the argument falls. The tendency of the time is to give high credit to the anæsthetist's function, and the suggestion that there is a widespread wish to follow the procedure of certain American centres is ill-founded. On the contrary, American and continental doctors have expressed their admiration for English methods of anæsthesia. At a well-known throat hospital three American specialists recently stated that they employed local anæsthesia for submucous resection because of the difficulty and danger of a general one. They admitted that the operation could be done much more thoroughly, as it was in England, the patient being unconscious. In an address delivered in May, 1915, at Cincinnati, Dr. EMMET F. HORNE remarked that many men in America were beginning to devote all their time to the study and administration of anæsthetics, as had been done in England for many years, with far-reaching results. It is, of course, possible that with such intensive study the traps and pitfalls of anæsthesia may be removed and the way smoothed for the less expert. Analogy does not make this likely.

## Annotations.

"Ne quid nîmis."

### MALARIA IN THE UNITED STATES.

A PAMPHLET dealing with various aspects of the malaria problem in America has recently been published by F. L. Hoffman, LL.D., statistician to the Prudential Insurance Company of America, and chairman of the Subcommittee on Statistics of the National Malaria Commission, who is already known as the author of "A Plea and a Plan for the Eradication of Malaria throughout the Western Hemisphere." The pamphlet is a consolidation and revision of a number of papers read by the author before certain public bodies during the last two years in the course of a campaign against malaria in the United States. He gives a number of interesting facts and figures concerning the disease and the measures he advocates for its suppression. It appears that there are three principal well-recognised endemic areas of malaria in the United States—one large and two small. The first and largest covers the whole south-eastern portion of the States, its southern boundary being the Gulf of Mexico; its western boundary is a line drawn from Eagle Pass on the Rio Grande to Leavensworth, Kansas; the Atlantic seaboard is its eastern boundary, and its northern is a line drawn from Leavensworth, Kansas, eastward some distance north of the Ohio river and extending to the Atlantic on a line with the northern boundary of Maryland. The second area includes a section of the northern part of New Jersey, southern New York State, Connecticut, Rhode Island, and part of Massachusetts. The third is situated in California and comprises the Sacramento and San Jaquin Valleys. Dr. Hoffman endorses the statement that the success of malaria prophylaxis is very largely a question of local conditions and the assistance given by the local and central health authorities. He sets out four different methods which should be applied in conformity with the variations in the local conditions, since a method which may be most useful in one locality may not

be so useful in another. The methods recommended, not necessarily in the order here given, are the usual ones: (1) the prevention of the development of the plasmodia in man and their destruction in infected individuals—both of these aims are accomplished by the administration of quinine (that is, quinine prophylaxis); (2) destruction of the mosquitoes transmitting malaria; (3) protection of man from the bites of mosquitoes; and (4) education of the public regarding malarial prophylaxis. In recent years, fortunately, the mortality from this disease in America has been on the decline. The case mortality rate is higher in the coloured population than among the whites. For the two-years' period 1915 and 1916 the fatality rates were 1·2 per cent. for the coloured and 0·7 per cent. for the whites. In order to get better control of malaria, Dr. Hoffman strongly advocates compulsory notification. Some boards of health have, indeed, made its notification obligatory, but these are a small proportion of the whole. So far reliance has had to be placed for the collection of morbidity statistics relating to the disease upon the procedure of the United States Public Health Service, which issues return postcards to medical practitioners asking for a monthly statement of the number of cases of malarial fever treated by them, giving particulars as to race, type of disease, and whether the diagnosis has been microscopically confirmed. The result is as unsatisfactory as such postal returns always are. Hitherto only about 13 per cent. of those receiving these postcards have sent replies, and the answers received from some districts are much more complete than the replies from others. The fuller information may be due either to the greater activity of the local health department or to the greater interest in the public welfare on the part of the local practitioners. Where the State boards of health are efficient, better results are obtained. In Dr. Hoffman's opinion the completeness of the notification of disease may be taken as a fairly dependable index of the efficiency of the Health Department and of the sanitary knowledge and training of its personnel. He regards the neglect of notification by general practitioners as a very serious dereliction of duty, and those who thus fail in the discharge of what is a public service "should be punished according to law to the fullest extent." He would treat with equal severity any local or State board of health which is unwilling to enforce the notification of malaria or other communicable disease, and adds that "incompetent officials should be dealt with according to their deserts." He further states that owing to the regrettable inadequacy of the notification returns of malaria the data published by the Public Health Service in their present forms cannot be utilised to much practical advantage. There is much that is useful and instructive in Dr. Hoffman's pamphlet.

### INDUSTRIAL FATIGUE AND ACCIDENTS.

Two further reports<sup>1</sup> have just been issued by the Industrial Fatigue Research Board. Dr. H. M. Vernon's illustrated description of the millmen's work in tinsplate manufacture, his investigations into the influence of hours of work and of ventilation on the output, and his suggestions of improvements in factory appliances and methods

<sup>1</sup> Reports of the Industrial Fatigue Research Board. No. 1: The Influence of Hours of Work and of Ventilation on Output in Tinsplate Manufacture. No. 4: The Incidence of Industrial Accidents upon Individuals, with Special Reference to Multiple Accidents. Published by H.M. Stationery Office, 1918. Price 6d. each net.



and in clothing, all indicate very clearly not only how arduous a task is the making of steel sheets, but also what can be done by employers to increase production and at the same time to reduce the discomfort, the fatigue, and the dangers to health of the employees. He finds an increase in total output of 8·3 per cent. when six-hour instead of eight-hour shifts are worked. His data indicate the possibility of still greater improvement in output by the installation of thoroughly efficient ventilation. He points out that the men stream with sweat within a very few minutes of starting work, that they are far more subject to rheumatism and neuralgia than various other classes of manual workers, and that throughout the shift they wear the same trousers and pants in which they journey to and from the works. He suggests several improvements, already adopted in certain American mills, which would conduce to diminution in needless physical effort and to lessened fatigue. One of the recognised consequences of undue fatigue is an increase in the frequency of factory accidents. Dr. Major Greenwood and Miss H. M. Woods, however, find in their report evidence of another factor in the determination of such accidents which has hitherto escaped attention. Certain workers are found to show a special susceptibility to accidents. They should, for their own sake and for that of their fellow workers, be transferred to less risky occupations. Further inquiry is obviously needed to discover what are the reasons and the remedy for such susceptibility. It may be that the individuals in question are unusually careless, nervous, or clumsy. At present we are quite ignorant of the cause or causes. The psychological examination of the susceptible worker would prove an interesting and valuable piece of future research.

#### THE PRINTED LIE.

LATELY a distinguished layman, reviewing the results of the war, remarked that the chief thing it had proved was the power of the lie to mould public opinion. This hardly comforting finding might have been foreseen. In the sphere of science error wilfully propagated is rare, but in the troublesome business of governing men it is, up to date, almost inevitable; as mordantly shown by Swift, and (to put the lady in very good company) in Vernon Lee's account of "vital lying." One reason why science is so much freer from falsehood than politics is that those interested in the former, being better educated, are much less credulous of what they see in print—having, indeed, constantly before them the garbling of scientific matters in the daily press. But the ordinary citizen, who has time and inclination for one newspaper only, believes its calumny by commission and omission just as readily as its reports of football matches. Again, in science, dealing as it does with exact and rational matters, truth prevails much more quickly than in the uncertain domain of the human heart and will. Nevertheless, the lie has been met with in medicine. The not rare phenomenon of patronised professors writing to order is little seen, although some perverseness to social influences may exist. But there is danger of it when millionaires endow and maintain a large organisation for research, especially considering the direction of the sociological trend of sanitary science. Merciful deceiving of a moribund patient is not an instance in point, if only that every wise

practitioner safeguards himself by enlisting the coöperation of the patient's relatives, whom he leaves in no doubt as to the facts of the case. Where the written lie is chiefly operative is on the commercial side. Very few baseless medical certificates of physical incapacity for war service came to light, although, of course, some must have remained undetected, the responsibility for them occasionally being on the shoulders of men of high professional position. The public estimation of medical certificates is, indeed, on the whole, high. Articles written ostensibly to serve research, but really in the interests of the vendors of some drug, appliance, or bacterial derivative, have been dealt with by medical organisations in more than one country. Such communications cannot be hard to detect by the fairly experienced, but they do much harm. The sacred thirst for truth is the motive of all fruitful research, and although an upholder of a dying theory or remedy (generally the latter) may write, as Samuel Johnson sometimes talked, "for victory," it is mostly unconscious, not deliberate, mental bias which puts a man into this posture. In science, which represents a high triumph of human culture over nature—which is, of course, non-moral to the core—truth reigns as nowhere else. Here especially does the American writer's epigram hold good that truth will survive being run over by a locomotive, while error dies of lockjaw if it pricks its little finger. And although these last five years have indeed shown that to political lying and vital lying must be added a third variety, to wit, war lying, yet happily from the severe injuries truth has sustained she is now slowly making sure recovery.

#### GANGRENE DUE TO CARBON MONOXIDE POISONING.

IN the *Journal of the American Medical Association* of August 30th Dr. J. E. Briggs has reported a case of a very unusual complication of carbon monoxide poisoning. The case is of interest not only on account of the rarity of the complication, but because it shows the danger, which is not generally recognised, of exposure to the exhaust gases of the internal combustion engine. Three brothers went for a fishing trip in a motor-boat. Before starting the exhaust pipe had been disconnected preparatory to installing another muffler. The exhaust was ordinarily carried out along the bottom of the boat, but the pipe was disconnected within 3 feet of the engine, leaving the open exhaust in the cabin, which was 15 by 7 feet. One of the brothers went to the cabin and lay down. After a time another went to arouse him, but after 15 minutes had not returned, and the third noticed through the open door that he had suddenly fallen forwards. He shut off the engine and rushed in. He found the first brother lying on the floor about 8 feet from the engine, and the second about 4 feet from it and dead. The first, who was breathing, was carried out of the cabin, and efforts were made to revive him. At first he talked incoherently. He was taken to hospital and treated for what appeared to be second degree burns of both hands and feet. His back, as well as that of the dead man, was covered with large tense blebs. These were punctured, trimmed, and dressed with boric ointment. He was discharged, but the affected areas enlarged and extensive gangrene followed. A month after the accident he was admitted to hospital under



Dr. Briggs's care. There was gangrene of the entire three middle fingers, one-half of the inner border of the thumb, and an extensive area of the little finger of the right hand. In the left hand gangrene affected the distal phalanges of the four fingers and the flexor surface of the thumb. There were also on the right side gangrenous areas on the outer border of the tibial region, the external malleolus, the outer border of the dorsum of the foot, and small patches on three toes. On the left foot were gangrenous areas at the distal end of two toes. The location and character of the lesions showed that they could not have been due to exposure to heat. The gangrene was dry, and affected skin, muscle, tendon, periosteum, and bone, and extended into several joints. Lines of demarcation were well established. Amputation of the three fingers of the right hand at the metacarpo-phalangeal joints and of the four fingers of the left hand at the middle of the second phalanx was performed. Two similar cases have been recorded. Alberti<sup>1</sup> has reported a case of extensive gangrene of the musculature of the throat and paralysis of the left leg after carbon monoxide poisoning. The patient was overcome by the gas escaping from a stove. He awoke with pains in the head, and on attempting to rise fell unconscious. Paralysis of the right foot and painful swelling of the right elbow, pain in the arm, and stiffness of the neck followed. On the right side of the neck a dry, brownish-black, mummified area of the size of the palm appeared. A line of demarcation formed. It was necessary to incise to a depth of 2 cm. before blood, mixed with dark-brown fluid, appeared. The gangrenous areas extended and he died 26 days after the poisoning. A. Maclean<sup>2</sup> has reported the case of a patient found unconscious in his room with a small gas burner open, in which the flame had been accidentally extinguished. The gas contained 7 per cent. of carbon monoxide. A week later he complained of pain in the feet and legs, and was admitted to hospital because they were swollen and discoloured in patches below the knee. During the next two weeks the pain continued, the legs became oedematous, and the discolourations became gangrenous. Both legs had to be amputated. Recovery ensued.

#### THE CENTENARY OF THE HUNTERIAN SOCIETY.

THE Hunterian Society was founded in the year 1819, and even in its early days, judging from the reports in our own columns, the discussions seem to have been attended with a vivacity unknown at other medical societies of London. To give a single example: At the Hunterian Society in May, 1826, a Mr. Waller related to a critical audience his personal experience of transfusion in the treatment of conditions of dangerous hæmorrhage. His remarks were not well received, and the president, in summing up, commented on the fact that the speaker had omitted to employ one important remedy—namely, "glysters of chicken-broth." More recent meetings, although curtailed by war conditions, have dealt with equally live topics, and a full programme is planned for the coming winter session. Meetings will be held on the second and fourth Wednesdays in the month from October to April at 9 P.M. at the School of Oriental Languages (formerly the London Institution) in Finsbury-circus. A special address by Professor Arthur

Keith, F.R.S., will be given on Oct. 8th in the Hall of the Society of Apothecaries. The Centenary Dinner takes place on Oct. 22nd, when Sir Norman Moore will propose the health of the Society. Sir William Osler has undertaken to deliver the annual oration. The present officers of the Society are Dr. W. Langdon Brown, president, Dr. F. Howard Humphris and Dr. R. L. Mackenzie Wallis, honorary secretaries. We wish the centenarian City medical society a renewed youth and vigour.

#### THE OPENING OF THE WINTER SESSION.

THE new session of the London Schools of Medicine which is upon us is likely to be noteworthy in one particular especially. It will see the inauguration of research clinics in several schools with a recognised authority at the head of each, who will devote the whole of his time and interest to the advancement of his special subject. At University College Hospital Dr. T. R. Elliott is mentioned as the director of the medical clinic; at St. Thomas's Hospital Sir Cuthbert Wallace has been made responsible for the establishment of a surgical unit; St. Bartholomew's Hospital is fortunate in finding men like Sir Archibald Garrod and Mr. G. E. Gask to preside over the medical and surgical research departments respectively. It is too early to presage the kind of development to which these appointments will give rise, although it is certain that they will enhance the reputation of the London School of Medicine as a research and teaching centre. A substantial step will have been taken towards founding that solid basis of undergraduate and graduate study in London which is befitting to a city of the size and position of the metropolis.

#### A NEW MEDICAL JOURNAL.<sup>1</sup>

THE *Journal of Industrial Hygiene* combines two innovations. This is the first serial publication devoted to occupational health, that branch of preventive medicine which is so rapidly coming to the front. Contributions to industrial medicine have heretofore appeared in publications dealing with general hygiene, medicine, or surgery; they have nowhere been collated, and those interested in the subject have had to watch all journals or run the risk of missing important papers. Secondly, it has an international editorship, American and British. This coöperation between two of the greatest industrial countries in the world is admirable, and is a sign of scientific friendship from which only good can come. The two nations are bound to be industrial rivals, but friendly rivalry is good for both; and joint action will assist in keeping it friendly, stimulate a proper emulation in effort to improve the health of both peoples, and stand ever in the way of jealous animosity. From both points of view this new venture deserves success. The journal, which in the excellence of its printing and of its reproductions of diagrams and illustrations holds out a challenge to many of our home publications, is produced by the Macmillan Company in America; hence we presume the predominance in the first two numbers of American contributions. The names, however, of those in this country who coöperate in the editorship should ensure in future numbers

<sup>1</sup> Deutsch. Ztschr. f. Chir., 1884, p. 476.

<sup>2</sup> Journ. American Med. Assoc., May 20th, 1911, p. 1455.

<sup>1</sup> The *Journal of Industrial Hygiene*, Macmillan Company, Fifth Avenue, New York.



adequate representation of British thought and research. The first number makes its bow with an article by Dr. Mock, who traces the development of industrial medicine in the States, and points out the stimulus it received during war-time. In this country, too, through the action of the Ministry of Munitions, war-time employment gave great impetus to the movement which we hope may hereafter be duly recorded. The writer sums up: "Thus, in the course of one short decade broad humanising principles, combined with scientific, medical, and surgical work, have permanently established in the medical profession this far-reaching health service—industrial medicine and surgery." Both the first and second numbers contain contributions from Dr. Alice Hamilton, who, in an interesting, if somewhat discursive, way, deals with her own specialty—industrial poisons; but in attempting to cover intoxication from lead, zinc, copper, brass, arsenic, antimony, mercury, carbon bisulphide, phosphorus, and carbon monoxide in two articles, she hardly does justice to her subject or herself. The most important paper is undoubtedly that of Dr. Spaeth on the "Problem of Fatigue." It is the best exposition of present knowledge on the subject we know, and is accompanied by an excellent and exhaustive bibliography. The author summarises laboratory experimental research and chemical knowledge of vital activity; and then proceeds to discuss practical methods of investigation in the industrial world by testing individuals and by measuring output, accidents, lost time, and sickness, all of which he holds may be expected to throw further light on definite aspects of the subject. Psycho-physiological tests are condemned as impracticable under industrial conditions; but research into reflexes and objective tests is recommended as likely to prove of value. The relation of hours of labour to efficiency is held to establish the superiority of a shorter working week, at any rate so far as the eight-hour and ten-hour shift systems are concerned; and the author holds that "the men who planned such a radical industrial programme (as the eight-hour day) were possessed of a profound wisdom and social vision." This article should be carefully read not only by medical men but by employers and employed, for it is not unknown for the workmen to desire, tempted by pay, to defy hygienic laws. Dr. Anna Richardson tells from her own experience of the value of medical service among telephone operators. This contribution should be of use to factory medical officers in indicating the work there is to do, and the way in which records can be scientifically analysed. Dr. Austen sets forth his work in examining factory employees before engagement, and points out its value. He places to the credit of efficient health service: "(i.) diminished labour turnover; (ii.) diminished loss of production, due to absenteeism; (iii.) increased efficiency and lessened cost of production, due to higher grade employees; (iv.) diminished industrial liability to accidents, due to elimination of physical and mental defectives; (v.) diminished moral hazard, due to the fact that venereal-infected employees are only conditionally employed; (vi.) diminished labour cost, due to the reduction of the excessive overhead charge which results from transferring employees who are working at a physical disadvantage; (vii.) a hospital and dispensary place employees in direct personal touch with the entire organisation, and show such

employees that their company recognises that healthy individuals are the most vitally necessary part of its success." A paper on health by an engineer, Professor Whipple, is excellent in itself, and valuable as surveying hygiene from an essentially practical point of view; the view of one who has to accomplish what the medical scientist declares should be done, whether in mosquito control, drainage systems, or factory construction. Other articles deal with "Chip Fractures of Terminal Phalanges," by Dr. Hurley; and "The Use of Army Gas Masks in Industries." Not the least valuable part of each number is a supplement giving abstracts of the current literature of industrial hygiene. Each notice is signed by the abstractor, which is likely to ensure more careful work than anonymity; and the notices are for the most part of such reasonable length that the reader can obtain a real idea of the work mentioned—a point where many abstracts of literature fail even to the extent of being little more than bibliographies. The standard maintained here is, however, uneven, and we recommend the editors to watch carefully this important part of their journal. We are so confident this journal meets a need, and has before it an opportunity of doing great and useful work, that we intend keeping our readers informed from time to time of the progress made.

#### THE COMPLEAT MASSEUR.

THE programme of the Conference of the Incorporated Society of Trained Masseuses, announced for Oct. 2nd-4th, suggests the stirring of new life. We may associate it with the petition recently addressed through the Board of Trade to His Majesty in Council begging that a Charter may be granted to a society to be known henceforth as the Chartered Society of Massage and Medical Gymnastics. The object of the proposed society is to unite together the older Society of Trained Masseuses, which was founded in 1894 and incorporated in 1900, and the more recent foundation, the Institute of Massage and Remedial Gymnastics, which was founded in 1916. Up to the time of the foundation of the Incorporated Society of Trained Masseuses 25 years ago, massage treatment in this country was in a parlous state. Anyone who chose could pose as a masseur, and training was so limited as to be almost non-existent. Small wonder, then, that the Swedish masseur became the traditional instrument to employ when ordering "massage." Thanks almost solely to the untiring efforts of the founders of the Incorporated Society and their successors—a faithful and disinterested band whose work has received all too little recognition—the art of massage was raised step by step from the lowest depths and placed upon a basis which, though still far from perfect, can only be considered as remarkably good. The lamentable lack of interest shown by the medical profession as a whole has been the main stumbling-block in the road of progress. Many medical men have studied and practised electro-therapy in recent years; there are few who would not be hard put to it if invited to carry out themselves the simplest of massage treatments, and fewer still who could write out a table of exercises applicable to a particular condition. The result is that most medical men who order "massage" or "exercises" are incapable of discerning between good and inefficient work and,



judging by results alone, are liable to extol or deprecate without discrimination.

In an article in a recent number of the *Journal of the I.S.T.M.*, Dr. Carl Westman points to the remedy. He advocates:—

(I.) "Compulsory visits for all medical students to the massage departments and opportunity for special training of those interested, such course to run concurrently with the medical studies."

(II.) "The adaptation and development of the treatment along scientific and rational lines."

The former suggestion will save the medical man of the future from ignoring one of the most valuable methods of treatment in his armamentarium. The second will then follow as a corollary. Dr. Westman goes on to advocate a revised and standardised training for masseurs (including "masseuses"), with abolition of the present six months' course certificate. It may be it is possible in six months to acquire a smattering of what is generally included under the term massage, a poor remedy on which to rely in remedial work. For surgical or orthopaedic cases a knowledge of Swedish remedial exercises is essential, the period of training required for admission to the existing examination being six months. A year's training is therefore an irreducible minimum for the fully qualified masseur. The formation of a register of persons qualified to practise massage, and the penalisation of quackery, would then protect the public from the danger of the uninstructed dabbler in remedial gymnastics. At present the gymnastic directors in this country have been trained in the two or three years' course at one or other of our leading physical training colleges. Their isolation from hospital work is the one great flaw in an otherwise magnificent training. These qualified gymnasts require recognition and protection, as well as the others who are more especially trained in medico-physical treatment. The granting of a charter should soon make it possible compulsorily to extend their training so as to embrace the full course of massage, Swedish remedial exercises, and electro-therapy.

#### THE COST OF HOUSING THE PEOPLE.

Sir Kingsley Wood, M.P., Parliamentary Secretary to the Ministry of Health, speaking at Brighton, urged his hearers to set off against the cost of modern house building the gain in health which the nation might expect as the result of better accommodation for its humbler members. This is probably the wisest, if not the only, way in which the matter should be looked at. The community has to contemplate a prospect of expenditure which, judged by the ordinary standard of probable pecuniary return, it would not be justified in undertaking. There is, however, this consolation, that the Ministry of Health, so Sir Kingsley Wood declared, was not going to be satisfied to emulate the jerry-builder of the past, and we hope to see new houses in which the saving in repairs will to some extent compensate for the initial expenditure on their production. It is to be regretted that when a man, or the nation, comes forward with money to spend and an object which has to be attained by its expenditure, he and, more than he, the nation, finds at once every one's hand against him. It will not be a hand raised in violence; its energies will be concentrated not upon taking his life, but upon emptying his pockets. Sir Kingsley Wood referred to claims provisionally made as to the price of land

for houses, amounting in the aggregate to £587,000, reduced by efficient valuation by £143,250. This is a reduction of not much less than 25 per cent. The building of houses by tender is not on quite a similar basis with the acquirement of the land for them. The cost of the houses of the class referred to was quoted by Sir Kingsley Wood as being about £700, minor details and accessories giving a certain amount of opportunity for economy to those desirous of effecting it. The audience at Brighton were reminded of the power of local authorities to contract with builders for the purchase of houses erected by the builders themselves.

#### PUBLIC-HOUSE REFORM.

THE virtues and vices of the existing licensing laws have been carefully considered by a sub-committee of the Brewers' Society and the National Trade Defence Association, who have issued an interesting draft of a new Licensing Bill this week. New licensing authorities, reduced hours of sale, and fresh penalties for inebriety—all involving somewhat drastic changes—are proposed, but the most interesting part of the Bill deals with an attempt to make the public-house a place comparable with a tea-shop or café. Too long has the liquor trade confined its business to merely the sale of liquor, and they realise now the mistake of not making the "pub." a centre of real and varied public refreshment and entertainment. Supposing that legislation should ensue upon this Bill, there will be difficulty, of course, just now in adapting existing premises to meet this much needed reform, but the policy of rendering places of refreshment airy and commodious, providing in them wholesome food and non-alcoholic beverages, is so sound that expense should not stand in the way. Moreover, money so spent would be a good investment. That the stuffy and unwholesome gin-palace and the dirty, offensive public-house must go, and decent rendezvous of refreshment substituted, has been for a long time a very general decision.

THE Home Secretary is about to appoint an inspector under the Cruelty to Animals Act. The appointment will be for a term of four years in the first instance and the salary will be £800 a year, together with war bonus on the scale authorised for the Civil Service and travelling allowances at the usual Civil Service rate. The inspector will be required to give his whole time to his duties. Candidates for this post who possess the necessary scientific qualifications required for the work should apply to the Private Secretary, Home Office, London, from whom further particulars may be obtained. Applications should be accompanied by one or two testimonials and particulars of the candidate's qualifications, and should reach the Home Office not later than Oct. 10th, 1919.

#### "THE LANCET" OF

JAN. 18TH, FEB. 8TH, 15TH, MARCH 1ST, AND  
JULY 5TH.

THE Manager will be obliged to readers who have not any further use for their copies of THE LANCET of the above dates if they will kindly return them to him at 1, Bedford-street, Strand, W.C.2. The postage on the first four numbers is one halfpenny each, and on July 5th one penny. He will be pleased to pay for those returned.



## SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

*Death of Professor Trail of Aberdeen University.*

THE death took place at Aberdeen on Sept. 18th of Professor J. W. H. Trail, who had occupied the chair of botany at the University of Aberdeen for 42 years. Professor Trail, who was 68 years of age, was born at Birsay, Orkney, and was educated at Aberdeen University, graduating M.A. in 1870, M.B., C.M. (with honours) in 1876, and M.D. in 1879. From 1873 to 1875 he acted as naturalist to an exploring expedition in Northern Brazil. In 1877, at the early age of 26, he was appointed regius professor of botany at Aberdeen University, which appointment he held up to the time of his death, when he was senior member of the Senatus. He was a Fellow of the Royal Society and of the Linnæan Society, and had made many contributions to scientific journals on botanical and zoological subjects. Outside the University he was also well known for his activities in public life in connexion with the subject of education.

*St. Andrews University: Chair of Natural History.*

The University Court of St. Andrews unanimously appointed Dr. James Fairlie Gemmill to the chair of Natural History in University College, Dundee. Dr. Gemmill is a distinguished graduate of Glasgow University, and held there the posts of lecturer in embryology and lecturer-assistant in zoology. He was also first president of the Scottish Marine Biological Association, which he was largely instrumental in founding.

*Election of Direct Representative for Scotland to the General Medical Council.*

Dr. Michael Dewar has issued to the profession in Scotland an address, in which he offers himself as a candidate at the election to be held in November next for appointing a Direct Representative for Scotland to the General Medical Council. Dr. Dewar is a graduate of Edinburgh University, and is well known locally for his work in connexion with the National Health Insurance Bill, both as regards its terms and administration, the British Medical Association, the Central Midwives Board (Scotland), and the Medical and Dental Defence Union. Dr. Dewar stands as a general practitioner in active practice, and is in favour of—

- (1) A fairly high standard of proficiency in general education for entrance to the medical curriculum.
- (2) The compulsory inclusion in all entrance examinations of the following subjects: English, Latin, mathematics (including algebra and arithmetic), and an additional language.
- (3) The recent action by the General Medical Council in approving of the various examinations as qualifying for registration of medical students.
- (4) The maintenance and extension of the supervision of the professional examinations by the Council.
- (5) The establishment of a one portal system for admission to the medical curriculum and to the medical profession.
- (6) The total prohibition of unregistered dental practice, due regard being given to those who have been practising dentistry for some years.
- (7) The necessity for the inclusion of as many general practitioners in the Council as are allowed by the 1886 Act to assist in dealing with penal cases.

He is to address meetings of the profession throughout Scotland in various centres during the month of October for the purpose of further explaining and amplifying his views.

*Public Health (Notification of Infectious Disease) Regulations (Scotland), 1919.*

A new Order amends the form of certificate to be given by a medical practitioner under Section 3 of the Infectious Disease (Notification) Act, 1889, especially in the direction of requiring the following additional particulars:—

- Measles.*—Date of first appearance of rash.  
*Tuberculosis.*—Localisation of the disease. Occupation. Usual place of residence (if other than that given in the notification). Is patient an insured person under the National Insurance Acts?  
*Ophthalmia neonatorum.*—Date of birth. Name and address of parent or other person (if any) having charge of child.  
*Malaria and dysentery.*—Is this patient's first attack? Was patient infected abroad?  
 Sept. 21st.

Dr. Alexander Morison, of Upper Berkeley-street, London, has received official sanction for the assumption of the surname of Blackhall before his paternal surname of Morison.

## IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

*The Irish Public Health Council.*

THE personnel of the Irish Public Health Council "was announced last week in these columns. Its duties under the Ministry of Health Act are "to give advice and assistance, and to make proposals to the Chief Secretary in connexion with his powers and duties under this Act." Your readers ought to know that the constitution of the Council is giving rise to severe criticism in Ireland on several grounds. Out of 17 members constituting this Health Council, five, so far, belong to the medical profession. The nominees of the Irish Insurance Commissioners (to be three in number) and of the Local Government Board for Ireland (also to be three) have not yet been made public, beyond the official chairman of each of these bodies. But it is probable that at least one of each group will be a doctor, and we may take it provisionally that six out of the 17 members of the Irish Public Health Council will be medical men, of whom at least three will be permanent officials not now in actual practice. This conclave is to suggest to the Minister of Health in Ireland (the Chief Secretary) some plan for improving the public health of the country, and yet of 17 members there will be apparently only six doctors, three of whom are not in active practice and not one of whom has been elected by the whole body of the medical profession.

Every one of the medical members of this Irish Health Council is a Dublin resident. Considering the five towns in Ireland of over 30,000 inhabitants, Dublin, with a population of 290,638, has 445 doctors; Belfast, with a population of 349,180, has 325 doctors; Cork, with 76,122 inhabitants, has 140 doctors; Londonderry, with a population of 39,892, has 32 doctors; and Limerick, with 38,151 inhabitants, has 39 doctors. Why should one Irish city, which, albeit the capital, comes second in population, have all the medical representation on a Public Health Council for the whole of Ireland? Not only the other large towns but the countryside is ignored. Ireland, as compared with England, is largely rural, and a total of 2398 doctors are absolutely unrepresented medically on this advisory Irish Public Health Council. The Poor-law medical officers of Ireland, with their wretched pay, hard work, and uncertain position—quite different from the Dublin permanent officials—have not a single medical representative on this Council, yet who know so well as they what an inadequate and antiquated public health service there is in Ireland? Irish doctors, who want the public health of the country improved, are asking how could six doctors, three not in practice and all residing in Dublin, tender advice—based on personal practical experience—in reference to the problems of the great rural districts of the centre and south of Ireland, of the "congested areas" of the west (somewhat analogous to the sparsely populated parts of the highlands and islands of Scotland, and of parts of Wales), and of the industrial public health difficulties of the north of Ireland?

*Londonderry Water Queues.*

The supply of water to Derry is daily growing less. The reservoirs on Sept. 18th had only 30 million gallons of water; one portion of the city is actually dependent on a pump, which may break down at any moment. In other parts there is a reduced supply given only twice a week, and the inhabitants there have to rely on a spring at the asylum in Strand-road, where in the 1911 water famine a pump was erected, and to this pump, an oasis in the desert, the travelling caravan of thousands of men, women, and children daily flock for water, which they carry off in every kind of vessel, from tins to whisky kegs, kettles to barrels. The corporation, in their efforts to keep some regulation of the "dry" crowd, have posted up the following notice: "Take your place in the line and wait your turn." There is a crowd both by day and night, and carts and lorries are being utilised to carry supplies. As for Belfast, there is still considerable shortage in the store of water, the total amount in the reservoirs being 1133 million gallons, as against 1609 million gallons in the same week of September, 1918. Until the water authorities in towns learn and act upon the principle that it is for dry and not



wet seasons they must prepare, such famines as at present prevail in the water-supply of their areas will every now and again occur.

#### *Scarlet Fever Outbreak in Belfast.*

There has been in Belfast a very widespread epidemic of scarlet fever since the beginning of the present month, so that now Purdyshurn Fever (Memorial) Hospital is full up (300 cases), and there are close on 100 cases more in the Union Fever Hospital. The patients are from all parts of the city and from all grades of society. There are 17 cases of scarlatina in Coleraine in the fever hospital, and the outbreak is prevalent in Kilrea, co. Derry.

Sept. 22nd.

## PARIS.

(FROM OUR OWN CORRESPONDENT.)

#### *Increase of Rabies in France.*

CASES of rabies are becoming more and more numerous in France because of the large numbers of stray dogs in the districts laid waste by the enemy. Many warnings recommending the provision of muzzles for dogs and their restraint on a leash have been issued. These suggestions, however, have not been generally adopted. Dr. Roux, director of the Pasteur Institute, at the last session of the Council of Hygiene and Health of the Seine Department, submitted to the Prefecture of Police an urgent note pointing out the gravity of the danger. He recommends that all people bitten by any sort of dog should come immediately to the Pasteur Institute. The few failures of antirabic treatment are due only to delay in treatment. Rules as to stray dogs and wearing of muzzles should also be enforced with vigour. If the public were not so sentimental about dogs, he says, and if the law were administered more strictly, rabies would have disappeared from France by now as it did practically before the war. M. Roux quoted the example of England, where rabies was unknown, thanks to strict rules, until the day when dogs were smuggled in by air.

#### *A New Chair in the Faculty of Medicine of Paris.*

A Chair of Laryngology has just been created in the University of Paris. Hitherto the only professor of this subject in France has been Professor Moure, of Bordeaux; elsewhere the teaching of laryngology has been undertaken by assistants appointed by the professor of general medicine in the practical clinics. The new professor is Dr. Sebileau, supernumerary professor, member of the Academy of Medicine, and surgeon of the Lariboisière Hospital, where he conducts a large department of laryngology.

#### *The Raising of the Official Tariff for Doctors' and Chemists' Fees for Industrial Accidents.*

The general rise in the cost of living and of all salaries has necessarily led doctors to raise their fees, but not in proportion to the increase in prosperity of workmen, manufacturers, and business men, because medical men cannot form a professional union, nor can they refuse to attend patients when humanity calls. The public would not extend to them the tolerance allowed to strikers who stop traffic—trams, trains, or taxis—or cut off the supply of water, gas, or electricity. Moreover, in certain cases medical men are bound by a contract accepted before the war. In this category comes medical attention given to workmen's injuries, to old people, and to the poor—under the law relating to gratuitous medical aid. The charges are regulated according to an old tariff, which is not remunerative because it is calculated by the State in accordance with the insurance companies, whose terms are somewhat lacking in generosity. This old tariff, which provided a fixed sum for each category of accidents and for every sort of medical aid, has obviously become too low for present conditions of life. It has become even more unjust, inasmuch as the companies have raised their insurance rates considerably. The difference is thus entirely in their favour. The Union of Medical Councils in France have undertaken a vigorous campaign to raise the medical fees in this tariff, and has succeeded in convincing the Parliamentary commission charged with the reconsideration thereof. Henceforward all fees are to be doubled. The new tariff comes into force as from April 1st, 1919, except for bills actually paid before the law was passed (July 30th). There is thus no means of

raising the prices on their hills, if they apply to accidents sustained before April 1st next. On the other hand, the tariff is provisional, and is only valid until Jan. 1st, 1920, after which it will be subject to quarterly revision if one of the parties—the State or the Medical Councils—demands a further modification. Thus the result obtained by the Union of Medical Councils is quite important, although still insufficient, in the opinion of many doctors, as workpeople's wages are not double but three or four times what they were, and the insurance companies have raised the rates in exact proportion to the increase in salary.

Sept. 29th.

## AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

#### *The Influenza.*

THE influenza epidemic still continues to show little alteration in Victoria. A recrudescence has been noticeable since the very cold weather began, early in June, and there are still upwards of 1200 to 1500 cases as a daily hospital average in the metropolis, and an unknown, but very large, number of cases elsewhere. On the whole the case-mortality appears to be somewhat small, but there are from 10 to 12 deaths daily in Melbourne. In Sydney there was a very severe outbreak during June and the early part of July, and the mortality assumed serious proportions during one or two weeks. The banks were so short-staffed that they only opened for two hours daily. With a warm spell in the middle of July the spread rapidly subsided, and at present is well within the capacity of the existing provision. In Perth there have been a few cases, but the disease has not assumed alarming features. All inter-State quarantine has been abandoned except by Tasmania, but as there is no communication between it and the mainland, owing to the shipping strike, this is no inconvenience. The Commonwealth Quarantine Department has announced the issue of a serum for the treatment of the affection, but the general attitude is apathetic towards such methods after the failure of vaccine inoculation which may now be taken as established, at all events, for those vaccines which were employed.

#### *Medical War Relief Fund.*

A movement has been set on foot by the Federal Medical Committee and the New South Wales Branch of the British Medical Association to establish a fund to be applied to medical men, or their dependents, who have suffered financial reverse while on active service. Clauses 4 and 5 of a draft agreement which has been adopted by all the State branches provide that the fund "shall be used in assisting medical officers who have been disabled and the dependents of those who have died; and that the fund shall also be used to issue loans, with or without interest, to medical men who, on account of war service, may require temporary financial assistance." It is proposed to raise the sum of £50,000, if possible, by voluntary contribution. The weak spot in the proposal is that apparently no attempt has been made to ascertain the probable demand that may be made, which could have been approximately arrived at without much difficulty, as the proposal has only been shaped since the armistice and practically all the medical officers are traceable.

#### *Returned Medical Officers.*

The medical officers who went from Victoria on overseas service have formed a society for the promotion of the interests of its members. They approached the Premier with a request that their secretary should be supplied in advance with particulars of proposed Government medical appointments, and that all such appointments made during the war should be reviewed with the prospect of giving them to returned men. The Premier saw no difficulty in the first request, and promised to think over the other.

#### *Munificent Bequests.*

Sir Samuel McCaughey, who recently died in New South Wales, was a pioneer of the pastoral industries in Australia, and acquired a large fortune. By his will the cause of medical education should benefit, for the Sydney University receives a sum of £400,000, while the Brisbane University benefits to the extent of £250,000. The late Sir Samuel McCaughey was a bachelor.



*Personal.*

Mr. G. A. Syme, F.R.C.S. Eng., having reached the retiring age, has relinquished his position as surgeon to the Melbourne Hospital and received a special acknowledgment from the committee of his long and faithful service. Mr. Syme volunteered for overseas war duty, and worked on a hospital ship during the Anzac landing, but contracted a poisoned hand, and after a dangerous illness was compelled to proceed to England, where he acted as consulting surgeon to the Australian medical establishment. Mr. Syme is succeeded by Mr. B. T. Zwar, who also was on active service with the Australian forces.

Lieutenant-Colonel N. F. Fairley has been appointed assistant director of the Eliza Hall Research Laboratory at the Melbourne Hospital. He is a Melbourne graduate, and has done interesting work on cerebro-spinal fever and on bilharziasis.

August 5th.

## TUBERCULOSIS.

*The Welsh National Memorial.*

ACCORDING to the report of the King Edward VII. Welsh National Memorial Association, which was presented at the seventh annual meeting on July 26th, the work of the association has gone successfully forward in spite of the war. At the end of July, 1914, the association possessed 87 hospital beds. The number of sanatorium beds belonging to the association in this year was 148. By 1919 the number of hospital beds had risen to 473, and that of sanatorium beds to 594. In the year ending March 31st, 1914, the patients examined numbered 8763. In the year ending March 31st, 1919, they numbered 12,260. During the war, up to this date, no less than 11,402 had received treatment in hospitals, and 6373 in sanatoriums. More than 50,000 patients were examined at dispensaries and visiting stations by tuberculosis physicians. Since 1915 there had been no delay in making provision for discharged Service men suffering from tuberculosis; more than 2500 passed through the hands of the association's medical staff, and more than 1600 received treatment in hospitals and sanatoriums. As many as 350 patients took their discharge against medical advice, and 53 were discharged for breaches of discipline. The two large sanatoriums, Talgarth and Llangwyfan, have been almost completed, and the work of the building committees has come to an end. The medical policy of the association is discussed in a special section of the report, and many recommendations are made as to the organisation of the campaign against tuberculosis. This section deals with principles and ideals rather than with actual achievements. In presenting the report the president, Major David Davies, said that it had been decided that the appointment of chief medical officer to the association, in succession to Dr. Marcus Paterson, who resigned two years ago, had been held in abeyance during the war on account of the difficulty of securing the best man. He added that the suggestion had been made that a chair of Tuberculosis should be established in the Medical School of Wales, and that the professor of tuberculosis should become the chief medical officer of the association. In this way the close co-operation of the school and the association would be secured, and the information gathered by the association would be at the disposal of the hundreds of medical students passing through the medical school.

*Sanatorium Reports.*

The thirty-fourth annual medical report of the *Trudeau Sanatorium*, published by itself, not with the general report already reviewed in THE LANCET for July 26th, consists largely of reprints of articles published by members of the Trudeau School in the *American Review of Tuberculosis*. It contains, however, a previously unpublished account of investigations made into the subsequent fate of patients who had been discharged from the sanatorium 20 years or more earlier. Of the 814 patients traced, 148, or 18.2 per cent., were alive; 666, or 81.8 per cent., were dead. An attempt is also made to show how the severity and extent of the disease at the time of treatment affects the ultimate fate of the patient.

The report of the *Vejlefjord Sanatorium* for 1918 includes a paper by its medical superintendent, Professor Saugman, on thoracoplasty. This operation, he has found, greatly

improves the prognosis for patients in the later stages of pulmonary tuberculosis, the results of treatment for these patients being far better than in earlier years when compression therapy was not practised. The majority (64.9 per cent.) of all the patients were in the third stage, and only 10.5 per cent. were in the first stage of the disease. The proportion of patients discharged fit for work was 49.7 per cent., as compared with 44.7 per cent. representing the average for the years 1900-1918. This improvement was chiefly due to the better results among the patients in the third stage, as great a proportion as 33.3 per cent. being discharged fit for work instead of 25.4 per cent. in earlier years. Of the patients in the third stage 45 underwent treatment by artificial pneumothorax (11 failures on account of pleural adhesions) and 16 underwent thoracoplastic operations. The results in some of these cases were strikingly successful.

*The American Review of Tuberculosis.*

The May number begins with a paper by Dr. Paul A. Lewis on the Complement-fixation Test in Tuberculosis. He finds that the numerical relations are such as to make it unsafe to apply this test to the diagnosis of tuberculosis except as a matter of the most limited confirmatory interest. In a paper on the Influence of Protein Intoxication on Tuberculosis in Guinea-pigs Dr. Allen K. Krause and Dr. H. S. Willis show that repeated daily injections of (homologous) tuberculo-protein and (heterologous) egg albumin, before experimental infection with tubercle bacilli, probably render guinea-pigs less resistant to tuberculous infection. Dr. A. L. Bloomfield and Dr. J. G. Mateer give an account of cutaneous tuberculin tests carried out in 19 consecutive cases of influenza. They found that during the febrile stage of the influenza the skin sensitiveness to tuberculin was absent in every case but one. During convalescence reactivity returned to 89.4 per cent., which corresponds with the proportion of positive reactions among otherwise healthy individuals. The authors note that, in its influence on the cutaneous tuberculin test, influenza bears a striking resemblance to measles. In a paper on the Pneumothorax Treatment of Acute Lung Abscess Dr. B. Goldberg and Dr. M. Biesenthal publish three cases successfully treated. Their analysis of 16 cases thus treated, including their three cases, shows that recovery was effected in 75 per cent., improvement in 12 per cent., while two patients (12 per cent.) were dead. Their comparison of this operation with other methods suggests that artificial pneumothorax is the best procedure. A somewhat discursive paper on the Treatment of Tuberculous Cervical Adenitis, by Dr. W. R. Abbott, is a plea for tuberculin treatment.

## URBAN VITAL STATISTICS.

(Week ended Sept. 25th, 1919.)

*English and Welsh Towns.*—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had been 10.0, 10.7, and 10.4 in the three preceding weeks, rose to 10.9 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual death-rate was 11.4, or 0.5 per 1000 above that recorded in the previous week, while among the remaining towns the rates ranged from 1.8 in Enfield, 4.9 in Oxford, and 5.7 in Northampton, to 18.4 in Middlesbrough, 19.0 in Tynemouth, and 20.6 in Great Yarmouth. The principal epidemic diseases caused 434 deaths, which corresponded to a rate of 1.4 per 1000, and included 322 from infantile diarrhoea, 38 from diphtheria, 31 from whooping-cough, 25 from measles, 14 from scarlet fever, and 4 from enteric fever. Measles caused a death-rate of 3.6 per 1000 in Tynemouth. The 322 deaths from infantile diarrhoea were 81 in excess of the number in the previous week, and included 103 in London, 25 in Liverpool, 12 each in West Ham and Middlesbrough, 11 in Birmingham, and 9 in South Shields. There were 1524 cases of scarlet fever and 1118 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 1504 and 1057 respectively at the end of the previous week. The causes of 26 deaths in the 96 towns were uncertified, of which 3 were registered in Birmingham and 3 in Liverpool.

*Scotch Towns.*—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had been 10.9, 10.8, and 10.2 in the three preceding weeks, rose to 10.5 per 1000. The 224 deaths in Glasgow corresponded to an annual rate of 10.4 per 1000, and included 15 from infantile diarrhoea, 3 from diphtheria, 2 from whooping-cough, and 1 each from enteric fever, measles, and scarlet fever. The 66 deaths in Edinburgh were equal to an annual rate of 10.2 per 1000, and included 2 from infantile diarrhoea, and 1 each from scarlet fever and whooping-cough.

*Irish Towns.*—The 97 deaths in Dublin corresponded to an annual rate of 12.5, or 4.8 per 1000 below that recorded in the previous week, and included 9 from infantile diarrhoea, and 1 each from enteric fever, scarlet fever, and diphtheria. The 111 deaths in Belfast were equal to a rate of 14.4 per 1000, and included 8 from infantile diarrhoea, 6 from scarlet fever, and 1 from diphtheria.



## CONTROL OF VENEREAL DISEASES.

*Prophylaxis against Venereal Disease.*

IN January last an Inter-Departmental Committee was appointed by Dr. Addison to consider the risks of demobilisation to the health of the civilian population of the country and the measures to avoid them. A Note (Cmd. 322. H.M. Stationery Office. Price 3d.) has now been presented to the Minister of Health reporting on one small part of the venereal problem—namely, the advisability of encouraging the sale of “packets”—i.e., the provision before exposure to infection of means of prophylaxis for use either before or after exposure. The Committee heard the experience of distinguished medical representatives of various sections of troops—namely: for Canada, Colonel J. G. Adami and Colonel J. A. Amyot; for Australia, Lieutenant-Colonel G. Raffan and Sir James Barrett; for New Zealand, Major J. Falconer Brown; for the United States, Colonel A. M. Whaley, Colonel H. Young, and Colonel W. T. Snow; for the B.E.F., Major C. T. White. In addition evidence was given by Lady Barrett, Sir Bertrand Dawson, Sir H. Bryan Donkin, Sir William Osler, Dr. Morna Rawlins, Sir G. Archdall Reid, and Dr. Agnes Savill. Memoranda submitted by these experts are given in the appendix to the Note, while in the text are set out the figures of incidence of venereal disease among the different troops. The general conclusion reached by the Committee is short and crisp:—The official application of a packet system to the civil community is neither desirable nor practicable. Paragraph 8 of the Note, which is the chief justification of this conclusion, runs:—

“..... while certain drugs and preparations may be relied upon to remove or destroy the infection of venereal disease if applied by skilled attendants very shortly after exposure, such satisfactory results cannot be secured if those drugs and preparations are used unskillfully or too long a time after exposure. .... experience indicates that, however careful the instruction, and however scientifically effective the prophylactic in itself might be if used under proper conditions, it frequently fails to protect when applied by the individual, even when this self-application is supported later by additional skilled treatment. The consumption of alcoholic liquors, carelessness, natural excitement, forgetfulness, or ignorance has been the cause of numerous failures, even amongst those troops where the use of such prophylactic measures has been most efficiently organised and taught.”

The Committee, it is added, set out to examine the evidence placed before them from the scientific and the medical point of view, and it is strictly in this spirit that they desire to record it as their opinion that the irreplaceable effect of the moral factor has been too frequently neglected or forgotten.

The Note is of value if only for the definition of certain terms adopted (“for the purpose of the Committee”) to avoid ambiguity.

*Prophylactic treatment* to connote the issue of drugs and appliances made available before exposure to infection, for use by the individual.

*Early preventive treatment* to connote treatment applied immediately after exposure to infection.

*Abortive treatment* to connote treatment applied immediately on the appearance of symptoms with a view to cutting short the duration of the disease.

The adoption of this nomenclature will clarify future discussion of the subject.

*Legislation against Venereal Disease in Sweden.*

We published in 1915 and 1916 a series of annotations dealing with reforms which were then being advocated in connexion with venereal disease in Sweden. Some of these have now materialised, and in the Swedish journal, *Dagens Nyheter*, Bureauchef Sigurd Ribbing has given an account of the new law dealing with venereal disease which came into force on Jan. 1st of this year. The system of registration and regulation of prostitutes is definitely abolished, and principles are adopted corresponding more closely with modern western sociological views. Every patient suffering from venereal disease is now entitled to free medical treatment, including drugs and, when necessary, free hospital treatment. The special wards hitherto set apart for venereal disease are abolished, so that no invidious distinction is made between venereal and other diseases. Provision is made in the large towns for polyclinics, each town of over 20,000 inhabitants being obliged to provide adequate

polyclinal accommodation. To help towns to meet this obligation, the State undertakes to defray the cost of doctors, drugs, and other medical requirements, while the cost of premises, of fuel, lighting, nursing, &c, must be borne by the local authorities. In return for its substantial subsidy the State looks to the local authorities to provide good accommodation and to keep up the standard of efficiency, so as to meet modern requirements. In districts where the establishment of polyclinics is not feasible, free medical treatment is undertaken by the local medical authorities, represented by the State medical practitioners or medical officers of health. It is admitted that these medical officers do not invariably possess the skill and experience of a specialist in venereal diseases, but in thinly populated districts there has been no satisfactory alternative, and several medical officers of health, recognising their limitations, have already brought their knowledge of venereal diseases up to date by getting into touch with special hospitals for these diseases. It is also anticipated that in the near future special post-graduate courses in venereal diseases will be provided in conjunction with grants of money to practitioners attending such courses.

The new law makes it compulsory for every patient suffering from venereal disease to submit to medical treatment as long as the disease is in an infectious stage. If the medical officer's instructions regarding treatment and prevention of infection are not followed out, the patient is liable to compulsory treatment in a public hospital and to detention there until the infectious stage of the disease is passed. Any man or woman who suffers from venereal disease and who exposes others to this infection is liable to imprisonment and hard labour. And it is the duty of the authorities to prosecute without the instigation of anyone who has been exposed to infection by the accused. New powers are also given the police for dealing with brothels masquerading as hotels.

The promoters of this new law do not flatter themselves that they have even approximately solved the problems of prostitution and venereal diseases by putting the above reforms on the Statute books. Indeed, they regard these reforms merely as one step to an end that can be attained only by the greatest vigilance and by untiring supervision of the working of the innovation. It is also admitted that prostitution is an expression of certain social economic factors which are hardly touched by the new law. The war has undoubtedly swelled the ranks of the prostitute to an enormous extent by inducing poverty on the one side, opulence on the other. And, above all, the housing problem is responsible for the conditions which foster prostitution. By more efficient inspection of houses throughout the country, and by local authorities undertaking the provision of new houses, it is hoped that a partial solution, at any rate, of this problem may be found; and in the meantime it is considered urgently necessary by Hr. Ribbing and his colleagues that the present legislation dealing with child welfare should be extended so as to give the authorities certain powers over young adults of 15 to 18. Compulsory education and detention of the incipient prostitute of this age would, it is urged, do much to convert the potential vagabond to an industrious and virtuous worker.

*Travelling Consultants for Venereal Clinics.*

Referring to a proposal made in this column on Sept. 6th (p. 451) to appoint travelling consultants for venereal clinics, “Fair Play” writes:—

“Your suggestion is excellent, but I should like to add that it does not go far enough, and that what is wanted is a complete overhaul of the present personnel. The majority of these clinics were started during the war, and appointments of medical officers were made from those available at the time. In some cases these appointments have been dealt with in the spirit of a closed corporation, and are reserved for members of the hospital concerned, irrespective of their knowledge of venereal disease. There are now many medical men demobilised who have had experience in Military V.D. Hospitals, to say nothing of pre-war experience, and who have returned to find the doors to these new appointments bolted and barred. As the Ministry of Health is spending public money on these clinics, it is ‘up to’ the Ministry to see that the money is spent to the best advantage, and that these appointments are made by a system of open competition. I have recently been consulted by a patient who has been woefully mistreated at one of these new clinics, owing apparently to ignorance on the part of the medical staff.”



## Correspondence.

"Audi alteram partem."

## CONTROL OF VENEREAL DISEASE.

To the Editor of THE LANCET.

SIR,—The letter in your last issue under this title from Sir Bryan Donkin with regard to the deputation from the National Council for Combating Venereal Diseases to the Public Health Committee of the London County Council, hardly does justice either to the London County Council or the National Council. The London County Council has no "policy of passivity." I know that it is prepared to go as far as it possibly can in providing facilities for treatment of venereal disease; but it declines to assist in establishing centres for "early preventive treatment," holding that the establishment and public advertisement of such centres would be a direct incitement to vice. Administrative and financial difficulties also influenced it.

It is obvious from its answer to the deputation that the County Council did not then realise that the main request of the National Council was for greatly increased facilities for effectual and continuous treatment, and that the "preventive" side was an adjunct.

The policy of the National Council for Combating Venereal Diseases is simple—"Personal cleanliness directly after risk of infection, and prompt resort to a medical man." No question of "6 hours" arises with regard to it.

I am Sir, yours faithfully,

E. B. TURNER, F.R.C.S.,

Chairman of the Medical Committee, N.C.C.V.D.  
81, Avenue Chambers, Southampton-row, London, W.C.I.,  
Sept. 24th, 1919.

## THE BRITISH FEDERATION OF MEDICAL AND ALLIED SOCIETIES.

To the Editor of THE LANCET.

SIR,—In your issue for Sept. 20th appears an attempt made by the officers of this body to reply to a corrected proof of my letter to you of Sept. 6th, headed "The Cult of Individualism," the receipt of which you acknowledge in your issue for Sept. 13th, but which, however, you have not seen your way to publish.

As you have deprived your readers of the benefit of seeing this letter and thus of forming an unbiased opinion with regard to the many points at issue, it is quite impossible to deal satisfactorily with the question when treated with such want of fair play. Your heading to the Correspondence column—"Audi alteram partem" would seem to support this contention.

I am, Sir, yours faithfully,

Have, Sept. 19th, 1919.

E. ROWLAND FOTHERGILL.

\*\* Before we were able to publish Major Fothergill's letter—and the delay was entirely due to his own wish—it appeared in the *British Medical Journal*. As the exact reference to this publication was given by Sir Malcolm Morris and his co-signatories, there could be no conceivable reason for using space in reprinting the letter. Major Fothergill knows perfectly well why his letter was not printed, so that his accusation of unfairness on our part is not a candid one.—ED. L.

## POST OFFICE CONTRACT PRACTICE.

To the Editor of THE LANCET.

SIR,—The principle of contract practice is that small annual payments should be made regularly by a number of patients during periods of health, the amount being calculated to cover the expense of attendance on those patients who incur illness. In the case of the Post Office, whose medical officers are paid on this system, the principle has, in my opinion, been entirely lost sight of and destroyed.

Early in the war when postal employees joined the Army, the Post Office medical officers were notified that each man's name, as he joined, would be removed for the time being from the doctor's capitation list, but that when the man returned, even if invalided, he would then be restored to the list. I protested vigorously at the time, pointing out that if the men were to be restored to the list, whatever their

state of health, on returning from military service, their capitation fee should continue to be paid during the interval of absence, especially as military service was likely to injure health in many ways. My protest was, of course, useless. Names were removed regularly from my list, with the result that my salary declined as follows: 1915, £16 16s. 9d.; 1916, £10 19s. 1½d.; 1917, £9 17s. 5d.; 1918, £9 0s. 9d.; and doubtless every other Post Office medical officer has experienced a like decline of salary.

The men are now returning, and I have just received a letter from the surveyor of the district apprising me of the restoration to my capitation list of a man invalided from the Army after months of illness from Mesopotamian malaria and who is only a fortnight out of hospital in England. His spleen is still palpable and he cannot walk a mile without breathlessness. He is now restored to my list for treatment at the rate of 8s. 4d. a year, although I have not received a penny for him for the last three or four years.

If these returning men are to be attended by us as before I maintain that at the very least their capitation fees for the period of their absence in the Army should be paid to us, and I have replied to this effect to the surveyor.

I am, Sir, yours faithfully,

Bromsgrove.

H. CAMERON KIDD.

## THE IRISH PUBLIC HEALTH COUNCIL.

To the Editor of THE LANCET.

SIR,—You announced last week in THE LANCET the names of the Irish Public Health Council, but without comment on them.

This Irish Public Health Council, whose duty is to advise the Chief Secretary, as Health Minister, as to what changes Ireland needs from a public health point of view, was indeed wrongly constituted at the outset. It is believed in Ireland that the situation has been largely due to the advice of the Irish Branch of the General Medical Council, where of seven members only one is elected by the whole profession. The Irish medical profession was never consulted as to the Public Health Council, on whom, however, the burden will fall of attempting to carry out any new health scheme. The Chief Secretary was early advised that the new Council was going to be wrongly constituted, that the medical members were too few in number, and that the profession as a whole should help in the selection of their own representatives. He knew our views even before the Bill went to the House of Lords, but he allowed himself to be guided by his permanent officials in Dublin. As a result he has—and it is his first attempt at a constructive measure in Ireland—as a Council to advise him as to the future public health measures necessary for the whole of Ireland, a body of 17 members, which has a medical representation which is too small and which is unrepresentative in knowledge of the general practice of this country, being wholly comprised of Dublin persons.

I am, Sir, yours faithfully,

Sept. 20th, 1919.

IRISH MEDICAL PRACTITIONER.

\*\* One of our Irish Correspondents deals with the matter this week.—ED. L.

DEATH OF SIR PETER WYATT SQUIRE.—The death of Sir Peter Wyatt Squire, which took place suddenly on Sept. 17th, removes a prominent and distinguished figure from the pharmaceutical world. His services to pharmacy, and to the Royal Household in his official capacity of pharmacist, were recognised by the King a little over a year ago, when His Majesty conferred upon him the honour of knighthood. His name will always be associated with "Squire's Companion to the Pharmacopœia," a valuable compilation initiated by his father, the late Peter Squire, who was President of the Pharmaceutical Society, 1861-63. Peter Squire's work laid the foundations of the British Pharmacopœia. Sir Peter Wyatt Squire devoted much time and attention to keeping the "Companion" up to date, and carried out considerable experimental work directed to verifying and revising the official tests. He did also some original work on methods of preparing tissues for microscopic work. His advice on pharmaceutical preparations and compounding was eagerly sought by the medical profession, and his prescience in regard to approved and valuable formulæ is well known.



## Obituary.

WILFRID OMBLER MEEK, M.B., B.S. LOND.,

MEDICAL SUPERINTENDENT OF BROMPTON HOSPITAL SANATORIUM, FRIMLEY.

Dr. W. O. Meek, whose joint contribution with Dr. J. J. Perkins and Dr. R. A. Young appears in our present issue, died in his sleep on Sept. 14th at the sanatorium which he so ably superintended. He received his medical education at St. Thomas's Hospital, London, where he held a Louis Jenner research scholarship, and after graduating in medicine at London University in 1905 he was first house physician and then assistant director of the clinical and pathological laboratories. A house appointment at the Brompton Hospital for Consumption turned his interests in that direction, and when Dr. Marcus Paterson left Frimley Sanatorium to direct the Welsh National Memorial it naturally fell on Dr. Meek to succeed him in the important post at Frimley. Of his work there a friend (J. J. P.), who was staying with him at the time of his death, writes:—

As the superintendent of a sanatorium for tuberculosis Meek was ideal, and if ever a man found his proper work in life it was he. He seemed to have all the gifts necessary for success in such a post and all departments of his work appealed to him equally. Nature and training had combined to fit him in this peculiar degree. His love of outdoor life and outdoor things gave him the interest in and grasp of the management of the estate and the patients' work which was so noticeable and made this side of his life an unflinching delight to him.

As a physician he started with a sound training in clinical work gained in resident posts to which his years as assistant in the clinical laboratory at St. Thomas's Hospital added a thorough insight into modern pathology and modern methods of research and their application to the problems of tuberculosis. In this he had the advantage over the ordinary physician. The writer has often admired the happy suggestions and explanations his scientific knowledge enabled him to give of puzzling clinical symptoms. Even after he went to Frimley, side by side with his administrative duties, he continued his research work, and in addition to what has been published he has left a large mass of valuable experimental results on which he was still at work.

Based on this thorough grasp of the pathology of tuberculosis, he had an equally thorough grasp of the principles of treatment, on which he held strong views. One can sum up his treatment by saying he was patient and wonderfully persistent and, it is not too much to say, profound. Add to these qualities a marked capacity for organisation and a firm, though sympathetic, character, and one need look no further for the secret of the respect and affection he won from all and of the contented, cheerful, though active, atmosphere one felt throughout the institution. Everything went like clockwork and went well.

It is almost unnecessary to add that he was quite unconscious of his many gifts, and day by day seemed just intent on the day's work being well done. Towards his friends he was thoughtful kindness itself and a very genial, hospitable companion. As one went about with him one realised after a time that he had a deep sense of sympathy with the patients, which made him leave nothing untried for their benefit. He was slow to give up hope for them, and everyone had a good chance to improve. He knew every case thoroughly, the details of their lives and work as well as of their illness.

In late years he had become much impressed with the necessity of making in many instances some alteration in their after-life at home to enable them to maintain their health. He gave a good deal of attention to this side of his work, with excellent results, entering into each case individually and giving really practical advice and help. It was from this point of view that he threw himself enthusiastically into the farm colony scheme of the National Association for the Prevention of Tuberculosis and gave almost daily supervision to the preparations for the colony which lies almost close to the Frimley Sanatorium. He had very large ideas and plans as to the instruction which could be given there. His death is a severe blow to every phase of tuberculosis work.

Dr. Meek's critical attitude of mind was well shown in his contribution to a discussion at the Medical Society of London on the Value and Limitations of Sanatorium Treatment as regards the Working Classes, a report of which appeared in THE LANCET of Nov. 24th, 1917. He carried out the principles of sanatorium treatment rationally and

scientifically, adapting them to the new developments of the times. It was his happy lot to find himself able to modify the prognosis in the case of his more resourceful and intelligent patients by attention to after-care. And where he showed the way others may follow.

## Medical News.

THE OPENING OF THE MEDICAL SCHOOLS.—At the opening of the October Session in the Metropolitan Medical Schools the following arrangements have been made:—

*St. Bartholomew's Hospital.*—The annual dinner will be held on Sept. 30th, at 7 for 7.30 P.M., at Princes Restaurant, Dr. W. S. A. Griffith presiding.

*Charing Cross Hospital.*—The annual Students' Dinner will be held at the Adelaide Gallery, Strand, on Oct. 1st, at 7.30 P.M., Colonel William Hunter presiding. The prizes will be distributed at the hospital on the same date by Sir Auckland Geddes, President of the Board of Trade.

*St. George's Hospital.*—The opening address will be delivered by Dr. Squire Sprigge, at 3 P.M., on Oct. 1st. The annual dinner will take place at Princes Restaurant, Piccadilly, on the same day, at 6.30 for 7 P.M., when the chair will be taken by Dr. J. H. P. Fraser, D.S.O., M.C.

*Guy's Hospital.*—The biennial dinner will take place at the Connaught Rooms, at 7 P.M., on Oct. 28th, Dr. Lauriston Shaw in the chair.

*King's College Hospital.*—The introductory address will be given by Dr. T. J. Macnamara, LL.D., on Oct. 1st, at 3 P.M. The annual dinner will be held on the same day at 7 P.M., at Pagani's Restaurant, Sir St. Clair Thomson presiding.

*London Hospital.*—Sir Bertrand Dawson will preside at the dinner of the Old Students, which will be held at Princes Restaurant on Oct. 2nd, at 7.30 for 8 P.M.

*St. Mary's Hospital.*—The prizes will be distributed on Oct. 1st, at 3 o'clock, by Lieutenant-General Sir John Goodwin, Director-General of the Army Medical Service. The annual dinner of Past and Present Students will be held on the same evening at the Connaught Rooms, Sir Almroth Wright in the chair.

*Middlesex Hospital.*—The introductory address will be delivered by Sir John Bland-Sutton, at 3 P.M., on Oct. 1st, and Surgeon Rear-Admiral Sir Robert Hill will distribute the prizes. The Annual Dinner will be held on Oct. 1st, at 6.30 for 7 o'clock, at the Holborn Restaurant, and the Earl of Athlone, chairman of the Hospital, will preside.

*St. Thomas's Hospital.*—The Old Students' Dinner will be held on Oct. 1st, at 7.30 P.M., in the Connaught Rooms, Great Queen-street, London, Sir George Makins, P.R.C.S., presiding.

*University College Hospital.*—The annual dinner of Old Students will be held at the Imperial Restaurant, Regent-street, on Oct. 3rd, at 7 for 7.30 P.M. Sir John Rose Bradford in the chair.

*Westminster Hospital.*—The annual dinner will be held on Oct. 2nd at the Imperial (Oddenino's) Restaurant, at 7 for 7.30 P.M. Mr. Walter George Spencer in the chair.

*London School of Medicine for Women.*—The introductory address will be given by Dr. Christopher Addison, Minister of Health, at 3 P.M., on Oct. 1st.

THE GRESHAM LECTURES.—On Oct. 14th, 15th, 16th, and 17th, at 6 P.M., Sir Robert Armstrong-Jones will deliver four lectures at Gresham College, Basinghall-street, London, E.C., on the Evolution of Military Medicine and Surgery from Ancient Times and the Medical Lessons Derived from the Great War. The lectures will be free to the public.

THE INCORPORATED SOCIETY OF TRAINED MASSEUSES.—The members' conference takes place in London from Oct. 2nd-4th. On Thursday, Oct. 2nd, at 11 A.M., Captain F. Wood Jones, R.A.M.C., lectures on "What We Know of Ourselves," at the Royal Society of Arts, 18, John-street, London, W.C.; at 2.30 P.M., Major R. C. Elmslie, R.A.M.C., deals with "Deformities of the Spine," at St. Bartholomew's Hospital, after which members are free to visit various departments of the hospital. On Friday, Oct. 3rd, at 11 A.M., Dr. Justina Wilson lectures on "Diseases of the Respiratory Tract," at the Royal Society of Arts; at 2.15 P.M., visits to various departments at St. Thomas's Hospital, by kind permission of the authorities; at 3.15 P.M., a demonstration of gymnastic work will be given by Miss Randell, sister-in-charge of the massage and exercises department of St. Thomas's Hospital; and at 6 P.M., a lecture will be delivered by Colonel A. H. Tubby on "Stiffness of Joints," at the Royal Society of Arts.



**THE RÖNTGEN SOCIETY.**—The officers and members of council for the ensuing year have been elected as follows:—President: Dr. Sidney Russ. (Past Presidents for last three years: Major C. Thurston Holland, Major G. W. C. Kaye, Dr. G. B. Batten.) Vice-Presidents: Mr. J. Hall Edwards, Professor A. W. Porter, Professor J. W. Nicholson. Honorary Secretaries: Dr. Robert Knox, Dr. R. W. A. Salmond. Honorary Treasurer: Mr. Geoffrey Pearce. Honorary Editor: Major G. W. C. Kaye. Council: Mr. W. E. Schall, Dr. G. H. Rodman, Dr. C. Howard Head, Mr. C. R. C. Lyster, Dr. J. Metcalfe, Dr. E. P. Cumberbatch, Dr. A. E. Barclay, Mr. F. J. Harlow, Dr. W. Makower, Dr. E. A. Owen, Dr. J. Russell Reynolds, Mr. R. S. Wright.

**BRITISH ORTHOPÆDIC ASSOCIATION.**—The annual meeting will be held at the rooms of the Medical Society of London, 11, Chandos-street, W., on Nov. 14th, when the President, Mr. Muirhead Little, will deliver an address. At 10.30 A.M. there will be a discussion on Kineplastic Amputations, in which Mr. T. H. Openshaw, Mr. S. Alwyn-Smith, Sir J. Lynn-Thomas, and Major M. Fitzmaurice-Kelly will take part, and in the afternoon a discussion on Birth Paralysis will be opened by Mr. H. A. T. Fairbank and Mr. Harry Platt. Mr. A. S. B. Bankart will discuss the Operative Treatment of Spastic Paralysis. The annual dinner will be held during the evening of the same day, and on Nov. 15th hospital demonstrations will be arranged, as well as a visit to the Country Hospital for Cripples at Pinner.

**DEATH OF MR. W. M. HOPE.**—Mr. William More Hope, M.R.C.S., L.S.A., D.P.H., medical officer of health for the city of Gloucester, was found dead in bed at his residence in Denmark-road last Monday morning. He had not been in good health for some little time, but discharged his official duties up to the last. He was 64 years of age, and took the diplomas of Member of the Royal College of Surgeons and Licentiate of the Society of Apothecaries in 1878, after which he was for over 10 years secretary and house surgeon to the Stamford and Rutland General Infirmary. While there his attention was directed more especially to preventive medicine and public health, and having passed the examinations of the Conjoint Board for the diploma in Public Health he went to Gloucester to practise in April, 1905, and was appointed medical officer of health of the city and port of Gloucester in succession to the late Dr. John Campbell. He was also appointed school medical officer to the city education committee under the medical inspection scheme. Dr. Hope was a bachelor.

**SOCIETY FOR THE STUDY OF INEBRIETY.**—An autumn conference of the Society for the Study of Inebriety will be held in the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, W., on Tuesday, Oct. 14th. The conference is open to all members and associates without fee, who may also introduce visitors on forwarding their names and addresses to the honorary secretary. The proceedings will include a breakfast, which will be held at the Polytechnic, 309, Regent-street, W., at 8.30 A.M., when the chairman of the National Temperance League, Mr. Robert Whyte, jun., will preside, supported by Sir Alfred Pearce Gould, Lord D'Abernon, Sir Thomas Whittaker, M.P., and Dr. Mary Scharlieb. Mr. Theodore Neild, chairman of the League's Science and Education Committee, will present an address. Those desiring to be present should communicate with Mr. John Turner Rae, secretary, at the offices of the League, 34, Paternoster-row, E.C.4. The sessions of the conference will be held in the Hall of the Medical Society of London, 11, Chandos-street, Cavendish-square, W. At the morning session, at 10.30, the President of the Society, Sir Alfred Pearce Gould, will deliver an introductory address, after which Lord D'Abernon will open a discussion on "The Scientific Basis of Drink Control." At the afternoon session, at 2 P.M., Sir Thomas Whittaker will open a discussion on "Alcohol in Relation to Recreation and Refreshment and the Public House." Special papers will be presented and discussed at the morning and afternoon sessions, and among communications promised are the following: "Alcohol and Alcoholism in Relation to Venereal Disease," by Mr. Arthur Evans; "Analytical Psychology in Alcoholism," by Dr. Maurice Nicoll; "Special Clinics for Inebriates," by Dr. J. A. Davidson; "The Influence of Dilution on the Toxic Action of Alcoholic Liquids," by Dr. H. M. Vernon. Tea will be served in the Library to members and associates attending the conference at 4.30 P.M. At 5.30 the eighth Norman Kerr Memorial Lecture will be delivered by Dr. Mary Scharlieb, C.B.E., M.D., M.S., in The Robert Barnes Hall of the House of the Royal Society of Medicine, 1, Wimpole-street, the subject being "The Relation of Alcohol and Alcoholism to Maternity and Child Welfare."

## The Services.

### ROYAL NAVAL MEDICAL SERVICE.

Surg. Rear-Admiral H. W. G. Doyne is placed on the Retired List at own request.  
Surg.-Capt. G. A. Dreaper is promoted to Surgeon Rear-Admiral.

### ARMY MEDICAL SERVICE.

Col. C. A. Young, C.B., C.M.G., retires on retired pay.  
Col. G. T. Rawnsley, C.B., C.M.G., is placed on the Half-pay List under the provisions of Article 351, Royal Warrant, for pay and promotion.  
Cols. A. J. Luther, C.B., H. L. Knaggs, C.B., C.M.G., and B. H. Scott, C.M.G., retire on retired pay.  
Temp. Col. C. J. Symonds, C.B. (Major, R.A.M.C., T.F.), relinquishes his temporary commission on re-posting.

### ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. E. McDonnell relinquishes the temporary rank of Colonel on re-posting.

The undermentioned relinquish the acting rank of Lieutenant-Colonel: Major O. L. Otway, Capt. R. G. S. Gregg, Temp. Capt. G. W. Milne.

Major and Bt. Lieut.-Cols. G. Ormrod and A. W. Samper relinquish the acting rank of Lieutenant-Colonel.

Major H. F. Shea relinquishes the acting rank of Colonel on re-posting.

R. H. Nicholson, Fleet Surgeon, R.N., ret., to be temporary Major.

Capt. J. D. Roche relinquishes the acting rank of Lieutenant-Colonel on ceasing to command a Medical Unit.

Major T. B. Moriarty to be acting Lieutenant-Colonel whilst specially employed.

Capt. J. J. Molyneux and R. G. S. Gregg to be acting Majors whilst specially employed.

The undermentioned relinquish the acting rank of Major: Capt. J. Biggam, A. L. Foster, T. L. Fraser; Temp. Capt. E. McCulloch, A. C. Hancock, J. C. D. Allan, E. S. Sowerby, C. Y. Ford (on ceasing to be specially employed).

Temp. Capt. (acting Major) R. H. Lucas to be Captain, and to retain his acting rank whilst specially employed.

Capt. J. C. Sproule to be acting Major.

The undermentioned temporary Captains to be acting Majors: J. M. Macfie, H. G. Hobson, and J. Graham and E. K. Campbell (whilst specially employed).

Late temporary Captains to be temporary Captains: P. Kitchen, G. L. Neil, R. W. D. Hewson, W. B. Honey, G. B. Proctor.

To be temporary Captains: J. A. Jardine and F. J. R. Cowie.

Officers relinquishing their commissions:—Temporary Lieutenant-Colonels retaining the rank of Lieutenant-Colonel: J. V. G. B. Tighe, W. Harding, M. A. Collins. Temp. Majors H. T. Jenkins, G. D. Gray (granted the rank of Lieutenant-Colonel), R. T. Smith (retains the rank of Major), Temp. Capt. (Bt. Major) W. E. P. Phillips (retains the brevet rank of Major). Temp. Capt. G. Robertson.

Temporary Captains granted the rank of Major: A. G. Anderson, R. W. P. Jackson, A. W. G. Woodforde, E. F. G. Ward, A. K. Cosgrave, C. D. Faulkner, R. J. B. Madden, R. S. Barker, A. Dick, G. Muir, E. Tawse, A. E. Quine, J. Donald, W. J. Johnson, R. S. Miller.

Temporary Captains retaining the rank of Captain: G. N. Kirkwood, E. H. Stone, R. L. Sinclair, A. L. McGarry, J. Dulberg, D. W. Smith, B. C. Ewens, J. J. Armistead, J. E. Barnes, L. H. Skene, A. Cleland, F. G. Gibbs, J. P. P. Inglis, R. H. Maingot, J. R. Davies, R. M. Lang, L. Cohen, L. Gray, J. Allan, M. Culpin, R. H. Fleming, J. C. Padwick, A. W. T. Whitworth, A. F. Wright, R. W. Telford, A. R. Wightman, A. B. Cooke, F. J. Whitelaw, J. H. Fryer, B. B. Noble, R. T. Grant, W. F. O'Regan, S. Rodin, C. F. Dillon-Kelly, A. Graydon, J. T. Titterton, H. P. Shackleton, G. Riddoch, D. Young, C. B. Tudehope, J. B. Fisher, A. D. Blakely, W. Simpson, C. H. L. Rixon, E. Gofton, J. W. N. Hohhouse, G. F. May, A. E. Hardy, C. Gordon, T. J. Lydon, H. O. West, W. H. Trethowan, H. Spurway, A. Robertson, R. G. McQueen, C. Salkeld, P. L. L. Craig, A. B. Lindsay, P. Ashe, F. O. Siedman, E. M. Condy, F. Penny, W. P. Miles. Temp. Hon. Capt. J. M. Bremner (retains the honorary rank of Captain). Temporary Lieutenants retaining the rank of Lieutenant: H. T. O'Neill, S. F. Breakey, A. I. Girdwood.

### Canadian Army Medical Corps.

Temp. Major J. A. Lussier and Temp. Capt. E. E. Locke retire in the British Isles.

Temp. Capt. A. J. Fisher relinquishes the acting rank of Major.

### The British West Indies Regiment.

The undermentioned relinquish their commissions: Temp. Surg.-Capt. A. G. McKenley and retains the rank of Surgeon-Captain. Temp. Surg.-Lieut. F. A. Norton and retains the rank of Surgeon-Lieutenant.

### South African Medical Corps.

Temp. Major R. N. Pringle relinquishes his commission on ceasing to be employed and retains the rank of Major.

Temp. Capt. E. A. Levisseur relinquishes his commission on ceasing to be employed, and retains the rank of Captain.

### SPECIAL RESERVE OF OFFICERS.

Capt. A. W. Russell relinquishes his commission and is granted the rank of Major.

Captains relinquishing their commissions and retaining the rank of Captain: J. F. Lyons, A. B. Austin.

Capt. J. H. Neill relinquishes his commission.

Capt. W. G. H. Cahle to be Major.

Capt. D. M. Marr relinquishes the acting rank of Major.

Capt. W. Donald to be acting Major.

Lieutenants to be Captains: J. W. W. Newsome, B. L. Slater, V. D. Wyborn, W. Buchan, A. C. Hill, J. A. Ross, D. C. Bowie, A. J. Macartney, D. Ferguson, J. A. Dawson, A. I. Meek, J. Morrison, G. W. C. Dunlop, R. B. MacGregor, H. J. Parish.



## TERRITORIAL FORCE.

Major (acting Col.) T. Kay relinquishes the acting rank of Colonel on vacating the appointment of Assistant Director of Medical Services. The undermentioned relinquish the acting rank of Lieutenant-Colonel on ceasing to be specially employed: Majors (acting Lieut.-Cols.) A. C. Goodwin, T. Frankish; Capt. (acting Lieut.-Cols.) A. O. Pearson, F. Darlow, and T. C. Clarke.

Capt. (acting Majors) J. Taylor, T. S. Worboys, H. Pinto-Leite, E. L. D. Dewdney, A. G. Hendley, A. B. P. Smith, C. W. T. Baldwin, and G. B. Buchanan relinquish the acting rank of Major on ceasing to be specially employed.

Capt. (acting Majors) relinquishing the acting rank of Major: G. Stevenson, W. T. P. Meade-King, F. Ellis.

Capt. R. W. Swayne and B. J. Alcock to be acting Majors whilst specially employed.

Capt. T. J. Faulder to be Major.

Capt. C. Nyhan relinquishes his commission and is granted the rank of Major.

Capt. S. Shephard relinquishes his commission and retains the rank of Captain.

1st Eastern General Hospital: Major (acting Lieut.-Col.) L. Humphry relinquishes the acting rank of Lieutenant-Colonel on ceasing to be specially employed.

3rd Southern General Hospital: Capt. J. F. Robinson is restored to the establishment. Capt. (acting Major) R. E. Humphry relinquishes the acting rank of Major.

5th Southern General Hospital: Capt. (acting Lieut.-Col.) J. Blackwood relinquishes the acting rank of Lieutenant-Colonel on ceasing to be specially employed and to remain seconded.

2nd London General Hospital: Major (Bt. Lieut.-Col.) T. D. Acland is restored to the establishment.

4th London General Hospital: Capt. (acting Major) W. Turner relinquishes the acting rank of Major on ceasing to be specially employed.

2nd London Sanitary Company: Lieuts. I. Walker and F. Evans to be Captains.

Attached to Units other than Medical Units.—Major T. Frankish to be acting Lieutenant-Colonel whilst specially employed.

## ROYAL AIR FORCE.

Medical Branch.—Wing Cmdr. (acting Group Capt.) T. D. C. Barry is transferred to unemployed list.

Flying Officers to be Flight Lieutenants:—J. Ferguson, T. M. Davies. Capt. W. H. H. Bennett (Captain, R.A.M.C., T.F.) relinquishes his commission on ceasing to be employed.

Squadron Leader (acting Wing Commander) F. F. Muecke, Capt. W. H. Payne, J. Duffin, G. W. Clark, Lieut. O. P. Turner, Flying Officers P. A. Dornier and C. Lambrinudi, Flight Lieuts. P. T. J. O'Farrell, I. de B. Daly, and J. E. Cox are transferred to the unemployed list.

Dental Branch.—Flying Officers to be Flight Lieutenants: S. C. Turner and A. Williams.

## THE HONOURS LIST.

The following awards to medical officers are announced:—  
M.B.E.—Surg.-Cmdrs. G. E. Duncan, A. Gaskell, C.B., and H. W. Gordon-Green, R.N.; and Surg.-Lieut. A. G. L. Reade, R.N.V.R.

In a despatch describing events in Syria and Palestine, subsequent to the conclusion of the armistice with Turkey on Oct. 31st, 1918, received from Field-Marshal Sir E. Allenby, Commander-in-Chief of the Egyptian Expeditionary Force, the following reference to the Medical Services appears:—

The Medical Services have dealt successfully with the difficulties of evacuation over long distances in a country of undeveloped communications; and have combated with excellent results the chief scourge of Syria and Palestine—malaria. I desire to mention the good work of Major-General A. E. C. Keble and Major-General Sir R. H. Luce, as Directors of Medical Services at various periods.

## FOREIGN DECORATIONS.

## American.

Distinguished Service Medal.—Surg.-Vice-Adml. Sir W. H. Norman, K.C.B.

## Belgian.

Ordre de la Couronne.—Chevalier: Temp. Capt. J. R. Rees, R.A.M.C. Croix de Guerre.—Temp. Capt. (acting Maj.) W. S. S. Berry, O.B.E., M.C., R.A.M.C.; Capt. (acting Lt.-Col.) J. M. A. Costello, R.A.M.C. (T.F.); Temp. Capt. (acting Maj.) W. S. Danks, 97th Fd. Amb., R.A.M.C.; Capt. L. A. Dingley, R.A.M.C. (T.F.); Lt.-Col. (temp. Col.) O. W. A. Elsner, C.B.E., D.S.O., R.A.M.C.; Temp. Capt. (acting Maj.) T. Ferguson, 42nd Fd. Amb., R.A.M.C.; Capt. (acting Maj.) J. D. Fiddes, M.C., 89th Fd. Amb., R.A.M.C. (T.F.); Lt.-Col. G. J. Houghton, D.S.O., R.A.M.C.; Maj. and Bt. Lt.-Col. (temp. Lt.-Col.) F. D. G. Howell, D.S.O., M.C., R.A.M.C.; Capt. J. R. Hudleston, D.S.O., 136th Fd. Amb., R.A.M.C.; Temp. Capt. (acting Maj.) J. Jack, M.C., 28th Fd. Amb., R.A.M.C.; Capt. and Bt. Maj. (acting Lt.-Col.) F. R. Laing, R.A.M.C.; Temp. Capt. G. E. Lindsay, M.C., R.A.M.C.; Temp. Capt. C. W. B. Littlejohn, 140th Fd. Amb., R.A.M.C.; Lt.-Col. (temp. Col.) L. N. Lloyd, C.M.G., D.S.O., R.A.M.C.; Temp. Capt. J. B. Mason, R.A.M.C.; Temp. Capt. J. C. Robb, 108th Fd. Amb., R.A.M.C.; Lt. (acting Maj.) L. S. C. Roche, M.C., 136th Fd. Amb., R.A.M.C.; Capt. (acting Lt.-Col.) J. Rowe, M.C., 103rd Fd. Amb., R.A.M.C.; Capt. (acting Maj.) H. A. Rowell, M.C., R.A.M.C.; Capt. H. Seddon, R.A.M.C. (T.F.), attd. 87th Fd. Amb., R.A.M.C.; Temp. Capt. (acting Maj.) H. C. Watson, M.C., 102nd Fd. Amb., R.A.M.C.

## French.

Légion d'Honneur.—Chevalier: Maj. G. W. W. Ware, D.S.O., R.A.M.C.

Croix de Guerre avec Étoile (en Argent).—Capt. R. Burgess, D.S.O., R.A.M.C. (T.F.); Temp. Capt. (acting Maj.) T. A. Lawder, 24th Fd. Amb., R.A.M.C.; Capt. P. J. Ryan, M.C., 24th Fd. Amb., R.A.M.C.

Croix de Guerre.—Temp. Capt. F. P. Montgomery, M.C., R.A.M.C.; Capt. J. A. A. Pare, M.C., 11th Canad. Fd. Amb., C.A.M.C.; Temp. Capt. (acting Maj.) F. B. Winfield, R.A.M.C.

Médaille d'Honneur avec Glorieux (en Vermeil).—Maj. W. D. C. Kelly, D.S.O., R.A.M.C.; Temp. Capt. H. T. Retallack-Moloney, R.A.M.C.; Maj. T. C. Ritchie, R.A.M.C.

Médaille des Épidémies (d'Or).—Lt.-Col. A. R. Aldridge, C.B., C.S.F. C.M.G., R.A.M.C. (R.O.); Maj.-Gen. Sir H. R. Whitehead, K.C.B.

Médaille des Épidémies (en Argent).—Temp. Capt. G. D. Keckles, M.C., R.A.M.C. (T.F.); Temp. Capt. D. L. Williams, M.C., R.A.M.C.

## Hellenic.

Order of the Redeemer.—Officer: Col. E. T. F. Birrell, C.B., C.M.G., A.M.S. (late R.A.M.C.).

Order of George I.—Officer: Surg.-Cmdr. T. W. Myles, R.N.

Military Cross.—2nd Class: Temp. Capt. W. K. McIntyre, M.C., R.A.M.C. 3rd Class: Temp. Capt. G. P. B. Huddy, R.A.M.C.; Capt. B. E. Potter, R.A.M.C. (T.F.).

Medal for Military Merit.—3rd Class: Col. E. T. F. Birrell, C.B., C.M.G., A.M.S. (late R.A.M.C.).

## Italian.

Croce di Guerra.—Capt. (acting Maj.) M. Coplans, D.S.O., O.B.E., R.A.M.C. (T.F.).

## Portuguese.

Military Order of Avis.—Grand Officer: Maj.-Gen. Sir W. W. Pike, C.M.G., D.S.O. Commander: Maj. and Bt. Lt.-Col. P. Davidson, C.M.G., D.S.O., R.A.M.C.; Temp. Maj. (acting Lt.-Col.) T. B. Unwin, O.B.E., R.A.M.C.; Surg.-Cmdr. P. H. Brody, R.N. Chevalier: Capt. (acting Lt.-Col.) G. S. Parkinson, D.S.O., R.A.M.C.

## Roumanian.

Order of the Star of Roumania (Grand Cross).—Chevalier: Temp. Capt. F. C. Robbs, M.C., R.A.M.C.

Order of the Crown of Roumania.—Officer: Capt. A. C. H. McCullagh, D.S.O., R.A.M.C. (T.F.). Chevalier: Capt. H. L. Garson, O.B.E., M.C., R.A.M.C. (S.R.); Capt. F. Jefferson, R.A.M.C. (S.R.); Capt. J. N. L. Thoseby, R.A.M.C.

## Serbian.

Order of St. Sava.—3rd Class: Maj. J. Ward, C.M.G., D.S.O., R.A.M.C. (T.F.). 4th Class: Temp. Capt. R. A. Wilson, R.A.M.C.

## Appointments.

HORT, VIOLET G., has been appointed Government Bacteriologist in the Isle of Man.

MACMILLAN, J., M.B., Ch.B. Glasg., D.P.H., Medical Officer of Health for Woolwich.

RYLAND, A., F.R.C.S. Edin., Assistant Surgeon to the Central London Ear, Nose, and Throat Hospital.

SHERA, A. G., M.D., B.Ch., B.A. Cantab., M.R.C.S. Eng., L.R.C.P. Lond., Honorary Clinical Pathologist, Princess Alice Memorial Hospital, Eastbourne.

Salford Royal Hospital: STONE, F. W., M.B., B.S., Resident Surgical Officer; FORT, C. W., M.B., Ch.B. Manch., House Physician; ELLIS, O. J., M.B., Ch.M., House Surgeon; SPARROW, L. W., M.B., Ch.B. Manch., Junior House Surgeon.

Certifying Surgeons under the Factory and Workshop Acts: WORMALD, T. L., M.D., D.P.H. Durh. (Darlington); TAYLOR, J. M., M.D. Glasg., D.P.H. (Thorne); SMITH, T. B., M.B., Ch.B. Glasg. (Aberthillery); POWER, V. A., L.R.C.P. & L.R.C.S. Irel. (Borrisoleigh).

## Vacancies.

For further information refer to the advertisement columns.

Battersea General Hospital, Battersea Park, S.W.—Res. M.O. £200.

Bedford County Hospital.—Res. M.O. £150.

Belgrave Hospital for Children, Clapham-road, S.W.—Two Asst. S.'s.

Also H.P. and H.S. £100 and £75.

Bethlem Royal Hospital, Lambeth-road, S.E.—Hon. Neurologist. Also Jun. Asst. P. £350.

Birkenhead Borough Hospital.—Jun. H.S. £170.

Birmingham Municipal Anti-Tuberculosis Centre.—Sen. Asst. Tuberc. O. £650.

Bradford Royal Infirmary.—Two H.S.'s. £200.

Brighton, Royal Sussex County Hospital.—Asst. Path. £200.

Brookwood, near Woking, Surrey Lunatic Asylums Visiting Committee.—First Asst. M.O. £600.

Cheltenham Eye, Ear, and Throat Free Hospital.—Asst. S. £400.

Cumberland Education Committee.—Two School Dentists. £350.

Derby, Derbyshire County Council.—Maternity and Child Welfare M.O. £450.

Derby, Derbyshire Education Committee.—Sch. M.O. £450.

Dorchester, Dorset County Council Education Committee.—School Dentists. £400.

Dunfermline, Carnegie Dunfermline Trust.—Sch. M.O. £400.

Durham County Council.—Five Asst. School M.O.'s. £600.

Eastbourne, Princess Alice Hospital.—R.M.O. £175.

East Riding Education Authority.—Sch. Dent. £350.

Frimley, Brompton Hospital Sanatorium.—Med. Supt. £600.

German East Africa Occupied Territory.—M.O.'s. £400-£20-£500.

Glasgow Eye Infirmary.—Res. H.S. and Res. Asst. H.S. £100 and £75.

Glasgow, Scottish Western Asylums' Research Institute.—Director. £600.

Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—Asst. S.

Grimsby and District Hospital.—H.S. £300.

Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—Two P.'s to Out-Patients. P. for Dis. of Skin, S. to Out-Patients, and Clin. Asst. in the Nose, Ear, and Throat Department.

Hereford County and City Mental Hospital.—Senior Asst. M.O. £350.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—S. H.P. for six months. 30 gs. Asst. Res. M.O. £150. Asst. P. £250. Asst. in Dept. of Path. £250. Part-time Asst. in Dept. of Path. £250.

Hospital for Diseases of the Throat, Golden-square, W.—Hon. Asst. S.'s. Hospital for Epilepsy and Paralysis, Maid Vale, W.—Hon. Psychologist, Hon. Ophth. S., and Hon. Asst. P.

Hospital for Sick Children, Great Ormond-street, W.C.—Res. Med. Supt. £200. Also Asst. S., M.O., H.S., and H.P. All £50.

Hospital for Women, Soho-square, W.—Phys. Con. Also Hon. M.O.

Huddersfield Royal Infirmary.—Asst. H.S. £100.

Hull Royal Infirmary.—Sen. H.S. £200.



*Ilford Urban District Council.*—Female Asst. M.O.H. £400.  
*Italian Hospital, Queen-square, W.C.*—Hon. Ophth. Surg.  
*Leamington, Warwick, Leamington, and South Warwickshire*  
*General Hospital.*—Res. II S. £200.  
*Leeds General Infirmary.*—Res. M.O. £150. Res. Obstet. O. £50.  
 Also Res. M.O. at Ida and Robert Arthington Hospitals. £20.  
 Two H.P.'s and Two H.S.'s.  
*Leicester Royal Infirmary.*—H.P. £250.  
*Liverpool, Hospital for Consumption and Diseases of the Chest, Mount*  
*Pleasant.*—Asst. M.O. and Pathologist. £175.  
*London, County of.*—Coroner for S.E. District. £1186 4s.  
*London Hospital, Whitechapel, E., Genito-Urinary Department.*—  
 Clin. Asst. One guinea per session.  
*London Lock Hospital and Rescue Home, 283, Harrow-road, W., and*  
*91, Dean-street, W.*—Hon. S. to Out-patients.  
*Manchester Royal Infirmary.*—Jun. Anast. £200.  
*Manchester Royal Infirmary, Central Branch, Roby-street, Manchester.*—  
 Res. Surg. O. £200.  
*Manor House Orthopaedic Hospital, North End-road, Hampstead, N.W.*  
 —Res. S.O. £500.  
*Middlesex Hospital, W.*—Asst. Anast.  
*Middleton-in-Wharfedale Sanatorium, near Ilkley.*—Asst. Res. M.O.  
 £325.  
*Mothers' Hospital, 153-163, Lower Clapton-road, E.*—Res. M.O.  
*Mount Vernon Hospital for Consumption and Diseases of the Chest,*  
*Northwood, Middlesex.*—Asst. Res. M.O. £200.  
*National Hospital for the Paralysed and Epileptic, Queen-square,*  
*W.C.*—Radiologist.  
*Newcastle-upon-Tyne, Hospital for Sick Children.*—Jun. Res. M.O.  
 £200.  
*New South Wales, Department of Public Instruction.*—Prinpl. M.O.  
 £900.  
*Nottingham General Hospital.*—Asst. Secretary. £250.  
*Oldham Royal Infirmary.*—Third H.S. £200.  
*Paddington Green Children's Hospital, London, W.*—H.P. and H.S.  
 £150 each.  
*Preston, Lancashire County Council.*—Asst. Disp. Tuberc. O. £550.  
*Prince of Wales's General Hospital, Tottenham, N.*—H.P. and H.S.  
 £200. Also Jun. H.S. and Jun. H.P. £120.  
*Queen Mary's Hospital for the East End, Stratford, E.*—H.S. £150.  
*Reading, Berks Education Committee.*—Sch. Dent. £400.  
*Reading, Royal Berkshire Hospital.*—Hon. Asst. P.  
*Royal Free Hospital, Gray's Inn-road, W.C.*—Hon. Anast. Also Cas. O.  
 (£100) and Registrar.  
*Royal National Orthopaedic Hospital, 234, Great Portland-street, W.*—  
 Surg. Registrars. 100 gs. Also Hon. P.  
*St. Bartholomew's Hospital.*—Asst. Administrator of Anaesthetics.  
*St. Marylebone Infirmary.*—Asst. M.O. £200.  
*St. Marylebone General Dispensary, 77, Welbeck-street, Cavendish-*  
*square, W.*—Res. M.O. £150.  
*Sheffield City Education Committee.*—Sch. Dent. S's. £400.  
*Sheffield City, Winter-street Tuberculosis Hospital.*—Asst. Tuberc. O.  
 £300.  
*Sheffield Royal Infirmary.*—H.S. for Ear, Nose, and Throat. £150.  
*South London Hospital for Women, South Side, Clapham Common, S.W.*  
 Female Asst. S. and Temp. Asst. S.  
*Stroud General Hospital.*—H.S. £200.  
*Sunderland Royal Infirmary.*—Sen. H.S. Two Jun. H.S.'s. and H.P.  
 £250 and £200 respectively.  
*Swton Colfield Borough.*—M.O.H. and Sch. M.O.  
*Taunton and Somerset Hospital, Taunton.*—Res. Asst. H.S. £150.  
*Victoria Hospital for Children, Fife-street, Chelsea, S.W.*—In-patient P.  
 and Two Out-patient P's.  
*Weston-super-Mare, Somerset County Education Committee.*—School  
 Oculist and Med. Inspece. £450.  
*Whitehaven and West Cumberland Infirmary.*—Res. H.S. £180.  
*Willesden Urban District Council.*—Two Dentists. £400.  
*Worcestershire Asylum, Barnsley Hall, Bromsgrove.*—Asst. M.O.  
 8 gs. per week.

THE CHIEF INSPECTOR OF FACTORIES, HOME OFFICE, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Almondsbury, Leven, and Maldon.

## Births, Marriages, and Deaths.

### BIRTHS.

EVANS.—On Sept. 21st, at Devonshire-place, W., to Dorothy, wife of Arthur Evans, O.B.E., M.S., F.R.C.S.—a son.  
 FENTON.—On Sept. 11th, at Croxley Green, the wife of W. J. Fenton, M.D., F.R.C.P., of a daughter.  
 MINNITT.—On Sept. 19th, at Kremlin-drive, Stonycroft, Liverpool, the wife of R. J. Minnitt, M.B., Ch.B., of a son.

### MARRIAGES.

ELGKE—HUNT.—On Sept. 18th, at the Parish Church, West Bridgford, Nottingham, Lieutenant-Colonel (temporary) Samuel Charles Elgke, R.A.M.C., to Dorothy Elizabeth, eldest daughter of Mr. and Mrs. Geo. Hunt, of West Bridgford.  
 WHITESIDE—DOUAY.—On Sept. 15th, at W. Eperlecques, France, James Whiteside, M.B., Ch.B., Captain, R.A.M.C., to Hélène, only daughter of M. et Mme. Charles Douay, Ecole de Garçons, Nott, France.

### DEATHS.

CLARKE.—On Sept. 19th, at Newham House, Truro, Huntley Clarke, M.R.C.S.  
 DOBSON.—On Sept. 17th, at Pendyffryn Hall, Penmaenmawr, Major George Magill Dobson, R.A.M.C., in his 50th year.  
 VASEY.—On Sept. 19th, at Twyford Abbey, Park Royal, Fleet-Surgeon C. Lyon Vasey, R.N. (ret.), aged 70.

N.B.—A fee of 6s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

## Medical Diary for the ensuing Week.

### LECTURES, ADDRESSES, DEMONSTRATIONS, &c. LONDON HOSPITAL MEDICAL COLLEGE, in the Clinical Theatre of the Hospital.

A Special Course of Instruction in the Surgical Dyspepsias will be given by Mr. A. J. Walton:—  
 MONDAY, Sept. 29th.—4.30 P.M., Lecture XVII.—Technique and Complications of Gastric Operations.  
 FRIDAY.—4.30 P.M., Lecture XVIII.—Surgical Anatomy of the Liver and Gall Bladder. (In the Dissecting Room.)

### Communications, Letters, &c., to the Editor have been received from—

A.—Mr. E. A. Armstrong, Lond.; Major A. Abrahams, R.A.M.C.; Sir R. Armstrong-Jones, Lond.; Rt. Hon. C. Addison, M.D.; M.P.; Mr. R. J. Albery, Lond.; Dr. F. P. Atkinson, Bexhill-on-Sea.  
 B.—Birmingham, Medical Officer of Health; Mr. A. Blackhall-Morison, Lond.; Board of Agriculture and Fisheries, Lond.; British Orthopaedic Association, Lond.; Mr. C. A. Bang, Lond.; Messrs. Butterworth and Co. (India), Ltd., Calcutta; Dr. R. Blair, Lond.; Dr. J. Blomfield, Lond.; Prof. F. A. Bainbridge, Lond.  
 C.—Dr. A. V. Clarke, Leicester; Major O. Challis, R.A.M.C.; Dr. H. P. Cholmeley, Forest Row; Dr. J. Catton, San Francisco; Dr. H. W. Crowe, Harrogate; Messrs. W. Collins, Son, and Co., Lond.; Dr. F. J. Cutler, Hastings.  
 D.—Dr. J. L. Dick, Lond.; Dr. Prof. L. Durante, Genoa.  
 E.—Dr. R. Eager, Exminster.  
 F.—Dr. E. C. Fernoulhet, Herne Bay; Col. N. Falcinelli, A.D.M.S.; Major E. R. Fothergill, R.A.M.C.; Dr. D. Forsyth, Lond.; Capt. N. B. Fleming, R.A.M.C.; Factories, Chief Inspector of, Lond.  
 G.—Prof. Galli, Bellano; Dr. H. M. Gerson, Lond.; Guy's War Memorial Fund, Lond.; Hon. Sec. of; Dr. A. D. Gardner, Broxbourne; Lieut.-Gen. Sir John Goodwin, K.C.B., C.M.G., D.S.O.; Capt. E. W. Gregory, R.A.M.C. (T.F.).  
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 I.—Insurance Committee for the County of London.  
 J.—Dr. R. Johnson, Lond.  
 K.—King's College Hospital Medical School, Lond.; Sec. of; Miss M. Knightley, Lond.; Dr. H. C. Kidd, Bromsgrove.  
 L.—London Hospital Medical College, Sec. of; London (Royal Free Hospital) School of Medicine for Women, Warden and Sec. of; Dr. D. D. Lee, Kettering; Mr. C. Litchfield, Lond.; Mr. W. Leavis, Lond.; Dr. R. B. Low, C.B., Lond.; Dr. C. E. Lakin, Lond.  
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 P.—Dr. J. J. Perkins, Lond.; Panel Committee for the County of London; Dr. M. J. Petty, Buenos Aires; Dr. R. H. Paramore, Rugby; Dr. A. S. Percival, Newcastle-upon-Tyne; Mr. F. Pamphilon, Gloucester; Dr. F. W. Pilkington, Kencott.  
 R.—Röntgen Society, Lond., Hon. Treasurer of.  
 S.—St. George's Hospital Medical School, Lond., Actg. Dean of; St. Mary's Hospital Medical School, Sec. of; Prof. W. Stirling, Manchester; Dr. N. I. Spriggs, Leicester; Prof. C. S. Sherrington, Oxford; Dr. A. G. Shera, Eastbourne; Dr. Ch. Sauvageau, Paris; Dr. C. Sullivan, Lond.; Mr. R. V. Slattery, Dublin; Society for the Study of Inebriety, Lond.; Save the Children Fund, Lond.  
 T.—Dr. J. Tatham, Oxford; Dr. D. Turner, Edinburgh; Miss F. M. Templeton, Lond.  
 U.—University College Hospital Medical School, Lond., Acting Sec. of.  
 V.—Dr. P. N. Vellacott, Gorleston.  
 W.—Westminster Hospital Medical School, Sec. of; Dr. H. Williamson, Lond.; Dr. E. M. Wyche, Nottingham.

Communications relating to editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C. 2.

### BOOKS, ETC., RECEIVED.

LEWIS, H. K., London.  
 Mind and its Disorders. A Text-book for Students and Practitioners of Medicine. By W. H. B. Stoddart, M.D. 3rd ed. 18s.  
 Field Ambulance Organisation and Administration. By Lieut.-Col J. H. Neil, N.Z.M.C. Pp. viii. + 125. 4s. 6d.  
 MACNILLAN and Co., London and Canada.  
 The Whole Truth about Alcohol. By George E. Flint. With introduction by Dr. A. Jacobi. Pp. 294. \$1.50.  
 MILFORD, HUMPHREY, London.  
 The Style and Literary Method of Luke. By H. J. Cadbury. Pp. 72. 5s. 6d.  
 PALESTINE EXPLORATION FUND, Hinde-street, London, W.1.  
 Hygiene and Disease in Palestine in Modern and Biblical Times. By E. W. G. Masterman, M.D. With preface by A. Macalister. Pp. 70. 2s. 6d.  
 PUTNAM'S (G. P.) SONS, London.  
 Married Love. By Marie C. Stopes, D.Sc. With Preface by Dr. Jessie Murray and a Letter from Prof. E. H. Starling, F.R.S. 7th ed., revised and enlarged. Pp. 190. 6s.  
 SAMPSON LOW, MARSTON, and Co., London.  
 The Natural History of the Child. By Dr. C. Dunn. Pp. 320. 7s. 6d.  
 SHAW and SONS, London.  
 Surgery of the Lung and Pleura. By Hon. Capt. H. M. Davies, R.A.M.C. (T.) 260 + xxiv. pp. £1 5s.  
 1805, SPRUCE STREET, Philadelphia, Pa., U.S.A.  
 Transactions of the American Pediatric Society, May, 1918. Edited by O. M. Schloss, M.D. Vol. XXX. Pp. 332.



## Notes, Short Comments, and Answers to Correspondents.

### THE AERIAL COMBATANT:\*

HIS PSYCHOLOGY AND NERVOUS PHYSIOLOGY CONSIDERED IN THE LIGHT OF ATHLETIC ANALOGIES.

BY THE LATE H. G. F. SPURRELL, M.A.,  
M.B., B.CH. OXF.,  
CAPTAIN, R.A.M.C.

#### PART I.

WHEN early in the war it was recognised that a powerful aerial army was required, the training of a large number of men began. It was suspected that the number of men who proved disappointing under training could be reduced if a scientific method of selection could be evolved. This expectation has been to a great extent justified; but failures under training still occur, and a very large proportion of these failures can be traced to nervous and psychological causes. This may be partly due to the practical difficulty of detecting nervous weakness when selecting a flying officer, but his duties make such unusual demands upon his nervous system that chance may easily subject even the soundest material to a breaking strain. Much has yet to be learned regarding the selection of the right nervous organism, how to train it when selected, and how to estimate its recuperative powers when damaged. In the light of some small experience gained on the selection and invaliding boards of the Royal Air Force, and in no less instructive daily intercourse with members of a great school of military aeronautics, I have attempted to sketch out the nervous physiology of training for aerial combat, and to trace to underlying physiological bases some of the factors which make for success or failure in the flying combatant. Such an attempt may be profitable, though the risk must be faced of saying much that is already tediously obvious.

#### *Training of the Flying Fighter.*

A flying fighter must undergo three distinct stages in his education. Firstly, he must be taught to fly. He must learn to fly instinctively with no more conscious mental effort in handling his machine than a cavalryman of the old school exerted in keeping his seat and managing his horse. Secondly, he must learn to fight, to drop his bombs with calculation and precision, but making many of the incidental movements subconsciously, and to manipulate his machine-gun with a trained hand but a free mind. Thirdly, having learned both to fly and to fight in the air, he must learn to use military intelligence. He must be able to watch what is going on in a *mêlée*, decide quickly whether to single out an opponent or go to the help of a friend, to use judgment when bombing in choosing objectives, and he requires special knowledge for gaining, interpreting, and using information which may come in his way. The old-time trooper with a firm seat and a fine wrist was a long way from being the complete cavalryman, and the skilful aeronaut who is dextrous with weapons has yet to become a flying soldier. With all this to learn the tyro's nerve centres need extensive and progressive development, and it may clarify one's ideas to translate the process into physiological terms.

Learning to fly may be compared with learning any other motor accomplishment. The required movements have to be worked out in consciousness by the highest cerebral mechanism. The muscles which are to perform them have to be developed to the strength requisite for acting harmoniously in the new combinations. When the movements have become clear conceptions which can be consciously carried out by trained muscles, these conceptions have to be passed down the scale of nervous controlling centres until they become the property of reflex centres and can be performed automatically, not merely without requiring thought, but without interrupting thought. Learning to fly is closely analogous to learning to bicycle: the stages of the nervous education are the same. It is also analogous to learning to walk, but here the analogy cannot be pressed so far. Evolution has not, either by structural adaptation or by nervous tendencies, given man an hereditary predisposition to fly analogous to the predisposition to walk. In flying and in bicycling the brain acts consciously by selecting, inhibiting, and adapting the established reflexes to new purposes; but the process is not shortened by any of those instincts which urge a child, in whom intelligence is only

dawning, to make persistent efforts to walk when its mother thinks it would still be much better employed crawling.

Man's capacity for education is, however, conditioned by his evolutionary history. While most animals have specialised for a particular place in nature, in man we see an animal capable, by means of tools and education, of specialising himself for many diverse requirements. One of his most recent attempts at self-education is for the air. He has not the exclusive specialisation for flight which evolution has produced in the bat, so if he is to fly he must attain his end by devising mechanical means and training his nervous system, and this he has proved himself capable of doing. But, together with the intelligence and versatility which enable him to elaborate movements, man must have a very complete power of delegating the controls elaborated by his brain to lower automatic centres. Only so can he prevent his brain from becoming overloaded and keep it free to deal with present needs. Only so, moreover, can he shorten his reaction times and so gain the necessary rapidity for meeting the emergencies of daily life.

#### *The Education of the Nervous System.*

In actually learning to fly one may trace three distinct stages in the education of the nervous system. First there comes the cerebral stage. The way in which the machinery of the aeroplane works is constantly before the mind and the muscular movements to produce the right effects in it have to be thought out and performed consciously, with mental effort. Errors become slighter as time goes on, because adaptations are taking place in the receptive side of the nervous system, which is learning to deal with a multitude of unfamiliar afferent stimuli. The first stage passes gradually into the second, or the stage of transition. During this stage automatic action is becoming perfected and conscious direction more and more restricted. The pupil learns, by flying with an instructor in a machine, under what is known as "dual control." Now the relations of the instructor to his pupil are very closely parallel to the relation of the higher centres of the brain to the automatic centres lower down the scale in the central nervous system. The progressive education of the pupil and the reflex centres, and the continually lessening intervention on the part of the instructor and cerebral cortex present no very strained analogy. But during the stage of transition there is a period when the aeroplane, though described officially as under dual control, is, physiologically speaking, under treble control. The nervous system of the instructor works harmoniously and may be regarded as a unit; but the pupil, whose conscious and automatic nervous centres have not yet arrived at a satisfactory division of labour, is more accurately to be described as two individuals than one. The conscious and subconscious nervous centres competing for the control of the muscles resemble a fussy, over-anxious instructor continually trying to help a wayward and awkward pupil. From what instructors tell me I gather that this is the least safe period in the pupil's career, and one can well understand that between the three controls the machine may come to the ground.

With the arrival of the third stage flying becomes instinctive. The pupil thinks of what he will do, not how he will do it, and he learns by observation and experiment how all manner of various conditions affect his doing what he wants to do. Even now, of course, the pupil is not immune from mishap. The venturesome type may come to grief by attempting things which are beyond his powers or the structural capacity of his machine; the careless type may have an accident because he "lets his wits go wool-gathering." The weakness of this type lies in a deficient power of inhibition. It cannot repress irrelevant stimuli which interfere with the essential action. Both these types prove unsafe flyers in spite of a successful education, but they are essentially deviations from the normal. In the normal man the most dangerous source of accident is a mental disturbance in which the cerebral hemispheres endeavour once again to take charge of actions which have for some time past been performed automatically.

The extreme difficulty of attempting and the disastrous results which often follow an attempt to perform consciously actions which have become reflex are matters of common knowledge, and it is only when we attempt to perform actions with especial care that we learn how many are really automatic. We have all seen the well-educated man, who can speak fluently in ordinary life, splutter, become incoherent, and break down when called upon to make a speech or to interview someone of importance. This is because he is making conscious efforts to speak clearly and grammatically, and we have all seen him recover miraculously when the impudence of a heckler distracts his attention from the cares of elocution, or the urbanity of a great man "sets him at his ease" by diverting his mind in the direction of the subject of his interview. When a pilot can fly by established reflexes which only need general orders from the presiding intelligence it is very perilous for the volitional centres to attempt suddenly to resume control. They can

\* This paper was received by us after the author's death. Reference to the obituary notice in THE LANCET of Jan. 4th (p. 42) will show the high qualifications which Captain Spurrell brought to his task.



resume control cautiously and deliberately in efforts to improve by practice movements which are not yet perfect, but that is another thing. Self-consciousness is the disturbing element. For instance, a man unused to flying in Egypt knows that the shimmering sand and blinding glare will make the conditions of his landing unlike those of grass in a grey light, and he may easily worry about this, and as he approaches the ground allow his conscious volition to hamper his reflexes with disastrous results. On the other hand, a man suddenly perceiving an obstacle when on the point of landing, will make the complex movements necessary to avoid it quite subconsciously and automatically. Whether he comes off safely depends on extraneous circumstances. In himself he has every chance.

This return of conscious control after reflex control has been established is like an old instructor, long retired from flying, going up with one who was formerly his pupil, but is fully proficient and in much better trim than himself. If the older man nervously insists on flying in dual control and in interfering whenever a difficulty confronts them the pair will probably crash. If the veteran is there solely as a passenger to use his experience for strategic purposes and occasionally offer advice on major tactics they will probably do excellent work. When the pilot's nervous system has been so trained that the reflex mechanism can carry out the requirements of intelligent volition, yet the higher centres which act consciously can be relied on never to embarrass the highly educated reflexes by untimely interference, then the third stage in his education is completed and he can be said to have learned how to fly.

#### THE METROPOLITAN WATER-SUPPLY DURING APRIL, MAY, AND JUNE, 1919.

On the whole, the month of April this year maintained its tradition in regard to rain, and, in fact, the rainfall in the Thames basin was 2.76 inches, being 1.02 inches above the average mean rainfall for that month during the previous 36 years. The Thames water was at times more or less coloured and turbid. Nevertheless, the results of the chemical examination showed that, generally speaking, all three raw waters (Thames, New River, and Lee) showed an improvement in quality as indicated by the albuminoid nitrogen, permanganate, turbidity, and colour tests. The filtered waters also showed an improved chemical quality compared with the previous month, and the samples collected at the different works were clear and bright and free from suspended matter. The results compared favourably also with the averages of the previous year. Bacteriologically the Thames and New River raw waters contained fewer and the River Lee raw water more bacteria than their respective averages for 1918. The filtered waters were satisfactory from this point of view. May was a dry month, the rainfall being 0.64 of an inch, being 1.34 inches below the average mean rainfall for this month during the previous 36 years. The Thames and New River raw waters showed a deterioration in quality by chemical tests. The raw waters of the Thames and Lee contained fewer and the New River more bacteria than their respective averages in 1918. The filtered waters were again satisfactory. June was also a relatively dry month, with the rainfall standing at 1.06 inches, being 1.13 inches below the average mean rainfall for that month during the previous 36 years. All three raw river waters showed, generally speaking, improved quality judged by chemical and physical tests. All three proved to contain fewer bacteria than their respective averages for the year 1918. There were no typical *B. coli* in 100 c.c.m. of the water in 72.4 per cent. of the filtered samples derived from the Thames, 36.8 per cent. from the Lee, and 77.9 per cent. from the New River. Judged on this high standard the Lee filtered water was inferior to the others. It is interesting to note that the April report is stamped "Local Government Board," while those for May and June are marked "Ministry of Health."

#### THE MISCEGENATION OF SHAKESPEARE.

To the physical anthropologist miscegenation must mainly be of interest as it affects human anatomy. As the school of Professor Keith points out, the races of the British Isles are "much of a muchness" from the point of view of craniology—they are practically all dolichocephalic; where long-headed races become intermixed that school does not regard the resultant types as it would half-breeds or mulattos. In more historic times than those of physical anthropology the question of miscegenation becomes important from the point of view of brain-differentiation and culture-drift. For the long heads are not all alike either in mental heredity or civilisation.

Shakespeare is the fine flower of English genius. That "Shakespeare" was a pseudonym, chosen by Bacon to express the fact that the Author of the Plays brandished the spear of Pallas in the great age of Elizabeth is a suggestion combated by the history of surnames. Shakespeare, a common name in Warwickshire, is Shalk's Byre, "the farm of the villen," who, in that part of

England, was descended from a Romanised Briton. That Shakespeare, the man, was a very pronounced instance of miscegenation is an attractive supposition. His genius has been described as both Teutonic, or Northern—i.e., Anglo-Saxon—and as British, Celtic, or rather Cymric, for he combines virility with mystery in a degree unknown to the German Goethe on the one hand or the old Welsh bards on the other. We may grant, at least, that Shakespeare was a combination of Saxon and Briton, and that this is reflected in his masterpieces. What, however, were the ancient Britons, from whom the shalks of the hyre descended? According to the late Sir Jonathan Hutchinson, who bases himself on Dr. Baynes, the Shakespeares, as well as Mary Arden, the poet's mother, came of Roman stock. In a very acute short paper, published in "The Home University" (October, 1898) Sir Jonathan Hutchinson points out a number of considerations in favour of this position. "During the Roman occupation," he says, quoting Baynes, "Warwickshire was the site of several central Roman stations, of which the fortified camps of Tripontium and Prædium, on the line of the Avon, were the most important. A Roman road crossed the Avon at Stratford, and radiating north and south, soon reached some of the larger Roman towns of the west, such as Uriconium and Corinnum. Between these towns were country villas or mansions, many of them being, like those at Woodchester, magnificent palaces covering as much ground as a whole town. The entire district must in this way have been powerfully affected by the higher forms of social life and material splendour which the wealthier provincials had introduced." Nay, more, according to Coote ("Romans of Britain," published in 1878), the whole of Britain, but especially the West, remained essentially Roman to a late date, the country having been everywhere measured out and allotted by *agrimensores* to scions of good Roman stocks (Julii, Cornelli, &c.), whose descendants founded our western squirearchy in preference to the rude Saxon invaders of the fifth and succeeding centuries. Is it too extravagant to suppose that through the Arden family, at any rate, Shakespeare derived the fissures of his brain and the aquiline cast of his features? The Iberian or Mediterranean type lingers everywhere in rural western England. Often it startles us by its Roman nobility of contour. Who has not come upon a face suggestive of Julius Caesar in the lonely fields along the remote Upper Thames at Bampton or in any remote region of Wessex?

Sir Jonathan Hutchinson closes his article with the remark: "Of Shakespeare's symmetrical and noble face we will only say that it is not one which could be easily matched in Denmark, and still less so in Germany. The resemblance of George Eliot's face to that of Savonarola has often been remarked, and as regards character a close parallel might be drawn between Savonarola and Fox." George Fox, a man of profound and original spiritual genius, was born at Fenny Drayton, George Eliot (Miss Evans—a Welsh name) at Nuneaton, Samuel Butler, author of "Hudibras," in the same neighbourhood, the Shakespeares were a Snitterfield stock, the Ardens came from the Forest of that name. These places were within 15 miles of Coventry. They represent a pocket of exceptional genius, due to a mixture of culture-drifts and the survival of a higher mental type. A similar pocket has been discovered by Professor Keith in the countryside of the Hunters, which produced in its day a remarkable group of medical men of genius.

#### EDUCATED HOME HELPS FOR THE MIDDLE CLASSES.

THE attention of practitioners is called to a newly established bureau for the provision of educated middle-aged women, experienced in housekeeping and holding certificates in first aid, home nursing, and invalid cookery, to help in private homes in cases of illness. No actual nursing will be undertaken, but such work as looking after the house and children, invalid's food, shopping, and mending. It is anticipated that the scheme will be doubly useful to women of slender means who desire part-time employment, and, on the other hand, to professional women living alone in a flat attended by a charwoman only, or to mothers with large households whose convalescence is too often retarded by worry about the servants, the shopping, and the children's meals. In the modern servantless middle-class homes, where at most the services of a daily maid are available, an illness of the mistress which confines her to bed is likely enough to bring household affairs to a full stop, as well as to create a period of added strain to the invalid. We take it that the new help is intended to replace the former ubiquitous unmarried sister or sister-in-law, who is nowadays usually a busy bachelor woman and seldom available in emergency. The payment will be not less than 10d. an hour or 5s. a day with food, or 25s. a week with all meals. All applications for educated home helps or from suitable candidates for employment should be made to the Women's Industrial Council, 6, York Buildings, Adelphi, W.C.2.



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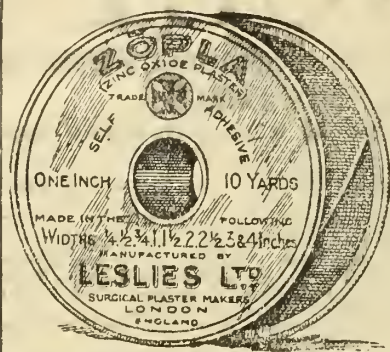
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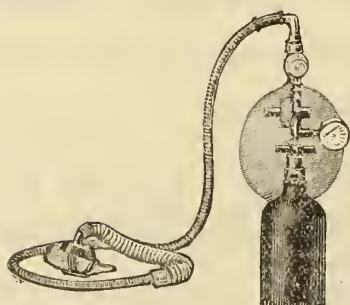
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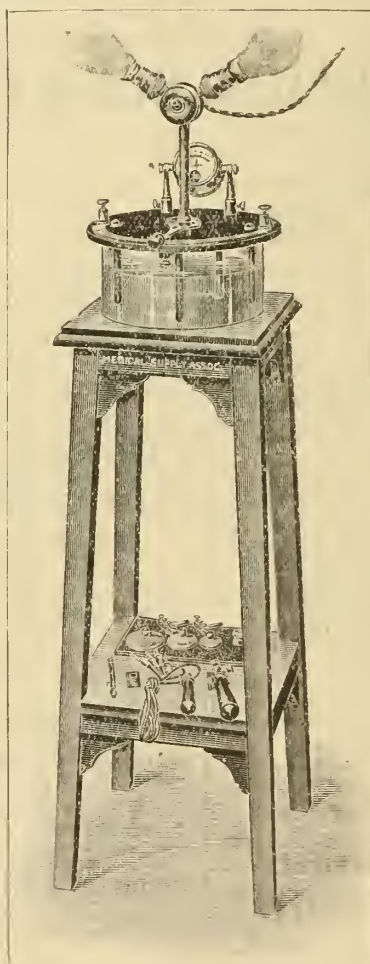
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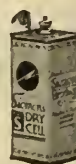
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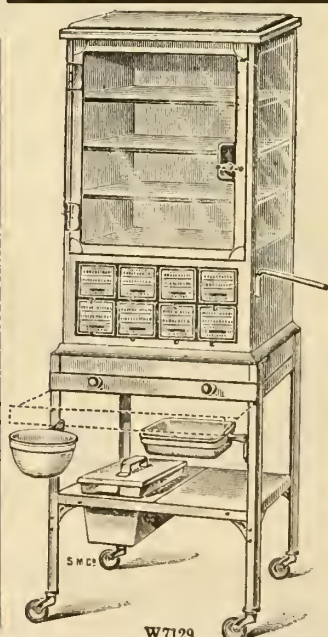
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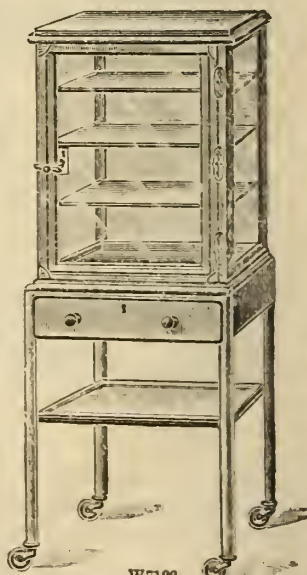
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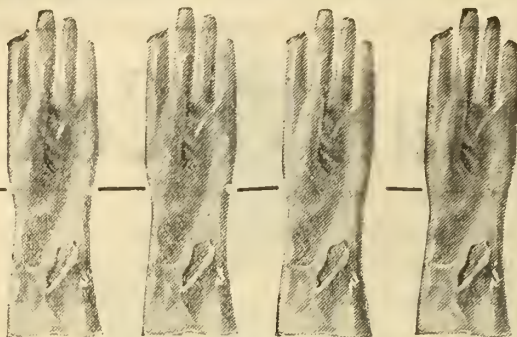
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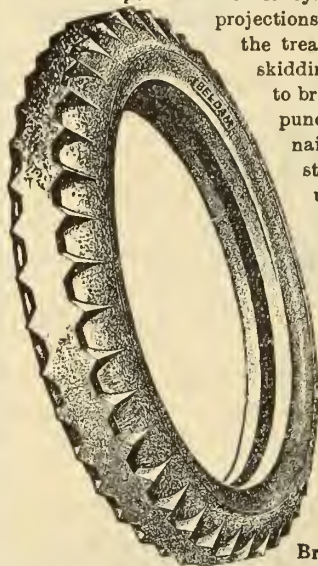


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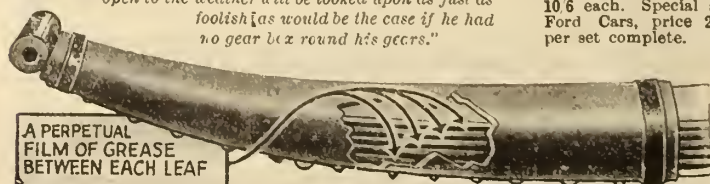
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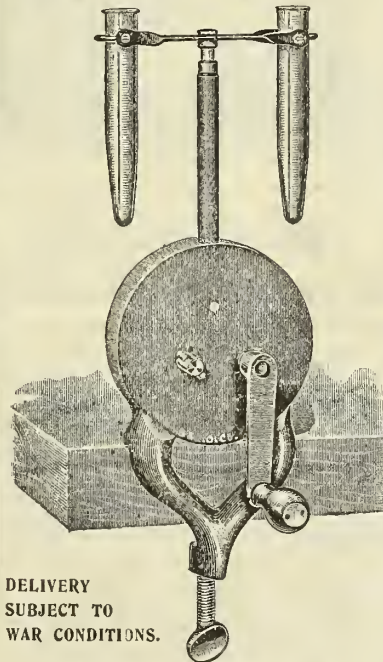
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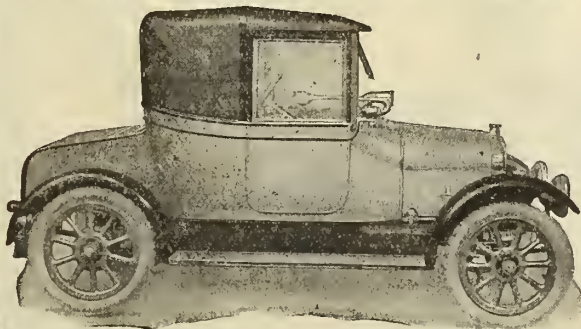
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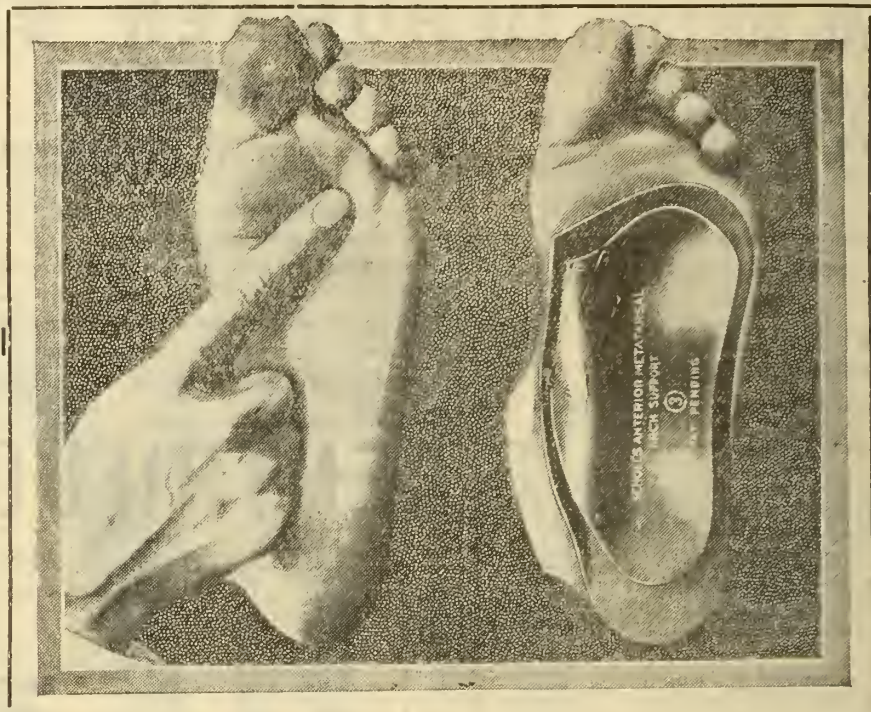
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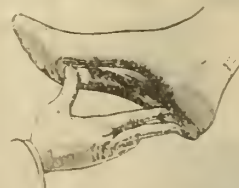
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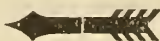
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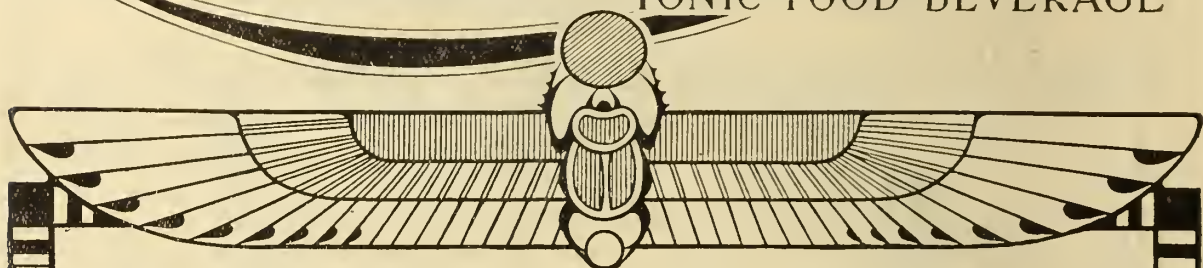
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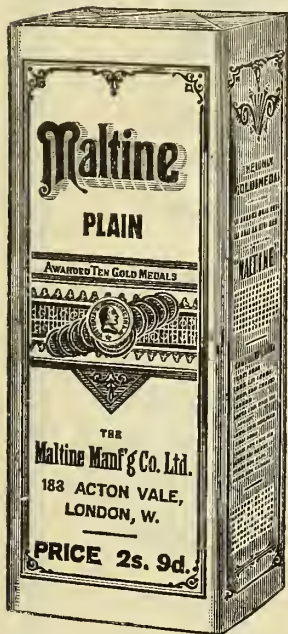
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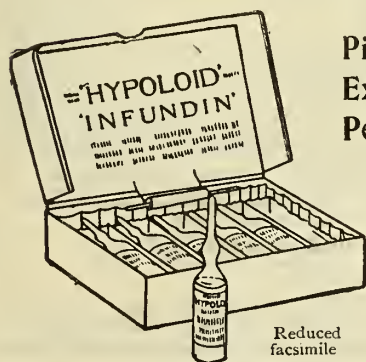
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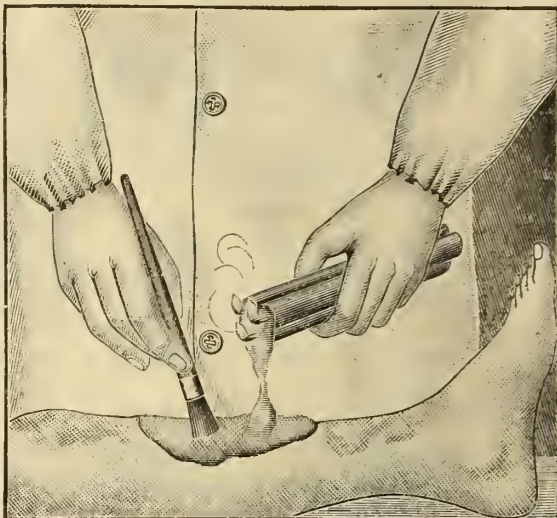


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In Bottles of 50 Tablets.

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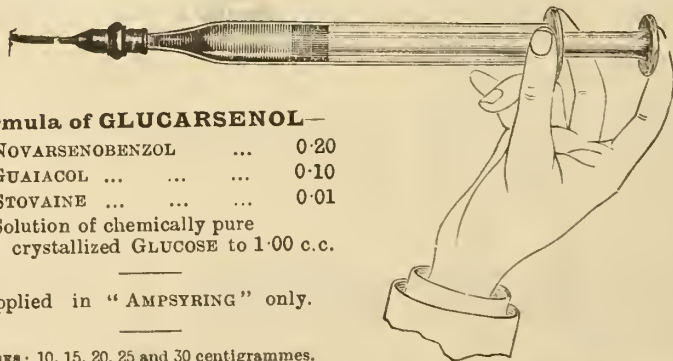
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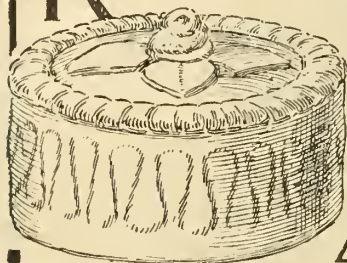
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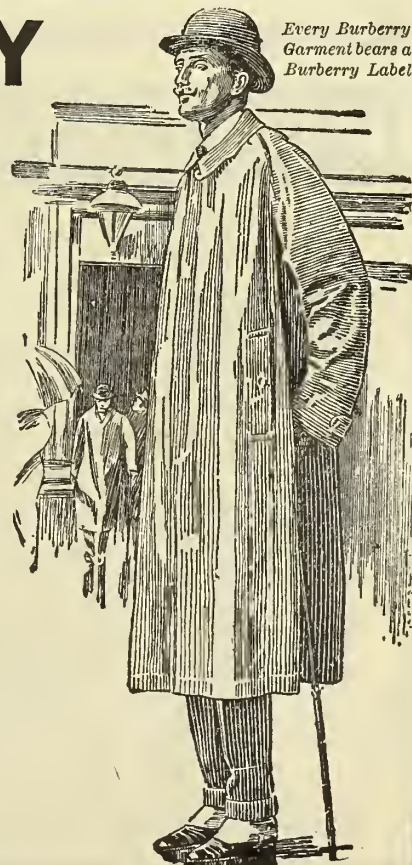
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	Tuesday, 6.30 P.M.	
Mr. N. PATTERSON.	Friday, 2 P.M.	Friday, 10 A.M.
Mr. L. COLLEDGE.	Tuesday, 2 P.M.	Thursday, 2 P.M.
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The next Session of the School will commence on 1st October, 1919.

In 1920 Sessions will be held commencing January 19th, May 3rd, and October 4th respectively.

For prospectus and further particulars apply to: The Director Dr. H. B. NEWHAM, C.M.G., London School of Tropical Medicine, Connaught Road, Albert Docks, London, E.16; or to the Secretary Seamen's Hospital, Greenwich, London, S.E.

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### OPENING OF WINTER SESSION, OCT. 1st, 1919.

*Introductory Address at 3 p.m. by*

The Right Hon. T. J. MACNAMARA, LL.D., M.A., Parliamentary Secretary to the Admiralty, Member of Parliament for North-West Camberwell.

The Right Hon. the Viscount HAMBLEDEN will Preside.

The Past and Present STUDENTS' DINNER will be held the same evening at Pagani's Restaurant, Great Portland-street, W., at 7.0 for 7.30 P.M. Sir StClair Thomson in the Chair.

The Prospectus of the School, giving information as to Prizes, Entrance and other Scholarships, &c., may be obtained post free on application to the Dean, H. WILLOUGHBY LYLE, M.D., B.S. Lond., F.R.C.S.; or to S. C. RANNER, M.A. Cantab., the Secretary of the School.

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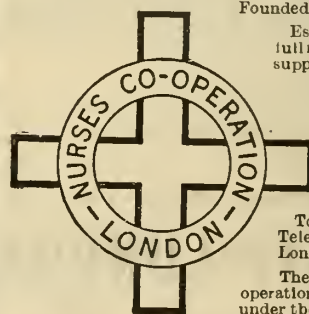
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PRIVATE PATIENTS are received at the rate of 28s. and upwards per week.

Apply to the Medical Superintendent.

**BARNWOOD HOUSE HOSPITAL FOR  
MENTAL DISEASES** near BARNWOOD,  
GLOUCESTER

Exclusively for private Patients of the Upper and Middle Classes. This Institution is devoted to the Care and Treatment of persons of both sexes at moderate rates of payment. Under special circumstances the rates of payment may be reduced by the Committee. For further information apply to ARTHUR TOWNSEND, M.D., the Med. Supt (Tel. No. 7).

**STRETTON HOUSE,**

Church-Stretton, Shropshire.

A Private HOME for the treatment of Gentlemen suffering from Mental Diseases. Bracing hill country. See "Medical Directory," p. 2119. Apply to Medical Superintendent. Telephone: 10 P.O. Church-Stretton

**WYE HOUSE, BUXTON.**

FOR LADIES AND GENTLEMEN MENTALLY AFFLICTED.

Situated 1200 feet above sea level. Facing south.

For terms, &c., apply to the Res. Med. Superintendent,  
W. W. HORTON, M.D.

[NAT. TEL. 130.]



# NEW SAUGHTON HALL

THE ONLY PRIVATE HOSPITAL for the TREATMENT of MENTAL CASES in SCOTLAND  
**POLTON, MIDLOTHIAN.**

NEW SAUGHTON HALL, which takes the place of Saughton Hall, established in 1798, is situated seven miles south of Edinburgh, in the beautiful neighbourhood of Hawthornden and Rosslyn, and is surrounded by picturesque and well-timbered pleasure grounds extending to 125 acres. There is also a SEASIDE HOUSE at GULLANE, EAST LoTHIAN.

Railway Stations—Polton, five minutes; and Loanhead, ten minutes' walk from the Institution—reached in half-an-hour from the Waverley Station, Edinburgh. Telephone—4 Loanhead.

Forms of admission for voluntary or certified cases, full instructions, &c., can be obtained on application to the Resident Medical Superintendent, J. BATTY TUKE, M.D., F.R.C.P. Edin. Inclusive terms from £156 to £500 per annum, according to requirements.

## CAMBERWELL HOUSE, 33, PECKHAM ROAD, S.E.

Telegrams: "PSYCHOLIA, LONDON."

Telephone: New Cross 1057.

*For the Treatment of Mental Disorders.*

Completely detached Villas for Mild Cases. Voluntary Boarders received. 20 acres of grounds. Cricket, tennis, croquet, squash racquets, bowls, and all in-door amusements. An Illustrated Prospectus, giving full Particulars and Terms, may be obtained on application to the Secretary. Senior Physician: FRANCIS H. EDWARDS, M.D., M.R.C.P.

**HOYE VILLA, BRIGHTON**—A Convalescent Branch of the Above.

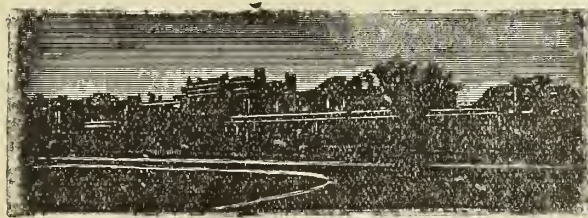
## PECKHAM HOUSE (Established 1826)

112, PECKHAM ROAD, LONDON, S.E.

Telegrams "Alleviated, London."

Telephone: New Cross 576

An Institution licensed for the CARE and TREATMENT of the MENTALLY AFFLICTED of Both Sexes. Conveniently situated. Electric trams and omnibuses from the Bridges and West-End pass the House. Private houses with electric light for suitable cases adjoining the Institution. Holiday parties sent to the Seaside branch at Worthing during the Summer months. Moderate terms.—Apply to Medical Superintendent for further particulars.



## NORTHWOODS HOUSE WINTERBOURNE, near BRISTOL.

FOR PRIVATE TREATMENT OF MENTAL DISEASES.

Situated in a large park in a healthy and picturesque locality, easily accessible by rail via Bristol, Winterbourne, Patchway, or Yate Stations. Uncertified Boarders received. For further information see Medical Directory, page 2069. Terms moderate.

Apply to Dr. J. D. THOMAS, Resident Physician and Licenses, for full particulars.

## HAYDOCK LODGE, Newton-le-Willows, LANCASHIRE.

A PRIVATE MENTAL HOSPITAL FOR THE CARE AND TREATMENT OF MENTAL AND NERVOUS CASES OF BOTH SEXES  
 EITHER VOLUNTARY OR UNDER CERTIFICATES, preference being given to Recoverable Cases.

Terms from £2 2s. per week upwards.

Private Apartments on special terms.

Situated mid-way between Manchester and Liverpool. Two miles from Newton-le-Willows Station on the L. & N.W. Ry., and close to Ashton-in-Makerfield Station on the G.C. Ry. in direct communication with Manchester.

CONSULTING ROOMS (Dr. Street), 47, Rodney Street, Liverpool, from 2 to 4 P.M., or by appointment. Telephone: 2456 Royal Liverpool, Manchester (Dr. Mould), Winter's Buildings, St. Ann Street, on Tuesdays and Thursdays, from 12 to 1.30 P.M., or by appointment.

VISITING AND CONSULTING PHYSICIANS.—Sir JAMES BARR, LL.D., M.D., F.R.C.P., 72, Rodney Street, Liverpool; W. B. WARRINGTON, M.D., F.R.C.P., 63, Rodney Street, Liverpool; G. E. MOULD, Physician for Mental Diseases to the Sheffield Royal Hospital, The Grange, Rotherham.

For further particulars and forms of admission apply Resident Medical Proprietor, Haydock Lodge, Newton-le-Willows, Lancs.

Telegraphic Address: "STREET, Ashton-in-Makerfield."

Telephone: 11 Ashton-in-Makerfield.

## BRISLINGTON HOUSE, near BRISTOL.

Telegrams: FOX, BRISLINGTON.

ESTABLISHED 1804.

Telephone: No. 2 BRISLINGTON.

A PRIVATE MENTAL HOSPITAL for the Care and Treatment of Persons of the UPPER and MIDDLE CLASSES of BOTH SEXES.

The House is situated on an estate of 200 acres, and has extensive Pleasure Grounds and a Farm connected with it. It lies between Bristol and Bath, three miles from Bristol Station and within two-and-a-half hours' journey from London.

In addition to the main building there are several villas completely detached and pleasantly situated in their own grounds, where there is accommodation for suitable cases.

Patients can be received without certificates as Voluntary Boarders.

For terms and further particulars apply to the MEDICAL SUPERINTENDENT.

## THE ROYAL EARLSWOOD INSTITUTION FOR MENTAL DEFECTIVES

(Formerly the EARLSWOOD ASYLUM.)

REDHILL, SURREY.

FOR THOSE REQUIRING CONTROL with EXPERT SUPERVISION  
 and needing SPECIAL TRAINING in useful occupations.  
 SCHOOLS, FARMING, and various TRADE WORKSHOPS.

SELECTED CASES admitted on reduced inclusive fees. THOSE  
 UNABLE TO PAY admitted by votes of Subscribers, with part-  
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RECREATIONS: ALL outdoor games, EXCELLENT BAND by Male Staff, for Concerts, Dancing, &c.

Apply: THE MEDICAL SUPERINTENDENT, Earlswood, Redhill, Surrey, or to the Secretary, Mr. HARRY HOWARD, 14-16, Ludgate Hill, E.C. 4.

Telephone: Redhill 344.

Telephone: City 5297.

R. C. P. HULL, Esq., J.P., Treasurer.



# NORTHUMBERLAND HOUSE,

Telegrams  
"SUBSIDIARY, LONDON."

GREEN LANES, FINSBURY PARK, N.

(Established 1814.)

Telephone:  
No. 828, North.

A PRIVATE HOME for the Treatment of Ladies and Gentlemen suffering from Nervous and Mental Affections. Four miles from Charing Cross; easy of access from all parts.

Six acres of ground, highly situated, facing Finsbury Park.

Voluntary Boarders received without certificate. Seaside Branch at Worthing.

For particulars, apply to the RESIDENT PHYSICIAN.

# ST. ANDREW'S HOSPITAL

DOLLIS HILL, LONDON, N.W. 2.

Telegrams: ANDREWS HOSPITAL, CRICKLEWOOD.

'Phone: Willesden 898.

Rooms for PRIVATE PATIENTS. Wards and Cubicles (at inclusive fees) for Gentlepeople of limited means. Medical and Surgical, but not mental, contagious, consumptive, nor chronic cases. Resident Doctor.

For terms apply to MATRON.

## INEBRIETY.

[Telephone: 16 Rickmansworth.

# DALRYMPLE HOUSE, RICKMANSWORTH, HERTS.

For the treatment of Gentlemen under the Act and privately. Established 1883 by an association of prominent medical men and others for the study of Inebriety; profits, if any, are expended on the institution. Large secluded grounds on the banks of the river Colne. All kinds of out-door and in-door recreations and pursuits.—For particulars, apply to F. S. D. Hogg, M.R.C.S., &c., Resident Medical Superintendent.

# MENDIP HILLS SANATORIUM, FOR THE OPEN-AIR TREATMENT.

Old-established, beautifully situated. 300 acres of Sanatorium grounds. Pinewoods and sheltered avenues. Altitude 850 feet. Porous subsoil. Separate chalets, with verandahs, hot-water radiators, and electric light. Special features—breathing an graduated exercises, and continuous inhalation. Individual attention. Resident Physician—C. VTHU, M.D., M.R.C.S., L.R.C.P.

Terms 4 guineas weekly.

For particulars, apply SECRETARY, Hillgrove, Wells, Somerset.

# MATLOCK SANATORIUM

Situated on the edge of the mountain limestone area of Derbyshire, over 700 feet above sea-level. The buildings face south and command beautiful views, while on the north and east they are sheltered by lofty hills. The surrounding country is well known for its great beauty and interest. The climate is dry and bracing. The buildings are lighted by electricity and heated by radiators.

Treatment is carried out on modern lines, all special methods being available in suitable cases. A new X-ray apparatus has been installed, and there is a complete equipment for the carrying out of up-to-date methods in all Tubercular and other Pulmonary cases.

For particulars apply to FREDERICK KINCAID, M.R.C.S., L.R.C.P., Medical Superintendent, Matlock Sanatorium, Matlock, Derbyshire. Telephone and Telegraph: SANATORIUM, MATLOCK 22.

# PENDYFFRYN HALL SANATORIUM

(NORDRACH-IN-WALES.)

Physicians: Dr. G. M. DOBSON and Dr. GERATY.

FOR THE OPEN-AIR AND INOCULATION TREATMENT OF ALL FORMS OF TUBERCULOSIS.

One of the first Sanatoria opened in the United Kingdom to carry out the treatment as practised at Nordrach. Carefully graduated walks rise through pine, gorse, and heather to a height of over 1000 feet above sea level, commanding extensive views of both sea and mountains. Sheltered from E. and N.E. winds. Climate mild and bracing. Small rainfall. Large average of sunshine. There are over five miles of walks in the private grounds. Rooms heated by hot-water radiators and lit by electric light.

Sister and full Nursing Staff. Trained Nurse on duty all night.

Telegrams: Pen dyffryn; and Telephone: 20 Penmaenmawr.

Apply, Secretary, Pendyffryn Hall, Penmaenmawr, North Wales

# DROITWICH BRINE BATHS WARNING.

The Public are warned that the full benefits of the treatment for Rheumatism and kindred complaints CAN ONLY BE OBTAINED IN THE NATURAL BRINE BATHS AT DROITWICH, FOR WHICH THERE IS NO SUBSTITUTE. LOVELY HOLIDAY DISTRICT. GOOD HOTELS, &c. Illustrated Booklet Post-free from Baths Manager, J. H. HOLLYER, 46, Spa Enquiry Office, Droitwich (Worce.). SPECIAL FACILITIES TO MEDICAL MEN.

# PALACE HOTEL, MONTANA



Accommodation for 150 patients.

SUR SIERRE,  
SWITZERLAND.

TUBERCULOSIS CURE  
STATION (Opening JUNE 1st)

THE FINEST IN EUROPE.

5000 feet high.

Principal Resident Medical Officer:

BERNARD HUDSON, M.D. Cantab., M.R.C.P.,  
Late Physician to the Queen Alexandra  
Sanatorium, Davos Platz.

FULL PARTICULARS FROM THE SECRETARY, 5, ENDSLEIGH GARDENS, LONDON, N.W. 1.



For COMFORT and HEALTH Visit  
**THE CATERHAM SANITARIUM**  
 "Battle Creek System."

Telephone : 88. Medical Superintendent :  
 Telegrams : "HYDRO, CATERHAM." Dr. F. C. SHONE.

# SMEDLEY'S HYDRO.

- MATLOCK. Established 1853.

Physicians : G. C. R. Harbison, M.B., B.Ch.  
 R. MacLelland, M.D., C.M. (Edin.)

Prospectus and full information on application to Managing Director.

## INEBRIETY MELBOURNE HOUSE, LEICESTER

PRIVATE HOME FOR LADIES.

Medical Attendant : ROBERT SEVESTRE, M.A., M.D. Cantab.  
 Principal : HENRY M. RILEY, Assoc. Soc. Study of Inebriety.  
 Thirty years' Experience. Excellent Medical References.

For Terms and Particulars, apply Miss RILEY or PRINCIPAL.  
 Telegrams : "MEDICAL, LEICESTER." Nat. Telephone : 769.

## EPILEPSY. THE DAVID LEWIS COLONY.

Stands in its own grounds of 180 acres and is situated in a beautiful part of Cheshire, 2½ miles from Alderley Edge Station, and 14 miles from Manchester. Electric light throughout. The Colony system ensures the social life and employment most suitable for those who suffer from Epilepsy. Patients certifiable under the Lunacy or Mental Defective Acts are NOT ELIGIBLE for admission. Two Resident Physicians. Terms for Middle- and Upper-class Patients, from 38s. a week upwards, according to accommodation and requirements. Private rooms can be provided.

For further information apply to the Director, Dr. ALAN McDOUGALL, Warford, near Alderley Edge, Cheshire.

## EPILEPSY.

### Colthurst House School,

Warford, Alderley Edge

Under the Management of the Committee of the David Lewis Colony.)  
 Home Life, Medical Care, School Education, most suitable for boys subject to Epilepsy. Terms 38s. weekly.

Further particulars may be obtained from Dr. ALAN McDOUGALL, The Colony, Warford, Alderley Edge.

Telegraphic Address : "Relief, Old Catton." Telephone : "290 Norwich."

## NERVOUS & MENTAL AFFECTIONS.

*Ladies only received.*

### The Grove, Old Catton, Norwich.—

A High-class Home for the Curative Treatment of Nervous Affections. Voluntary Boarders are also received without certificates. Nurses supplied to take charge of patients under the care of their own medical attendants. For full particulars apply to the Misses McINTOON or to CECIL A. P. OSBURNE, F.R.C.S.E., Medical Superintendent.

## CLARENCE LODGE

CLARENCE ROAD, CLAPHAM PARK.

Stations : Clapham Road and Clapham Common.

A Licensed Home for Mental and Nervous Patients.

Twelve Ladies only received for treatment under eminent Specialist and given individual care and the comforts of their own homes. Suitable cases received as voluntary boarders. The house is surrounded by well-wooded grounds; shady lawns for tennis, croquet, &c.

Associated Rooms, Private Rooms, or Suites. Very moderate terms. Illustrated Prospectus from Resident Licensee, Mrs. THWAITES.  
 Telephone : 494 Brixton.

## HOME FOR FEEBLE-MINDED, BRUNTON HOUSE, LANCASTER.

There are now a few vacancies in this well-appointed private establishment. It is easily accessible from Lancaster, overlooks Morecambe Bay, and possesses extensive gardens and grounds, with tennis and croquet lawns. Varied scholastic and manual instruction. Individual attention is given to pupils by experienced staff under a Resident Physician and Lady Matron. Terms on application to Dr. W. H. COUPLAND.

## THE WARNEFORD, OXFORD.

HOSPITAL FOR MENTAL DISORDERS.

President : The Right Hon. the EARL OF JERSEY.

This Registered Hospital, for the Treatment and Care, at moderate charges, of Mental Patients belonging to the educated classes, stands in a healthy and pleasant situation on Headington Hill, near Oxford. Voluntary boarders are also received for treatment.—For further particulars apply to the Medical Superintendent.

## CHEADLE ROYAL.

A HOSPITAL FOR MENTAL DISEASES,  
 CHEADLE, CHESHIRE.

AND ITS SEASIDE BRANCH,

**GLAN-Y-DON, COLWYN BAY,**  
 NORTH WALES.

The object of the above is to provide the most efficient means for the cure of mental diseases in those who belong to the upper and middle classes.

Voluntary boarders as well as certified patients are received for treatment.

For terms and further information apply to the Medical Superintendent, W. SOWWORTH, M.R.C.S., &c., at Cheadle, or he may be seen at 72, Bridge-street, Manchester, on Tuesdays and Fridays from 2 to 3. Telephone : 208 "Cheadle Hulme." 3594 "Manchester."

## Grove House, All Stretton, Church

STRETTON, SHROPSHIRE.

A PRIVATE HOME for the Care and Treatment of a limited number of Ladies Mentally Afflicted.  
 Climate healthy and bracing.

Apply to Dr. McOllntock, Proprietor and Resident Medical Superintendent.

## Home wanted for Mental Case

(Certified), Female, in house of Medical Man in West of England. Terms about £3 8s. a week.—Apply, Mr. Percival Turner, 4, Adam-street, Adelphi, Strand, W.C. 2.

## Doctor (young), experienced, has

VACANCY, Mental, Nerve Convalescent. Charming residence near sea; 4 acres shady lawns, tennis, croquet, bowls, golf, billiards, bridge, music.—Address, No. 966, THE LANCET OFFICE, 423, Strand, W.C. 2.

## Home for Chronics and Maternity

CASES. From £5 5s. per week upwards. Nurses supplied at short notice to any part. Tel. : Otley 67.—Apply, Matron, Wharfedale Nursing and Nurses' Home, Leeds-road, Otley, Yorks.

## Resident Patients.—Descriptive List

(Illustrated) of Medical Men in all parts willing to receive Resident Patients sent without charge. Or selection will be made on statement of nature of case and terms to the General Manager, Scholastic, Clerical & Medical Assn., Ltd., 22, Craven-street, Trafalgar-square, W.C. 2.

## Lady would be glad to hear of

Medical Man willing to take RESIDENT PATIENT—gentleman suffering from Neurasthenia. No other patients preferred. Fees must not exceed 4½ guineas per week, but comfortable home suitable to gentleman of refined tastes essential. London or near London preferred.—Apply, Mrs. W., 138, Lexham-gardens, W. 8.

## Psycho-Therapy.—Medical Man, now

demobilised, with nearly twenty years' experience, is prepared to take NEURASTHENIC or PSYCHASTHENIC ADULTS and CHILDREN in his own home in a cathedral town near the South Coast.—For terms and full particulars, apply to the sole agent, Mr. Percival Turner, 4, Adam-street, Adelphi, Strand, W.C. 2.

IN BEAUTIFUL COUNTRY, 18 MILES FROM LONDON.

## Littleton Hall, Brentwood, Essex

(400 feet above sea-level). A HOME for a few LADIES Mentally Afflicted. Large grounds. Liverpool-street half an hour. Stations : Brentwood one mile; Shentfield one mile. Voluntary Boarders received. Vacancy.—For terms, &c., apply Dr. Haynes. Telephone and Telegrams : Havnes, Brentwood 45.

## A Medical Man, married with no

children, residing in an exceptionally pretty and healthy country town in the West Midlands, 700 feet above sea level, is willing to take as a RESIDENT PATIENT a lady or gentleman requiring treatment for any condition, Mental or Physical. Convenience for various forms of electric treatment or massage in the house. Gravel soil, perfect drainage, pure soft water. Motor-car kept. Advertiser is a Cambridge graduate between fifty and sixty years of age who has had special experience of mental and nervous complaints.—Address, No. 524, THE LANCET OFFICE, 423, Strand, W.C. 2.

## Surgical Registrars.—The Committee

of the ROYAL NATIONAL ORTHOPEDIC HOSPITAL invite applications for the post of Surgical Registrar. Two appointments will be made. Applications, with copies of testimonials, should reach the Secretary, 234, Great Portland-street, W. 1, not later than October 4th. Honorarium 100 guineas per annum. Further particulars may be obtained on application to the Secretary.

## Willesden Urban District Council.—

Appointment of Two DENTISTS.—The Willesden Urban District Council require the services of Two Dentists for work in connection with Maternity and Child Welfare and School Children. Both appointments are whole-time.

The salary is £400-£500 by £25 annual increments.

Forms of application may be obtained from the undersigned, to whom they must be returned not later than the 14th October, 1919.

GEORGE F. BUCHAN, Medical Officer of Health.

Municipal Offices, Dyne-road, Kilburn, N.W. 6.



## Hospital for Epilepsy and Paralysis,

Maldia Vale, W.—HONORARY PSYCHOLOGIST required.

Applications are invited for the post of Honorary Psychologist to the above Hospital.

Applications, giving age and full particulars, must be accompanied by copies of three recent testimonials and reach the undersigned by Wednesday, October 8th.

H. W. BURLEIGH, Secretary and General Superintendent.

## Hospital for Epilepsy and Paralysis,

Maldia Vale, W.—HONORARY OPHTHALMIC SURGEON required.

Applications are invited for the post of Honorary Ophthalmic Surgeon to the above Hospital. Candidates must be Fellows of the Royal College of Surgeons, England, and will be required to attend the Hospital on one morning a week.

Applications, giving age and full particulars, must be accompanied by copies of three recent testimonials and reach the undersigned by Wednesday, October 8th.

H. W. BURLEIGH, Secretary and General Superintendent.

## Hospital for Epilepsy and Paralysis,

Maldia Vale, W.—HONORARY ASSISTANT PHYSICIAN required.

Applications are invited for the post of Honorary Assistant Physician. Candidates must be Fellows or Members of the Royal College of Physicians and Graduates of a University.

Applications, giving age and full particulars, must be accompanied by copies of three recent testimonials and reach the undersigned by Wednesday, October 8th.

H. W. BURLEIGH, Secretary and General Superintendent.

## National Hospital for the Paralysed

and EPILEPTIC.—RADIOLOGIST.—The Board of Management will proceed shortly to appoint a Radiologist, and are inviting applications from duly qualified gentlemen, which, accompanied by recent testimonials, should be addressed to the Secretary, National Hospital for the Paralysed and Epileptic, Queen-square, W.C.1, from whom all particulars may be obtained, on or before October 6th, 1919.

GODFREY H. HAMILTON, Secretary.

## London Hospital, Whitechapel, E. 1.

GENITO-URINARY DEPARTMENT.—A qualified CLINICAL ASSISTANT is required for the Women's Section. He or she is to attend two Sessions per week—on Wednesday and Saturday afternoons from 2 P.M. to 5 P.M.

Remuneration is at the rate of One Guinea per session, and the appointment is for six months.

Apply, giving former experience, to the House Governor, London Hospital, E. 1.

## The Italian Hospital, Queen-square,

London, W.C. 1.—The Committee of Management invite applications for the post of HONORARY OPHTHALMIC SURGEON. Candidates must be Fellows of a Surgical College the degrees of which are recognised by the British Medical Council, or possess equivalent degrees from a Royal Italian University, and they shall have their names on the British Medical Register. Applications, with copies (only) of testimonials, should be sent to the Secretary and Controller on or before Saturday, the 4th October.

## The Belgrave Hospital for Children

(Incorporated), Clapham-road, S.W. 9.—The Committee of Management invite applications for Two ASSISTANT PHYSICIANS.

Candidates must be Graduates in Medicine of an English University and Fellows or Members of the Royal College of Physicians of London. Applications, with copies of testimonials, must be delivered to the undersigned by Monday 13th October, 1919, from whom further information may be obtained.

By order.

THOMAS CLAPHAM, Secretary.

## Applications are invited for the office

of ASSISTANT ANÆSTHETIST to the MIDDLESEX HOSPITAL, W. 1. Candidates, who must be fully qualified Medical Practitioners, are requested to send their applications and a copy of their testimonials to the undersigned not later than Monday, October 6th. The appointment is an annual one and the selected candidate will be expected to take up the duties of the office at once.

By order of the Weekly Board.

WALTER KEWLEY,  
Secretary-Superintendent.

## The Hospital for Women, Soho-

square, W. 1.—The Committee are desirous of appointing an Honorary Medical Officer as PHYSICIAN CONSULTANT to the Hospital, and applications are hereby invited for the post. Candidates must be Fellows or Members of one of the Royal College of Physicians of the United Kingdom, and on the Honorary Medical Staff of a London General Hospital.

Applications and testimonials must be forwarded to the undersigned (from whom further information may be obtained) on or before Tuesday, October 21st, 1919.

ALFRED HAYWARD, Secretary.

## The Hospital for Women, Soho-

square, W. 1.—A vacancy having occurred in the office of HONORARY MEDICAL OFFICER in charge of Out-patients, applications are hereby invited for the post. Candidates must be Graduates in Medicine of a recognised University, and Fellows of one of the Royal College of Surgeons of the United Kingdom.

Applications and testimonials must be forwarded to the undersigned (from whom further information may be obtained) on or before Tuesday, October 21st, 1919.

ALFRED HAYWARD, Secretary.

## Hospital for Consumption and

DISEASES of the CHEST, Brompton, S.W.—A vacancy having occurred in the office of SURGEON, the Committee of Management invite applications for the post. Candidates are requested to send in applications and testimonials on or before Thursday, October 16th, 1919. They must be Fellows of the Royal College of Surgeons of England, and hold the appointment of Surgeon or Assistant Surgeon at a General Hospital in London.

Brompton, September, 1919.

FREDERICK WOOD, Secretary.

## Hospital for Consumption and

DISEASES of the CHEST, Brompton, S.W.—The Committee of Management invite applications for the post of HOUSE PHYSICIAN (for which there are three vacancies). The duties include work in the Out-patient Department as well as in the wards. Further particulars may be obtained from the undersigned, to whom applications, with testimonials, should be addressed. The appointment is for six months, with an honorarium of 30 guineas.

Applications received from qualified Women.

September, 1919.

FREDERICK WOOD, Secretary.

## Hospital for Consumption and

DISEASES of the CHEST, Brompton, S.W.—The Committee of Management invite applications for the post of ASSISTANT RESIDENT MEDICAL OFFICER. Candidates, who will be required also to undertake the duties of a House Physician, must be Registered Practitioners, and must have held a resident Hospital appointment for six months. Salary £150 per annum, with board and residence. Applications, with testimonials, to be sent in on or before October 16th, 1919.

Brompton, September, 1919.

FREDERICK WOOD, Secretary.

## Hospital for Consumption and

DISEASES of the CHEST, Brompton, S.W.—Vacancies having occurred in the office of ASSISTANT PHYSICIAN, the Committee of Management invite applications for the post. Candidates are requested to send in applications and testimonials not later than Thursday, October 16th, 1919. They must be Doctors or Bachelors of Medicine, and Fellows or Members of the Royal College of Physicians of London. A successful candidate is also eligible for appointment as Assistant in the Clinical Laboratories at a remuneration of £250 per annum.

Brompton, September, 1919.

FREDERICK WOOD, Secretary.

## Hospital for Consumption and

DISEASES of the CHEST, Brompton, S.W.—The Committee of Management invite applications for the post of Whole-time ASSISTANT in the Department of Pathology. Candidates must be duly qualified. Preference will be given to applicants who have had previous experience in Bacteriological and Pathological technique. Further particulars may be obtained at the Hospital. Salary £250 per annum. Applications, with testimonials, to be sent in on or before October 16th, 1919.

Brompton, September, 1919.

FREDERICK WOOD, Secretary.

## Hospital for Consumption and

DISEASES of the CHEST, Brompton, S.W.—The Committee of Management invite applications for the post of Part-time ASSISTANT in the Department of Pathology. Candidates will be required to have had special training in Bio-chemical methods. The appointment is being made with a view to encouraging research into chemical problems in connexion with Tuberculosis. Further particulars may be obtained at the Hospital. Salary £250 per annum. Applications, with testimonials, to be sent in on or before October 16th, 1919.

Brompton, September, 1919.

FREDERICK WOOD, Secretary.

## Brompton Hospital Sanatorium,

Frimley.—The Committee of Management of the Hospital for Consumption and Diseases of the Chest, Brompton, S.W., invite applications for the post of MEDICAL SUPERINTENDENT at the Sanatorium. Salary £600 per annum, with board and residence. Candidates must be qualified to practise medicine and surgery and be duly registered. Applications, with testimonials, to be sent in not later than Thursday, 16th October, 1919. Further particulars may be obtained upon application to the Secretary at the Hospital.

Brompton, September, 1919.

FREDERICK WOOD, Secretary.

## St. Marylebone Infirmary.—Wanted

shortly, an ASSISTANT MEDICAL OFFICER (Male), whose main duties would be concerned with Tuberculosis. The Ward consists of some 90 beds (average occupied about 70-80), and are under the medical supervision of Dr. Halliday Sutherland, Visiting Physician to the Tuberculosis Wards.

The cases include every phase of Tuberculosis, and the appointment provides a wide experience which would qualify for other posts in the Tuberculosis Service. Salary £200 a year, all found. Garden. Quiet quarters. Good off-duty time. Apply, Medical Superintendent, St. Marylebone Infirmary, Rackham-street, Ladbroke-grove, W. 10.

## St. Marylebone General Dispensary,

77, Welbeck-street, Cavendish-square, W. 1.—A vacancy having occurred in the office of RESIDENT MEDICAL OFFICER to this Institution, the Directors are prepared to receive applications for the vacant office. Candidates must be registered, and hold a Medical and Surgical qualification. Salary £150 per annum, with furnished apartments, attendance, coals, and light. The appointment is for one year, the occupant being eligible to become a candidate for re-election on the vacancy being advertised. Written applications and testimonials to be forwarded not later than Monday, October 6th, and candidates must attend the Medical Committee at the Dispensary on Wednesday, 8th October, at 4.30 P.M. precisely. This appointment is suitable for a gentleman reading for a higher examination.

22nd September, 1919.

HUGH STOKES, Secretary.



**Royal Free Hospital, Gray's Inn-road,**  
W.C.1.—Applications are invited for the post of HONORARY ANÆSTHETIST. Information with regard to the times of duty may be obtained from the Secretary, to whom applications should be addressed on or before October 4th, 1919.

**Royal Free Hospital, Gray's Inn-road,**  
W.C.1.—Applications are invited from duly qualified and registered Practitioners for the post of CASUALTY OFFICER. Salary £100 per annum, with residence. Duties to commence on the 1st November, 1919. Applications, stating age, with three copies of recent testimonials, should be sent to the Secretary on or before October 4th, 1919.

REGINALD R. GARRATT, Secretary.

**Royal Free Hospital, Gray's Inn-road,**  
W.C.1.—Applications are invited for the post of SURGICAL REGISTRAR. Duties to commence on the 1st November, 1919. Candidates, who must be fully qualified, must apply, stating age, qualifications, and experience, accompanied by copies of three testimonials and addressed to the Secretary, on or before October 4th, 1919.

REGINALD R. GARRATT, Secretary.

**The Anti-Vivisection Hospital, the**  
BATTERSEA GENERAL HOSPITAL (Incorporated), Battersea Park, S.W.11.—RESIDENT MEDICAL OFFICER wanted for Cancer Wing, to work under Honorary Specialist's supervision. Some knowledge of Electro-Therapy essential. Commencing salary £200, with board, lodging, laundry, &c. Apply by letter, with copies of three recent testimonials, to Secretary.

**The Mothers' Hospital,**  
153-163, Lower Clapton-road, E. 5.  
A RESIDENT MEDICAL OFFICER is required at this Maternity Hospital and School of Midwifery. Commissioner Adelaide Cox, The Salvation Army Women's Social Work Headquarters, 280, Mare-street, Hackney, E. 8, desires to meet with a Christian woman for this important sphere of useful service.

**Manor House Orthopædic Hospital.**  
The Committee of Management require a RESIDENT SURGICAL OFFICER at £500 per annum, with board. The position carries the duties of Surgical Registrar, the seeing of out-patients and admission of new cases. Applications must reach the Secretary on or before 17th October. BERNARD GILBERT, Secretary, Manor House Orthopædic Hospital, North End-road, Hampstead, N.W. 3.

**Paddington Green Children's**  
HOSPITAL, London, W. 2.  
HOUSE PHYSICIAN. HOUSE SURGEON.  
These appointments will become vacant on 1st November, 1919. Salary of House Physician £150, and House Surgeon £150 a year, with board, residence, and washing.  
Applications, with copies of three testimonials, must be sent in to the undersigned not later than the 9th October.  
24th September, 1919. F. STANLEY CHEER, Secretary.

**The London Lock Hospital and**  
RESCUE HOME,  
283, Harrow-road, W. 9, and 91, Dean-street, W. 1.  
HON. SURGEON TO OUT-PATIENTS.  
Candidates for this appointment are requested to send in their applications, with not more than three copies of testimonials, to the Secretary, at 283, Harrow-road, W. 9, not later than October 6th, 1919. The election, which is by ballot of the Governors, will be duly announced to the candidates. No personal canvassing of the Board or Medical Staff permitted. Candidates must be Fellows of the Royal College of Surgeons (Eng.)  
By order of the Board.  
Sept. 23th, 1919. H. J. EASON, Secretary.

**County of London.—Appointment of**  
CORONER for the South-Eastern District of the County of London.—The London County Council invites applications from duly qualified persons for the appointment of Coroner for the South-Eastern District of the County of London. The salary attached to the office is £1186 4s. a year.

The Coroner will be required to provide the necessary office accommodation and clerical assistance, and also to defray all other expenses of the office (including the services of an approved deputy), except the actual disbursements under the Council's schedule of fees, allowances, and disbursements made at the holding of an inquest.

The duties of Coroners are regulated by the Coroners Act, 1887, and other Acts. Section 12 of the Coroners Act, 1887, provides that "Every Coroner for a county shall be a fit person, having land in fee sufficient in the same county whereof he may answer to all manner of people."

Preference will be given to persons who have served or attempted to serve with the Forces of the Crown.

Candidates must possess either a legal or a medical qualification, and the candidate appointed will be required to give an undertaking that he will devote his whole time to the duties of his office, and that he will agree to any future scheme that may be formulated by the Council affecting the salaries and duties of coroners.

Applications must be made on the official form which can be obtained from the Clerk of the London County Council, County Hall, Spring Gardens, S.W. 1. The latest time for receiving applications is 11 A.M. on Monday, 6th October, 1919.

Candidates must be British subjects, and it is desirable that they should not be under thirty-five or over fifty years of age.

Canvassing of members of the Council, either directly or indirectly, will be held to be a disqualification for the appointment.

JAMES BIRD, Clerk of the London County Council.

**St. Bartholomew's Hospital.—**  
ASSISTANT ADMINISTRATOR OF ANÆSTHETICS (non-resident).—The Committee invite applications for the above office. Candidates must be registered Practitioners. Applications, with testimonials, must be left with the undersigned, from whom further particulars may be obtained, on or before Monday, the 6th October, 1919.  
September, 1919. THOMAS HAYES, Clerk to the Governors.

**Queen Mary's Hospital for the East**  
END, Stratford, E. 15.—Applications are invited for the post of HOUSE SURGEON at the above Institution. Salary at the rate of £150 per annum, with board, apartments, and washing. The work of the Hospital includes Eye, Ear, Nose and Throat, and Maternity Departments.  
Applications to be sent at once to the undersigned.  
A. W. SCRIVENER, Secretary.

**The Prince of Wales's General Hos-**  
PITAL, Tottenham, N. 15.—Applications are invited for the following posts, vacant on the 15th October next:—  
HOUSE PHYSICIAN. £200 per annum.  
HOUSE SURGEON. £200 per annum.  
JUNIOR HOUSE SURGEON. £120 per annum.  
JUNIOR HOUSE PHYSICIAN. £120 per annum,  
with residence, board, and laundry.

The appointments are from 15th October to 15th April, 1920. Candidates (Male) must be duly qualified and registered, and applications, together with copies of three recent testimonials, to be sent to me on or before the 30th September next.  
September 16th, 1919. FREDK. W. DREWETT, Director.

**Bethlem Royal Hospital.—In con-**  
nexion with the above, another Hospital has been established (quite apart from the main building) at 52, Lambeth-road, S.E. 1, for the treatment of early cases of neurological and psychiatric interest. Applications are invited for the post of HONORARY NEUROLOGIST. Candidates must be duly registered Practitioners and either Graduates of a University or Fellows or Members of the College of Physicians. Further particulars in regard to the appointment, if desired, will be furnished by the undersigned, to whom applications, accompanied by copies of testimonials, must be forwarded on or before Monday, October 6th.  
JOHN L. WORSFOLD, Clerk.  
Bridewell Royal Hospital, New Bridge-street, E.C. 4.

**Bethlem Royal Hospital, Lambeth-**  
road, S.E. — Wanted, JUNIOR ASSISTANT PHYSICIAN. Candidates for this office must be fully qualified Medical Practitioners, possessed both of Medical and Surgical qualifications as required for registration by the General Council of Medical Education, provided they be either Members of a British College of Physicians or Graduates in Medicine of a British University recognised by the aforesaid Council, unmarried, and not exceeding thirty years of age.

The salary will be £350 per annum, with annual increments of £30, subject to the approval of the Court, to £500 per annum, apartments in the hospital, complete board, and laundry being provided.

All applications and testimonials must be accompanied by answers to a printed form, which with a copy of the duties may be obtained at my office here, and such applications, &c., must be forwarded to me on or before October 6th. Candidates are required to present themselves before the Medical Committee at Bethlem Hospital on Wednesday, October 8th, at 2.15 P.M.

JOHN L. WORSFOLD, Clerk.

Personal canvassing not allowed.  
Bridewell Royal Hospital, New Bridge-street, E.C. 4.

**The Hospital for Sick Children,**  
Great Ormond-street, W.C.1.—A RESIDENT MEDICAL SUPERINTENDENT is required on the 13th October, 1919.

Candidates are invited to send in their applications, addressed to the Secretary, before 12 o'clock on Monday, the 6th October, accompanied by copies of not more than three testimonials given specially for the purpose.

The appointment is made for one year, but may be held subject to re-election for a period of three years. Salary £200 per annum, with board and residence in the Hospital, and £5 washing allowance.

Candidates must be registered Medical Practitioners, and must have held a responsible Hospital appointment.

All candidates must appear before the Joint Committees at their meeting on Wednesday, 8th October, at 5 P.M. precisely.

Forms of application and copies of the rules may be obtained from the Secretary at the Hospital.

By order of the Committee of Management.  
September, 1919. JAMES MCKAY, Acting Secretary.

**The Hospital for Sick Children,**  
Great Ormond-street, W.C.1.—The following Resident appointments will shortly be vacant:—  
ASSISTANT CASUALTY MEDICAL OFFICER, 13th October, 1919.  
HOUSE SURGEON, 1st November, 1919.  
HOUSE PHYSICIAN, 1st November, 1919.

Candidates are invited to send in their applications, addressed to the Secretary, before 12 o'clock on Monday, 6th October, 1919, with copies of not more than three testimonials given specially for the purpose, and also evidence of their having held a responsible Hospital appointment.

The appointment is made for six months. Salary £50, washing allowance £2 10s., and board and residence in the Hospital. Candidates must be unmarried and possess a legal qualification to practise.

All candidates must appear before the Joint Committees at their meeting on Wednesday, 8th October, at 5 P.M. precisely.

Forms of application and copies of the rules may be obtained from the Secretary.

By order of the Committee of Management.  
September, 1919. JAMES MCKAY, Acting Secretary.



**Honorary Physician.—The Committee of the ROYAL NATIONAL ORTHOPEDIC HOSPITAL** invite applications for the appointment of Honorary Physician. Applications, with copies of testimonials, should reach the Secretary, 234, Great Portland-street, W. 1, not later than Saturday, October 4th.

**Hospital for Diseases of the Throat.** Golden-square, W. 1.—Applications are invited for the appointment of HONORARY ASSISTANT SURGEONS.

Candidates must be registered Medical Practitioners. Applications, accompanied by copies of three recent testimonials, should be sent to me not later than Saturday, October 25th.

By order. Wm. Holt, Secy.-Supt.

**Hampstead General and North-West LONDON HOSPITAL,** Haverstock-hill, N.W. 3.—The Council invite applications:—Two PHYSICIANS TO OUT-PATIENTS, PHYSICIAN FOR DISEASES OF THE SKIN. Candidates must be Members or Fellows of the Royal College of Physicians, London. Applications, &c., should reach the Secretary not later than Friday, October 10th.

**Hampstead General and North-West LONDON HOSPITAL,** Haverstock-hill, N.W. 3.—The Council invite applications for the post of SURGEON TO OUT-PATIENTS. Candidates must be Fellows of the Royal College of Surgeons, England. Applications, &c., should reach the Secretary not later than Friday, October 10th.

**Hampstead General and North-West LONDON HOSPITAL,** Haverstock-hill, N.W. 3.—There is a vacancy for a CLINICAL ASSISTANT in the EAR, NOSE, & THROAT DEPARTMENT. The position offers a suitable opportunity for anyone who intends to specialise in this work. Applications, &c., should reach the Secretary not later than Oct. 10th.

**South London Hospital for Women.** South Side, Clapham Common, S.W. 4. The Board of Management invite applications from fully qualified Medical Women for the posts of ASSISTANT SURGEON and TEMPORARY ASSISTANT SURGEON—the latter appointment to be for a period of twelve months. Full particulars may be obtained from the Secretary. Canvassing Members of the Board is not allowed. Applications, with copies of testimonials, to reach the Secretary at the Hospital not later than the first post on October 31st.

**Belgrave Hospital for Children** (Incorporated), Clapham-road, S.W. 9.—The Committee of Management invite applications for the posts of HOUSE PHYSICIAN and HOUSE SURGEON, which will shortly become vacant. Applicants must be fully qualified and registered. The appointments are for six months, with board, residence, and washing provided. Salary at the rate of £100 per annum in the case of House Physician, and £75 per annum in the case of House Surgeon.

Applications, with copies of testimonials, to be forwarded on or before October 13th, to the undersigned, from whom further particulars may be obtained.

By order.

THOMAS CLAPHAM, Secretary.

**Victoria Hospital for Children,** Tite-street, Chelsea, S.W. 3.—The Committee of Management invite applications for the following vacancies on the Honorary Staff:

(a) IN-PATIENT PHYSICIAN (the Senior Out-patient Physician is a candidate);

(b) Two OUT-PATIENT PHYSICIANS.

Candidates for these posts must be Fellows of the Royal College of Physicians of London and Graduates in Medicine of a University recognised by the Medical Council.

Candidates are expected to call on the Medical Staff, and should send in their applications, with testimonials, to the Secretary of the Hospital on or before Saturday, 11th October, 1919.

By order.

H. G. EVERED, Secretary.

**Ilford Urban District Council.—**

Appointment of WOMAN ASSISTANT MEDICAL OFFICER OF HEALTH.—The Urban District Council of Ilford invites applications from properly qualified Medical Women for the office of Woman Assistant Medical Officer of Health, for duties in connexion with General Public Health Work, Maternity and Child Welfare Work, and School Medical Inspection. Candidates must possess the Diploma of Public Health or similar qualification, and have definite experience in Children's Diseases.

The aggregate salary of the officer will be £400 per annum, rising by annual increments of £25 to a maximum of £450.

The person appointed will be required to devote her whole time to the duties of the office, to reside, in any case, within the Urban District of Ilford, and to enter into a contract with the Council for the due performance and fulfilment of all the duties and conditions governing the appointment.

Candidates must not be more than forty-five years of age.

Applications, which must be made on forms obtainable (with list of duties) from the undersigned, accompanied by copies of three recent testimonials (which will not be returned), endorsed "Woman Assistant Medical Officer of Health," must be received at my office, at the Town Hall, Ilford, not later than 12 o'clock noon on Tuesday, the 14th day of October, 1919.

Canvassing members of the Council, directly or indirectly, is prohibited and will disqualify. By order.

ADAM PARTINGTON, Clerk and Solicitor to the Council. Town Hall, Ilford, September, 1919.

**Mount Vernon Hospital for Consumption and Diseases of the Chest,** Northwood, Middlesex.—An ASSISTANT RESIDENT MEDICAL OFFICER is required. Applicants must be fully qualified and registered. Salary £200, with board, lodging, washing, &c.

Applications, with copies of testimonials, to W. J. MORTON, Secretary, Offices, 7, Fitzroy-square, W. 1.

**Worcestershire Asylum, Barnsley Hall, Bromsgrove.**—ASSISTANT MEDICAL OFFICER (Locum Tenens) required for three weeks from October 8th or 9th. Salary 8 guineas per week, with board and lodging.—Apply to the Medical Superintendent (giving particulars and references).

**Bradford Royal Infirmary (215 beds,** 5 Resident Officers).—Two HOUSE SURGEONS wanted for beginning of November. Candidates must be single and legally qualified. Salary £200 per annum, with board and rooms. Applications, stating age, qualifications, and previous experience (if any), with copies of recent testimonials, to be received by 7th October.

J. J. BARRON, Secretary-Superintendent.

**Dorset County Council Education COMMITTEE.**—Appointment of SCHOOL DENTISTS.—Three School Dentists required. Duties: To examine the teeth of school children and treat those with dental defects. Salary £400 per annum, with travelling expenses.

Application form and terms of appointment may be obtained from Secretary for Education, County Offices, Dorchester.

**Taunton and Somerset Hospital,** Taunton (105 beds).—A qualified RESIDENT ASSISTANT HOUSE SURGEON required at once. Salary at the rate of £150 per annum, with board, lodging, and laundry. The appointment, which is for six months, is not open to Medical Women. Apply, with copies of not more than three testimonials, to REGINALD A. GOODMAN, Secretary.

**The Royal Sussex County Hospital,** Brighton.—An ASSISTANT PATHOLOGIST to the Pathological, Bacteriological, and Clinical Research Department of the above Institution is required. Salary £200 per annum, with an additional payment of £100 per annum in lieu of board, residence, and laundry. Applications, with copies of testimonials, to be sent to the undersigned at the Hospital immediately.

J. HAROLD PENFOLD, Acting Secretary.

**Oldham Royal Infirmary.—Wanted** at once, a THIRD HOUSE SURGEON. Salary at the rate of £200 per annum, with board, residence, and laundry. The appointment will be for six months, then eligible for promotion to Second House Surgeon's post.

Duties in Ophthalmic, Casualty, Out-patients, and V. D. Departments. Applications, with testimonials, to be sent not later than October 7th, to E. LIONEL BLAKE, Supt. and Secy.

**Leicester Royal Infirmary.—House Physician.**—A vacancy has arisen for the post of House Physician. Salary at the rate of £250 per annum, with board, apartments, and washing.

Applications to be forwarded at once to the undersigned.

HARRY JOHNSON, House Governor & Secretary.

22nd September, 1919.

**Stroud General Hospital.—House Surgeon.**—The Committee are prepared to consider the application of candidates (women eligible) for the post of HOUSE SURGEON at the Stroud General Hospital. Candidates must be duly qualified and registered. Salary £200 per annum, with board, lodging, and washing. The Hospital is well equipped and serves a population of 40,000 in a manufacturing and agricultural district. Applications should be sent, with testimonials, to the Honorary Secretary, the Hospital, Stroud, Glos., not later than Tuesday, October 14th, 1919.

**Manchester Royal Infirmary.—** Central Branch, Roby-street, Manchester. 52 beds. Pensioners. New casualties about 30 daily.—RESIDENT SURGICAL OFFICER. The Board of Management of the Manchester Royal Infirmary invite applications for the above appointment. The appointment is for six months. Remuneration is at the rate of £200 per annum, with board and residence. Applications, accompanied by copies of three testimonials, to be sent to the undersigned on or before Monday, 6th October, 1919.

By order.

FRANK G. HAZELL, General Superintendent and Secretary.

20th September, 1919.

**General Hospital, Nottingham.—An ASSISTANT SECRETARY (Male)** is required at the above Institution. Candidates must have organising ability, a thorough knowledge of Hospital Bookkeeping and Accounts, and be experienced in Committee work. Commencing salary £250 per annum. Applications, stating age and experience, together with copies of three recent testimonials, and endorsed "Assistant Secretary," to be delivered to me not later than Saturday, October 12th, 1919. Previous Hospital experience and a knowledge of Shorthand and Typewriting will be a recommendation.

P. M. MACCOLL, House Governor & Secretary.



**Berkshire Education Committee.**

Applications are invited from registered Dental Surgeons for the appointment of SCHOOL DENTIST under the Berkshire Education Committee.

The officer appointed will be required to devote his whole time to the services of the Committee and to act under the direction of the School Medical Officer.

The salary will be at the rate of £400 per annum. Out-of-pocket travelling expenses actually incurred will be paid according to scale.

The appointment will be terminable by three months' notice on either side.

Further particulars and forms of application may be obtained from the undersigned.

All applications must be sent in before 27th October, 1919.

Canvassing members of the Committee will disqualify.

W. C. F. ANDERSON, Education Secretary.

Shire Hall, Reading, Sept. 16th, 1919

**Somerset County Education Committee.**

**MITTEE.—SCHOOL OCULIST and MEDICAL INSPECTOR (Male or Female).**—The Committee invite applications for the above appointment. Special experience in Eye diseases and Refraction work is essential, while experience in dealing with children is desirable.

Commencing salary £450 per annum, increasing to £550 by yearly increments of £25, with necessary travelling and out-of-pocket expenses.

Applications, stating age, qualifications, and previous experience, accompanied by copies of not more than three recent testimonials, must be forwarded not later than Monday, Oct. 13th, to the undersigned, from whom all further particulars can be obtained.

Canvassing will disqualify.

W. G. SAVAGE, County School Medical Officer.

Boulevard, Weston-s-Mare.

**The Royal Infirmary, Sunderland.**

Wanted, **SENIOR HOUSE SURGEON** (with previous Hospital experience), **TWO JUNIOR HOUSE SURGEONS**, and **HOUSE PHYSICIAN**. Candidates must possess double qualifications (registered). The appointments will be for six months, or for such longer period as may be mutually agreed upon. Salary for Senior appointment £250 per annum, other appointments £200 per annum, with board, residence, and laundry.

There are 236 beds for patients and four resident medical officers.

Applications, stating age, with certificate of registration and copies of three recent testimonials, to be sent to the Secretary on or before Wednesday, October 1st, endorsed "Application for Resident Appointment."

The election will take place on October 9th, and the successful candidates will be required to enter upon their duties on November 1st.

Further information may be obtained from the undersigned.

September 13th, 1919.

S. C. FRYERS, Secretary.

**Lancashire County Council.**

Appointment of **ASSISTANT DISPENSARY TUBERCULOSIS OFFICER**.—The Lancashire County Council are prepared to receive applications for the post of one Assistant Dispensary Tuberculosis Officer at a salary of £550 per annum, rising by annual increments of £25 to £625 per annum.

Applicants must be registered Medical Practitioners between twenty-five and forty years of age, and must devote the whole of their time to the duties as defined by the Council. Candidates must have held house appointments for at least six months in a General Hospital, and have had special experience in the diagnosis and treatment of Tuberculosis.

The possession of a Diploma in Public Health and practical experience in Bacteriological work will be deemed additional qualifications for the post.

Applications, accompanied by copies of three recent testimonials, to be delivered to the undersigned not later than the first post on 10th October, 1919.

Forms of application, terms of appointment, and list of duties, can be obtained from the undersigned.

All letters must be marked on the outside, "Appointment of Dispensary Tuberculosis Officer."

HARCOURT E. CLARE,

County Offices, Preston. Clerk of the County Council.

**Durham County Council.**

The County Education Committee invite applications for five vacancies for **ASSISTANT SCHOOL MEDICAL OFFICERS**, to act under the County Medical Officer in connexion with the inspection of children attending elementary schools, and such other duties as may from time to time be required by the Education Committee.

The commencing salary will be £500 per annum, rising by annual increments of £25, to £700 per annum, together with reasonable travelling and out-of-pocket expenses. The successful candidates will be required to devote their whole time to the duties of the office, and to reside in or near the districts to which they may be attached, at a place to be approved by the County Education Committee.

In making the appointments preference will be given to candidates who have—

- (1) Enjoyed special opportunities for the study of the diseases children;
- (2) Had some definite experience in school hygiene; and
- (3) Had adequate training in State Medicine, or held a diploma in public health.

The appointments will be subject to three calendar months' notice on either side, to expire on the last day of any calendar month. Applications, endorsed "School Medical Inspector," accompanied by copies of not more than three testimonials, must be sent not later than Wednesday, the 1st October, 1919, to the undersigned, from whom forms of application (to be completed in candidate's own handwriting) can be obtained.

Canvassing, directly or indirectly, is prohibited and will disqualify.

A. J. DAWSON, Director of Education.

Shire Hall, Durham, 12th September, 1919.

(No. 54, 1919.)

**Princess Alice Hospital, Eastbourne.**

Applications are invited for the post of Male **RESIDENT MEDICAL OFFICER**. Candidates must be unmarried, fully qualified, and able to commence duties on the 1st November. The appointment is for six months and may be extended. Salary at the rate of £175 per annum. There will be ample time for reading. Applications, stating age, qualifications, and accompanied by not more than four recent testimonials, should be sent to the Hon. Secretary (from whom further particulars may be obtained) not later than Saturday, 4th October.

**Hospital for Consumption and**

**DISEASES OF THE CHEST**, Mount Pleasant, Liverpool.—The Committee of the Hospital invite applications for the post of **ASSISTANT MEDICAL OFFICER and PATHOLOGIST**. Salary £175 per annum (non-resident), with liberty to private practice.

Candidates must be Graduates of a British or Irish University or Members of the Royal College of Physicians.

Applications, with copies of three recent testimonials, to be sent in, endorsed "Assistant Medical Officer," not later than the 5th prox. to the Secretary, 70, Mount Pleasant, Liverpool.

**Birmingham Municipal Anti-Tuber-**

**CULOSIS CENTRE.**—Applications are invited from registered Medical Practitioners, between the ages of twenty-five and forty years, who are experienced in the Diagnosis and Treatment of Tuberculosis, for the post of **SENIOR ASSISTANT TUBERCULOSIS OFFICER**, at a salary of £650 per annum. Candidates must have held a resident appointment in a General Hospital for six months, and must also have held a recognised Tuberculosis appointment for at least one year.

Applications, on a form to be obtained from the Chief Tuberculosis Officer, 44A, Broad-street, Birmingham, with copies of three recent testimonials, should be received not later than Sept. 30th, 1919.

**East Riding Education Authority.**

**SCHOOL DENTIST.**—The Authority invite applications for the appointment of a School Dentist at a salary of £350 per annum; at present there is a bonus of £65 per annum. Necessary out-of-pocket and travelling expenses will be paid.

The officer appointed will be required to devote the whole of his time to the service of the Committee, and to act under the directions of the Chief School Medical Officer.

Applications, stating age, qualifications, and experience, together with copies of recent testimonials, to be sent to me not later than 30th Sept.

JOHN BICKERSTETH,

Clerk of the East Riding Education Authority.

**West Riding County Council.**

**ASSISTANT RESIDENT MEDICAL OFFICER.**—The County Council of the West Riding of Yorkshire invite applications for the appointment of an Assistant Resident Medical Officer for the Middleton-in-Wharfedale Sanatorium, near Ilkley.

Salary £325 per annum.

Further particulars and form of application may be had from the undersigned, by whom all applications, together with copies of not more than three recent testimonials, must be received not later than the 6th October, 1919.

FRANCIS ALVEY DARWIN, Clerk of the County Council.

County Hall, Wakefield, September, 1919.

**The Royal Infirmary, Sheffield**

(377 beds).

OPEN ELECTION.

Wanted, an Ear, Nose, and Throat **HOUSE SURGEON**. Salary £150 per annum, with board and residence.

The duties of the officer to be elected will include work in the In- and Out-patient Departments, under the supervision of the Honorary Medical Staff.

Applications, which are invited from persons who must be fully qualified, should be sent to the Secretary immediately, stating age, qualifications, and any previous experience.

By order.

Board Room, August, 1919.

JNO. W. BARNES, Secretary.

**General Infirmary at Leeds.**

Wanted:—**RESIDENT MEDICAL OFFICER**. Salary £150 per annum, with board, residence, and laundry.

**RESIDENT OBSTETRIC OFFICER**. Salary £50 per annum, with board, residence, and laundry.

**RESIDENT MEDICAL OFFICER** at the Ida and Robert Arthington Hospitals. Salary £60 per annum, with board, residence, and laundry.

**TWO HOUSE PHYSICIANS.** } Without salary, but with board, resi-

**TWO HOUSE SURGEONS.** } dence, and laundry.

Candidates must be legally qualified and registered, and applications, with testimonials, should be addressed to the Secretary to the Faculty at the Infirmary.

By order.

9th September, 1919.

FRED J. BRAY, General Manager.

**Cumberland Education Committee.**

**SCHOOL DENTISTS.**—The Committee propose to appoint Two Whole-time Dentists, and applications are invited from qualified and registered Dentists (men and women).

The duties will primarily consist in examining the teeth of the school children in the county and in remedying dental defects.

Some work may also be necessary under the County's Maternity and Child Welfare Scheme.

Salary £350 per annum, rising to £400 by £25 annually, with reasonable travelling expenses.

Applications, which must be on the form provided, must reach the School Medical Officer, 43, Warwick-road, Carlisle, on or before the 11th November, and forms of application may be obtained from him, together with further particulars of the appointment.

Canvassing, directly or indirectly, will disqualify.

C. COURTNEYAY HODGSON, Secretary to the Committee.

The Courts, Carlisle, September, 1919.



**Cheltenham Eye, Ear, and Throat**  
FREE HOSPITAL.—Post of ASSISTANT SURGEON vacant.  
Salary £400. Apply, Hon. Sec.

**Whitehaven and West Cumberland**  
INFIRMARY.—Wanted, a RESIDENT HOUSE SURGEON.  
Salary £180 a year, with board, &c. Applications to the Secretary,  
Infirmary, Whitehaven.

**Borough Hospital, Birkenhead.**—  
Wanted JUNIOR HOUSE SURGEON, qualified. Duties  
include anaesthetics and casualties. Salary £170 per annum, with board  
and laundry, &c. Applications, with testimonials, to be sent to the  
Secretary at the Hospital.

**Huddersfield Royal Infirmary.**—  
Wanted immediately, a fully qualified Male ASSISTANT  
HOUSE SURGEON. Salary £100 per annum, with board, residence,  
and washing. Applications, stating age, with copies of testimonials,  
to be sent to Mr. J. BATE, Secretary, Royal Infirmary, Huddersfield.

**Bedford County Hospital.**—Wanted,  
a RESIDENT MEDICAL OFFICER, duly qualified in Medicine  
and Surgery, to act as House Physician for a term of six months  
Salary £150 per annum. Board, lodging, and laundry. Apply, stating  
particulars and three testimonials, to  
September 15th, 1919. THE SECRETARY.

**Grimsby and District Hospital**  
(50 beds).—Wanted immediately, a duly qualified HOUSE  
SURGEON. Salary £300 per annum, payable monthly, with board,  
residence, and laundry.  
Apply to E. BEN CHAPMAN, Prudential Chambers, Victoria-street,  
Grimsby.

**The Hospital for Sick Children,**  
Newcastle-upon-Tyne. (74 beds).—Applications are invited for  
the post of JUNIOR RESIDENT MEDICAL OFFICER. Salary £200  
per annum, with board, residence, and laundry. Duties to commence  
at once. Applications, stating age and copies of testimonials, to be  
sent to the Secretary, Mr. NEIL BRODIE, Star Buildings, 25, Northum-  
berland-street, Newcastle-upon-Tyne.

**Warneford, Leamington, and South**  
WARWICKSHIRE GENERAL HOSPITAL, Leamington  
Spa.—Wanted, a RESIDENT HOUSE SURGEON, fully qualified and  
registered. Salary per annum £200, with board, residence, and laundry.  
Applications, accompanied by not more than three recent testi-  
monials, must reach the undersigned not later than the 1st October  
next.  
C. R. W. OFFER,  
House Governor and Secretary.

**Hereford County and City Mental**  
HOSPITAL.—Wanted, a SENIOR ASSISTANT MEDICAL  
OFFICER (Male), age under thirty-five, single, doubly qualified, to  
live in. Experienced in treatment of Mental Diseases. Salary £350 per  
annum, increasing by annual increments of £25 to £400, with board,  
lodging, washing, and attendance. Laboratory facilities are available.  
The appointment is under the Asylum Officers' Superannuation Act,  
1909.

Applications, stating availability, with copies of not more than three  
recent testimonials, to be sent to the Medical Superintendent, The  
Mental Hospital, Burghill, nr. Hereford.

**Derbyshire County Council.**—  
MATERNITY and CHILD WELFARE MEDICAL OFFICER.  
Applications are invited for the above position at a commencing  
salary of £450 per annum, together with travelling and reasonable  
out-of-pocket expenses.

Particulars of duties and forms of application may be obtained from  
the undersigned, to whom they must be returned, filled in, together  
with copies of not more than three recent testimonials, on or before  
Friday, October 10th, 1919.

SIDNEY BARWISE, M.D., County Medical Officer of Health.  
New County Offices, Derby, September 23rd, 1919.

**Derbyshire Education Committee.**—  
SCHOOL MEDICAL OFFICER.—Applications are invited for  
the above position at a salary of £450 per annum, rising by annual  
increments of £25 to £600 per annum, together with £100 per annum  
for travelling expenses.

Particulars of duties and forms of application may be obtained from  
the undersigned, to whom they should be returned, filled up, together  
with copies of not more than three recent testimonials, on or before  
Friday, October 10th, 1919.

SIDNEY BARWISE, M.D., School Medical Officer.  
New County Offices, St. Mary's Gate, Derby,  
September 23rd, 1919.

**The Royal Infirmary, Hull.**—Senior  
HOUSE SURGEON wanted. The Hospital contains 125 surgical  
beds. There are in addition a Resident House Physician, Assistant  
House Surgeon, and two Casualty House Surgeons. Candidates must  
be fully qualified, registered, and unmarried, and preference will be  
given to such as have previously held a similar appointment. The  
salary is £200 per annum, with board and furnished apartments. The  
selected candidate will be required to enter into an agreement to remain  
not less than one year and to give or receive three months' notice to  
terminate his engagement. Applications, stating age, qualifications,  
and previous experience, with copies of testimonials, to be sent  
addressed "Chairman, House Committee."

BENJAMIN BROOKS, Secretary.

**The Gloucestershire Royal Infirmary**  
and EYE INSTITUTION.—There is a vacancy for an ASSISTANT  
SURGEON on the acting Medical Staff of this Institution.

By the rules of the Hospital "the Assistant Surgeon shall be a Fellow  
or Member of the Royal College of Surgeons of England, or a Fellow or  
Licentiate of the Royal Colleges of Surgeons of Ireland or Edinburgh,  
or a Graduate in Surgery of one of the Universities recognised by the  
Medical Council of the United Kingdom."

Candidates should send in their applications, diplomas, and testi-  
monials, under cover to the Secretary, on or before Wednesday, the  
29th day of October next.

Members of the acting Medical Staff are appointed by the Election  
Committee.  
Gloucester, September 25th, 1919. G. HURFORD, Secretary.

**City of Sheffield**—Wanted, Assistant  
TUBERCULOSIS OFFICER, to live at Winter Street Tuber-  
culosis Hospital, and to devote his whole time to the Municipal Tuber-  
culosis Scheme.

Salary £300 per annum, rising to £400 per annum by annual  
increments of £50, with board, residence, and laundry.

Applications, stating age, qualifications, and experience, with copies  
of testimonials, to be sent on or before October 8th, to the Medical  
Officer of Health, Town Hall, Sheffield.

**City of Sheffield.**—Education Com-  
MITTEE.—Appointment of SCHOOL DENTAL SURGEONS.—  
Applications are invited from duly qualified Dental Surgeons for  
appointment as School Dental Surgeons to the Education Committee.  
Salary to commence at £400 per annum, rising to £450 by annual  
increments of £25, with opportunity of increasing the amount by  
evening work at the Clinic.

The persons appointed will be required to devote the whole of their  
time to the services of the Committee, and to act under the super-  
intendence of the Chief School Medical Officer.

Forms of application may be obtained from the Secretary, to whom  
they should be returned not later than 13th October, 1919.

Personal canvassing will disqualify.

PERCIVAL SHARP, Director of Education.  
123, Hawley-street, Sheffield, 22nd September, 1919.

**Royal Berkshire Hospital.**—The  
Board of Management invite applications for the appointment  
of HONORARY ASSISTANT PHYSICIAN.

Candidates must be Fellows or Members of the Royal College of  
Physicians, London, or Medical Graduates of one of the Universities of  
Great Britain or Ireland, and must be registered.

The elected candidate will be appointed for the period ending on the  
third Tuesday in January, 1920, but will be eligible for re-election.

Candidates are required to provide 65 copies of their application, and  
of not more than four recent testimonials.

The applications and testimonials must be addressed to the Secretary,  
and reach him not later than October 11th, 1919.

The election will take place on October 21st, 1919.

Canvassing by or on behalf of the candidate will disqualify him.  
Reading, 27th September, 1919. HERMAN BURNBY, Secretary

**Surrey Lunatic Asylums Visiting**

COMMITTEE, Brookwood, near Woking.—Appointment of  
FIRST ASSISTANT MEDICAL OFFICER.—Applications are invited  
for the post of First Assistant Medical Officer under the Surrey County  
Asylums Committee from duly registered Medical Practitioners who  
have had previous experience in Asylum work.

Salary, if married man is appointed, £600 per annum, rising by  
annual increments of £25 to a maximum of £700 per annum, together  
with a house free of rent, rates and taxes; if a single man, £480, rising  
by annual increments of £25 to £580, with board, lodging, attendance,  
and laundry.

The appointment will be subject to the rules and regulations affecting  
the Asylum and will be determinable by three months' notice on  
either side.

Applications upon the prescribed form, which can be obtained from  
the undersigned, may be accompanied by copies of not more than three  
recent testimonials (which will not be returned), must be sent not later  
than the 8th October, 1919.

R. A. HODGES, Clerk to the Committee.  
County Hall, Kingston-on-Thames, 22nd September, 1919.

**Borough of Sutton Coldfield.**—

Applications are invited for the appointment of MEDICAL  
OFFICER OF HEALTH and SCHOOL MEDICAL OFFICER.

Area of Borough ... .. 13,030 acres.  
Estimated Population ... .. 22,000.  
Rateable Value ... .. £143,565.

Schools—10 in number. School population about 2,400.

An office is provided in the Council House in connexion with the  
work of the Medical Officer of Health, to be used jointly by him and  
the Sanitary Inspector.

Office accommodation will also be provided at the Children's Welfare  
Centre in Holland-street, where the work of the School Medical  
Service, Infants Welfare, Dental Clinic, &c., will be carried on.

It is distinctly understood that the office of Medical Officer of Health  
and School Medical Officer will be a first charge on the time of the  
person appointed. He will be responsible for the organisation and  
supervision of the work of both services (including Infant Welfare, &c.),  
and have control of the Sanitary Inspector and his assistants, and the  
School Nurses and Health Visitors, with a view to the proper coordina-  
tion of these services, to be carried out so as to comply with the  
Statutes and the Regulations of the Government Departments con-  
cerned. He will attend and report to appropriate Committees of the  
Council, and prepare such Statistics, Reports, &c., as may be required  
by them or the various Government Departments. Salary according to  
experience and qualifications.

Applications, with copies of three recent testimonials, to be addressed  
on or before the 18th October, 1919, to  
Sutton Coldfield. R. A. REAY NADIN, Town Clerk.



**Manchester Royal Infirmary.—**

**JUNIOR ANÆSTHETIST.**—The Board of Management of the Manchester Royal Infirmary invite applications for the above office. Applicants must be fully qualified and registered. The appointment is for twelve months, but the holder of the office is eligible for re-election. Salary £200 per annum. Attendances five mornings each week.

Candidates must state age, and send applications and three testimonials to the undersigned not later than 9 A.M. on Saturday, 4th October, 1919.

By order,  
FRANK G. HAZELL, Gen. Supt. & Secretary.

Manchester Royal Infirmary, 23rd September, 1919.

**Scottish Western Asylums' Research**

**INSTITUTE.**—Applications are invited for the post of **DIRECTOR.** Salary commences £600. Candidates must be skilled in modern clinical and laboratory methods and technique, and be capable of undertaking and directing Research Work in Mental and Nervous Affections.

Applications, stating qualifications and experience, to be sent to the Secretary, Dr. J. H. MACDONALD, Hawkhead Asylum, Cardonald, Glasgow, from whom all further particulars may be obtained.

**The Glasgow Eye Infirmary.—The**

**Directors** invite applications for the appointments of **RESIDENT HOUSE SURGEON** and **RESIDENT ASSISTANT HOUSE SURGEON.** Salary for House Surgeon £100 per annum, and Assistant House Surgeon £75 per annum, both with apartments and board. The gentlemen appointed will enter upon duty on 30th October next or as may be arranged. Applications, in writing, with copy testimonials, should be lodged with the undersigned.

HAROLD J. BLACK, Secretary.

88, West Regent-street, Glasgow, 18th September, 1919.

**The Carnegie Dunfermline Trust.—**

**SCHOOL MEDICAL OFFICER.**—Applications are invited for appointment as Assistant School Medical Officer (Man) at a salary of £400 per annum, rising by annual increments of £25 to £500. The duties will include the examination and treatment of school children and the giving of a course of lectures in the Dunfermline College of Hygiene and Physical Education. Candidates should state any special experience they may have of work bearing upon the treatment of children, such as Kye, Ear, or X-Ray work, and should give particulars of their military service (if any) and of any disability from which they suffer as a result of such service.

The Officer appointed will be required to devote the whole of his time to the work, and to act under the direction of the Chief Medical Officer.

Applications, stating age, qualifications, and experience, together with one copy of not more than three recent testimonials, should be sent not later than 30th September, to the Secretary, Carnegie Dunfermline Trust, Abbot-street, Dunfermline.

Sept. 10th, 1919.

**Matron, Assistant, wanted for Glasgow**

**DISTRICT MENTAL HOSPITAL, Gartloch, Gartcosh.** Candidates should hold the Certificate of the Medico-Psychological Association for training in Mental Diseases, and preference will be given to one with General Training. Salary to commence £113, with board, lodging, laundry, and uniform. Apply, stating age, experience, and where trained, to Medical Superintendent.

**Principal Medical Officer.—Depart-**

**MENT OF PUBLIC INSTRUCTION, NEW SOUTH WALES.**—Salary £900 per annum. Professional Division. Duties to conduct and supervise medical examination of schools and school pupils throughout the State, organise and direct school travelling, hospital and school dental clinics, and generally act as Medical Adviser to the Department. Applicants must be duly qualified Medical Practitioners. Preference will be given to a suitable applicant who is registered in New South Wales and has served with the A.I.F.

Applications, stating age, qualifications, experience, &c., should reach the Secretary, Public Service Board, Sydney, not later than 10th November, 1919.

AGENT-GENERAL FOR NEW SOUTH WALES.

Sydney House, 26, Cockspur-street, London, S.W. 1,  
8th September, 1919.

**The Secretary of State for the Colonies**

announces vacancies for pensionable posts of **MEDICAL OFFICERS** in the Occupied Territory of **GERMAN EAST AFRICA.**

The salary is on the scale of £400-£20-£500 a year, with duty allowance of £40 a year, and after six years' service £525-£25-£600 a year, with duty allowance of £50. War bonus is granted at present at the rate of £55 per annum to unmarried officers and £105 per annum to married officers.

The Senior appointments in the Medical Department are those of Senior Medical Officer on the scale of £600-£25-£750, with duty allowance of £60, and of Deputy Principal Medical Officer, Senior Sanitary Officer, and Principal Medical Officer, the scales for which are not yet determined.

Particulars as to leave and pension may be had on application. Free quarters are provided or an allowance is given in lieu, and free first-class passages to and from East Africa are provided on first appointment and on leave.

Medical Officers are permitted to take private practice on the understanding that they give precedence to their official duties.

Intending candidates should write to the Private Secretary for Appointments, Colonial Office, Downing-street, S.W. 1.

No testimonials, &c., should be sent in until the candidate has received a form of application from the Colonial Office.

Downing-street, Sept. 9th, 1919.

**Wanted, a Medical Officer for an**

Expedition proceeding to Gold Coast (West Africa). Must be fully qualified and experienced. Age twenty-five to thirty. Salary on a twelve months' agreement, £500 per annum, with free quarters, travelling out and home. Medical certificate of fitness to serve in Tropics required.—Write to G. Alexander, Capel House, 62, New Broad-street, London, E.C.

**Ship's Surgeon. — Messrs. Elder**

Dempster and Co., Limited, have a few vacancies for Surgeons in their West African Service. Pay £20 per month. Fees allowed for attendance on passengers. Length of voyage varies from six to ten weeks, according to particular route.—Apply, Medical Superintendent, Messrs. Elder Dempster and Co., Limited, Colonial House, Liverpool.

**Wanted, Locum Tenens. Good**

General Practitioner for Doctor in Pietermaritzburg February to October 1920.—Particulars, apply, "Natal," Post Office, Drottwich.

**Wanted, Assistant Medical Officer in**

London Private Asylum. Salary £300 per annum. Mental experience required.—Address, No. 555, THE LANCET Office, 423, Strand, W.C. 2.

**Assistant required immediately in**

good-class Practice, Thames Valley. £400, all found, and half Midwifery fees.—Address, No. 542, THE LANCET Office, 423, Strand, W.C. 2.

**Locum Tenens Provided**

at short notice.

Apply to Mr. PERCIVAL TURNER,

the oldest and only Agent who for forty years, without agency fee to Principals, has supplied Practitioners with reliable substitutes,

4 & 5, ADAM STREET, ADELPHI, STRAND, W.C. 2.

Telegrams: Epsomian, London. Telephone: Gerrard 399.

After 5 P.M.—Tel. Epsom 695.

**Locums can be had for Holidays if**

booked at once.—Lee & Martin, Ltd., 93, Hall-road, Handsworth, Birmingham. Telegrams: "Locum, Birmingham." Telephone: 191 Northern.

**Locum Tenens Provided**

at SHORT notice.

APPLY TO

ARNOLD & SONS

(J. E. ARNOLD, E. R. ARNOLD),

Surgical Instrument Manufacturers,

ESTD. 100 YEARS,

MEDICAL TRANSFER DEPARTMENT,

6, GILTSPUR STREET, LONDON, E.C. 1.

Telegrams: "Instruments, London." Telephone: 5240 City (3 lines).

**M.B., B.C. (Camb.) requires Part-**

time Work in London, while working for D.P.H.—Address, No. 523, THE LANCET Office, 423, Strand, W.C. 2.

**M.B. requires Part time Work in**

Liverpool or district while working for D.P.H.—Address, No. 541, THE LANCET Office, 423, Strand, W.C. 2.

**Partly qualified Gentleman wants a**

post as a MEDICAL ASSISTANT anywhere.—Address, No. 544, THE LANCET Office, 423, Strand, W.C. 2.

**F.R.C.S., having recently relinquished**

General and Surgical Practice, desires Full-time Work till end of year. Would consider Institution work, assisting Surgeon, taking over General Practice, or looking after Death Vacancy.—Address, No. 546, THE LANCET Office, 423, Strand, W.C. 2.

**M.D., aged 35, desires Assistantship**

with view to Partnership or Succession, in good-class or mixed Practice. Highest social and professional references.—Address, No. 547, THE LANCET Office, 423, Strand, W.C. 2.

**Late H.P. (Bart.'s), passed M.B.,**

B.C. (Cambridge), married, requires ASSISTANTSHIP, preferably with view, in Country Practice. Within 80 miles London preferred.—Address, No. 553, THE LANCET Office, 423, Strand, W.C. 2.

**Eye Specialist, M.B., 4 years assistant**

in Paris ophthalmic hospital, desires situation as ASSISTANT in Private Practice.—Address, No. 554, THE LANCET Office, 423, Strand, W.C. 2.



**Discharged N.C.O. seeks post as Lab. ASSISTANT.** Good working knowledge of Bacteriology. Excellent medium maker. Six years' experience—civil and military.—Address, No. 540, THE LANCET Office, 423, Strand, W.C. 2.

**Ex-Chief Sick Berth Steward, R.N.** (Pensioner) requires situation as DISPENSER, or any position of trust.—J. Y., 62, Beutham-road, South Hackney, E. 9.

**Lady Dispenser (Hall) requires post** with Doctor or Hospital. London preferred. Two and a half years' various experience. Free end of September.—Testimonials on application to Miss Warren, 17, Mildred-avenue, Watford.

**Lady, Graduate and experienced** driver, seeks post to Drive Doctor's or private Car, and do some Secretarial Work. North London. Neighbourhood of Highgate preferred.—Apply, T., 3, North-grove, Highgate, N. 6.

**Chauffeuse with Car.**—Lady resident in London, with own Car, would be glad to act as Chauffeuse whole or part time. Medical or Professional man preferred. Careful and experienced driver.—Write, giving particulars, to "Car" 372, care Deacons. Leadenhall-street, E.C. 3.

**Wanted immediately, a Third Partner** in an old-established Practice near Liverpool. Share of over £250 for sale, with ample scope for increase. No clubs. No panel. Early prospect of increased share. Premium £900.—Address, No. 543, THE LANCET Office, 423, Strand, W.C. 2.

**Norfolk.**—A Partner required in an old-established General Practice, situated in a small county town, producing over £1650 per annum. Panel list 1400. Fees 2s. 6d. to 12s. 6d.; Midwifery 30s. to 5 guineas. Population 5000. Excellent house, containing five bedrooms, &c., one acre of garden, and garage; rent £60 per annum. Premium one and a half years' purchase for Half Share.—Quote Folio 893, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

**Wanted, in Suffolk or adjacent** county, on or near Coast preferred, a PARTNERSHIP returning £800 and upwards by experienced Practitioner with means.—Details to 4031, Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

**Private Asylum or Borderland House.** PARTNERSHIP required by M.D., aged thirty-five, with nine years' experience in treatment of Nervous and Mental Diseases. Necessary capital available now. Highest social and professional references.—Address, No. 548, THE LANCET Office, 423, Strand, W.C. 2.

**Required, a Country Town or S. Coast** PRACTICE producing not less than £1000 per annum. A good house and garden essential. Advertiser can negotiate at once.—Send details in confidence to M.B., care of Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

**Wanted, North London, a large Cash** and Panel PRACTICE. Receipts not less than £10.0 per annum. Purchaser can settle at once.—Send full particulars in confidence to C., care of Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

**Wanted in London or near, General** PRACTICE of £1000 a year or more. Applicant is prepared to buy at once, and has ample means.—Apply, No. 3931, Mr. Percival Turner, 4, Adam-street, Adelphi, Strand, W.C. 2.

**Wanted by M.D., F.R.C.S., a** PRACTICE in nice part of Devon, with good house and garden. Small place with Cottage Hospital preferred. Income £600 to £900.—Apply, Blundell & Rigby, Walter House, 418-422, Strand, W.C. 2.

**Wanted, Middle-class Practice, with** or without panel, £800 to £1500 a year. In or near London preferred; other districts considered. Partnership would be entertained. Client can purchase at once.—Apply, Peacock and Hadley, 29, Craven-street, Strand, W.C. 2. (No charge unless sale effected.)

**Wanted by M.B., F.R.C.S., aged 34,** a PRACTICE or PARTNERSHIP in the South of England, with scope for Surgery. Income about £800. Now free.—Apply, Blundell & Rigby, Walter House, 418-422, Strand, W.C. 2.

**Wanted, Practices and Partnerships.** Messrs. ARNOLD & SONS, Surgical Instrument Manufacturers (Estbd. 100 years), are in urgent need of Practices and Partnerships for several of their Clients who are anxious to settle down at once.—Send full particulars, in confidence, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

**To Purchasers.**—Do not buy any Practice or Partnership without an investigation into books and other inquiries by an expert specially competent to conduct the same. Forty years' personal attention to such inquiries has given Mr. PERCIVAL TURNER an unique ability to advise in all cases.—Terms and full particulars free on application to 4, Adam-street, Adelphi Strand, W.C. 2. Telephone: 399 Gerrard. Telegram: Epsomian, London.

**For Disposal, Practices or Partner-**SHIPS.—Messrs. ARNOLD & SONS, Surgical Instrument Manufacturers (Estbd. 100 years), have been instructed to privately dispose of a large number of really good Practices and Partnerships. Gentlemen are requested to state their requirements and amount of capital available. No charge to purchasers.—Address, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

**For Disposal.**—A really good Practice is not always to be had directly, but Mr. PERCIVAL TURNER (with forty years' personal experience) can generally offer applicants something suitable on being furnished with details of their requirements. Nearly all the best Practices are sold by him without being advertised.—Full information free of charge on application, personally or by letter, to 4, Adam-street, Adelphi, Strand, W.C. 2.

**Partnership introduction of 6 to 18** months to good-class Suburban PRACTICE doing at present over £1600 a year. Very desirable investment and personally known.—For details, apply to Mr. Herbert Needea, 199, Piccadilly, W. 1.

**Partnership.**—Share for Disposal in good-class, old-established, Non-Panel PRACTICE in Military-Naval centre in South of England. Good schools, Hospital, &c. Income of Share about £1200 per annum. Premium two years' purchase. Incoming partner preferably Surgeon, married, experienced, and with necessary capital.—Apply, with personal particulars, to No. 489, THE LANCET Office, 423, Strand, W.C. 2. No agents.

**Death Vacancy.**—Midland Spa.—Large Panel and Private PRACTICE.—Full particulars, apply Lee and Martin, Ltd., Medical Agents, 93, Hall-road, Handsworth, Birmingham.

**Partnership.**—Seaside Resort, South WALES.—Old-established Mixed PRACTICE. Average net receipts £1953. One-third or Half for disposal. Transferable appointments about £160. Panel 2000. Fees 3s. 6d. to 12s. 6d. Ample scope for surgery. One year's purchase, part down, remainder by easy instalments.—Lee & Martin, Ltd., Medical Agents, 93, Hall-road, Handsworth, Birmingham.

**Country Practice.**—Staffordshire.—Average receipts £1275 per annum. Panel about 600. Good fees. Rent £32; ample accommodation, including seven bedrooms and excellent surgeries. Good garden. One year's purchase.—Lee & Martin, Ltd.

**Staffordshire.**—Industrial and General PRACTICE. Receipts £1178. Panel 1600, increasing. Transferable appointments. Introduction. One or two years' Partnership. Good fees. Rent £60, or house for sale, £1500. Ample accommodation. £1500 to sell outright, or £750 for Half Share.—Lee & Martin, Ltd.

**Country Practice.**—Unopposed.—LINCOLNSHIRE.—Receipts £698. Panel 450. Good scope. Good fees. Rent £30. Lease. Garden. Sport and educational facilities. £600 down, or £800 in three instalments.—Lee & Martin, Ltd.

**Riverside Town.**—Old-established PRACTICE in Worcestershire. £1066. Panel 475. Fees 2s. 6d. to £1 1s. House for sale. Ample accommodation. £1200.—Lee & Martin, Ltd.

**Shropshire.**—Country Practice.—£473. Panel 300, increasing. Reasonable offer.—Lee & Martin Ltd.

**Cheshire.**—£750.—Panel 600. Good fees. One opponent. Rent £21. Good accommodation. Small garden. £500, half down, balance by arrangement.—Lee & Martin, Ltd., Medical Agents, 93, Hall-road, Handsworth, Birmingham.

**North of England.**—Nearly £1000 a year in a prosperous business Town on Coast. Panel over 800. Good house and garden; rent £80. Good schools.—Apply, No. 6629, Mr. Percival Turner, 4, Adam-street, Adelphi, Strand, W.C. 2.

**Lancs.**—An old-established General PRACTICE situated in a thickly populated industrial district. Receipts £1000. Panel list 1200. Fees 2s. 6d. upwards plus medicine. Midwifery 30s. 6d. to 42s. Nice house, containing four bedrooms, &c., large garden and garage; rent £55 per annum. Premium one year's purchase.—Quote Folio 1119, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).



**London, W.—For Disposal in residential district.** £480 a year. Panel 300. Opposition below average. Easily worked. Good house; rent £85. Good scope for a younger man. Price £600.—Apply, No. 6618, care of Mr. Percival Turner, 4, Adam-street, Adelphi, Strand, W.C. 2.

**Yorks.—Old-established Practice for Sale** in lovely district, owner retiring. Detached house, large garden, tennis court, &c.; rent £100. Receipts nearly £1200. Great scope. Price £2000, part deferred.—Apply, Manchester Medical and Scolastic Association, 8, King-street.

**South Wales.—£1500 a year.—Residential neighbourhood of large town.** Panel 1000. Appointments worth £80-£90. Good corner house with garage to be sold, £1000. Premium for goodwill, one and a half years' purchase.—Apply, No. 6617, care of Mr. Percival Turner, 4, Adam-street, Adelphi, Strand, W.C. 2.

**Kent.—A General Practice situated in** a thickly populated industrial district. Receipts over £770. Panel list 1170. Fees 2s. 6d. upwards. Midwifery 31s. 6d. to £5 5s. Villa residence containing 8 rooms, &c., three-quarters of an acre garden, garage, &c.; rent £60 per annum. Premium £750.—Quote Folio 1090, Arnold & Sons, Transfer Dept., 6, Giltspur-street, London, E.C. 1 (opposite St. Bartholomew's Hospital).

**Unusual Opportunity.—Wales.—**Excellent chance for Welshman. Unopposed for many miles. Good doctor's house available. Panel 600, and other appointments to be had. Prospect of about £1000 a year. Premium only £150.—Apply, No. 6624, Mr. Percival Turner, 4, Adam-street, Adelphi, Strand, W.C. 2.

**South Midlands.—An unopposed Country PRACTICE** about fifty miles from London. In good agricultural and pleasant residential district. Receipts £1000 a year. Small house; rent about £40. Station in village. Efficient introduction given. Premium £1100.—Apply, Peacock and Hadley, 19, Craven-street, Strand, W.C. 2.

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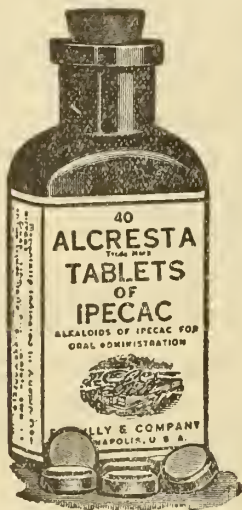
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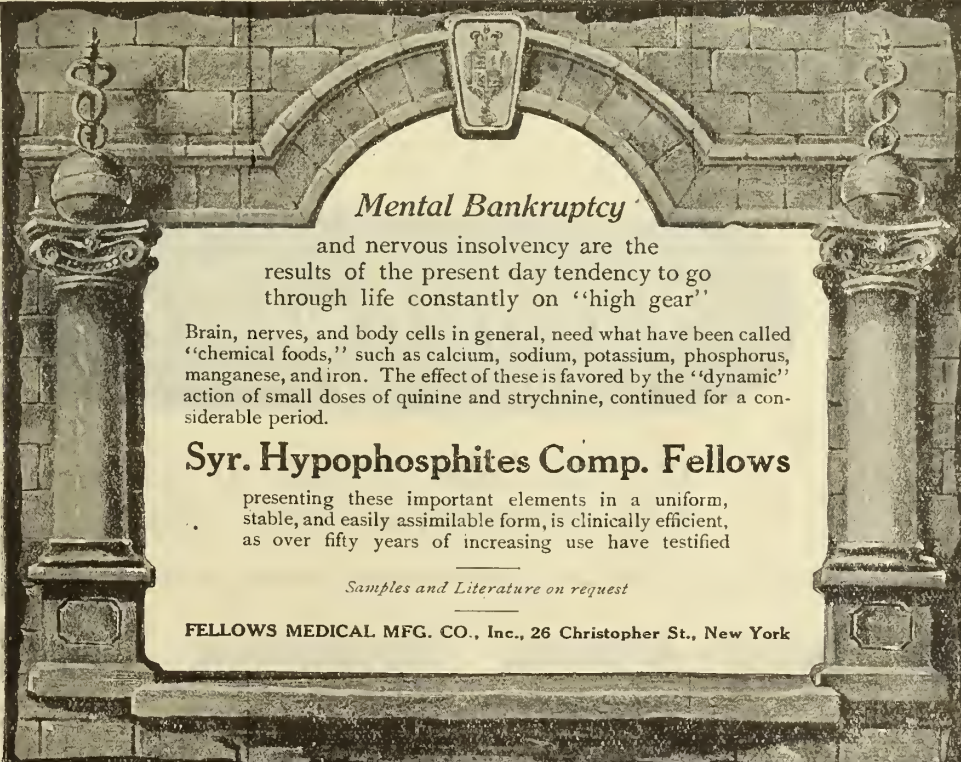
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