

COUNTWAY LIBRARY



HC 31RP 6

BOSTON  
MEDICAL LIBRARY  
8 THE FENWAY







Digitized by the Internet Archive  
in 2016

<https://archive.org/details/journallancet6619nort>

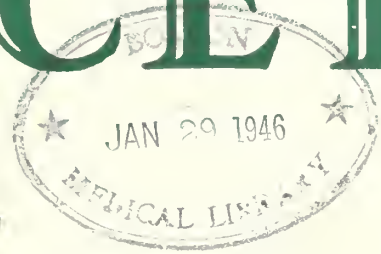






107

# The JOURNAL LANCET



New Series  
Vol. LXVI, No. 1

January, 1946

Single Copies 25c  
One Year \$2

SEROLOGY AND OBSTETRICS, by <i>R. T. La Vake, M.D.</i> . . . . .	1
FREE PLASMA SERVICE IN NORTH DAKOTA, by <i>Melvin E. Koons, M.P.H.</i> . . . . .	4
SHORT LEG BACKACHE, by <i>John M. Butler, M.D.</i> . . . . .	10
SOME COMMON SKIN DISEASES AND THEIR TREATMENT, by <i>Herbert C. Leiter, M.D.</i> . . . . .	12
Book Reviews . . . . .	18
Editorials:	
THE MEDICAL OUTLOOK IN THE NEW YEAR . . . . .	19
A.M.A. HOUSE OF DELEGATES MEETING . . . . .	20
Announcements . . . . .	20
Meet Our Contributors . . . . .	21
News Items . . . . .	22
MEASURING THE COMMUNITY FOR A HOSPITAL . . . . .	24
Necrology . . . . .	26
Physicians Licensed by Minnesota State Board November 9, 1945 . . . . .	29

Copyright 1946 by Lancet Publishing Co.

*Serves the Medical Profession of*  
**Minnesota, North Dakota, South Dakota, and Montana**

~~~~~  
76th Year of Publication

# Doctor—Judge

---

PHILIP MORRIS suggests *you* judge . . . from the evidence of your own *personal* observations . . . the value of PHILIP MORRIS Cigarettes to your patients with sensitive throats.

PUBLISHED STUDIES\* SHOWED WHEN SMOKERS CHANGED TO PHILIP MORRIS SUBSTANTIALLY EVERY CASE OF THROAT IRRITATION DUE TO SMOKING CLEARED COMPLETELY, OR DEFINITELY IMPROVED.

But naturally, no published tests, no matter how authoritative, can be as completely convincing as results you will observe for yourself.



## PHILIP MORRIS

PHILIP MORRIS & CO., LTD., INC.  
119 FIFTH AVENUE, NEW YORK, N. Y.

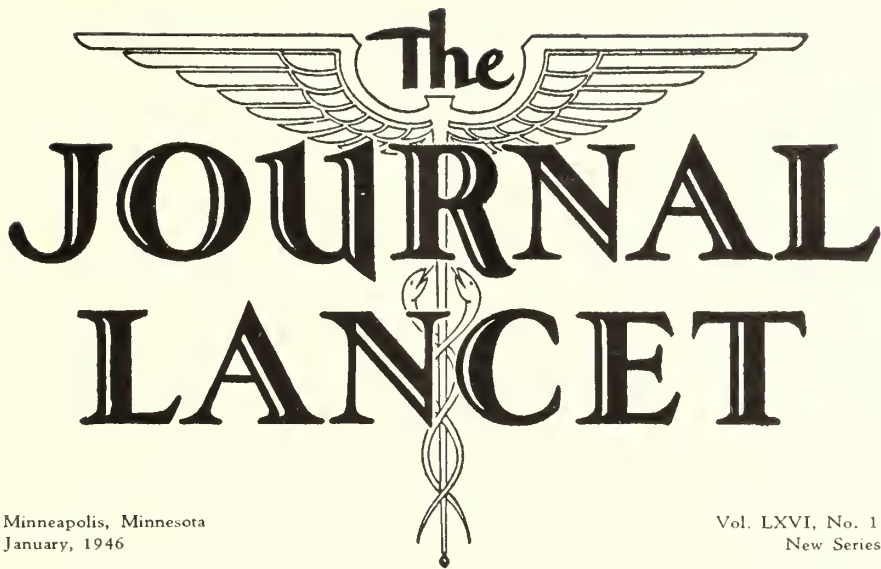
\**Laryngoscope*, Feb. 1935, Vol. XLV, No. 2, 149-154.

*Laryngoscope*, Jan. 1937, Vol. XLVII, No. 1, 58-60.

TO THE DOCTOR WHO SMOKES A PIPE: We suggest an unusually fine new blend—COUNTRY DOCTOR PIPE MIXTURE. Made by the same process as used in the manufacture of Philip Morris Cigarettes.

Publication Office, 514 Essex Building, 84 So. 10th St., Minneapolis 2, Minn.  
Entered as second-class matter at the postoffice at Minneapolis under the act of March 3, 1879.  
Published monthly by the Lancet Publishing Co.





Minneapolis, Minnesota  
January, 1946

Vol. LXVI, No. 1  
New Series

## Serology and Obstetrics

R. T. La Vake, M.D.

Minneapolis

**T**HE demand for a safe transfusion approach and an answer to the problems involved in erythroblastosis has led many men in the Central Northwest to attack these problems intensively. The result is the accumulation of a large pool of antibody findings under the supervision of Dr. R. W. Koucky, serologist and pathologist to Abbott Hospital, Minneapolis. The setup also provided an unusual opportunity for anyone interested in the associated problem of pregnancy toxemia. This paper gives an obstetrical interpretation of what the antibody titers seem to indicate, from the point of view of theory and practice.

The clinical, pathological, and serologic evidence that has increasingly converged in proof upon the fetal toxin hypothesis of pregnancy toxemia is familiar to all of you. It involves the work of Veit, Dienst, James Young, McQuarrie, Ottenberg, and Bartholomew and Colvin, to name but a few investigators. The proof was never conclusive because it failed to identify a specific toxin in the fetus against which, in the mother, an antitoxin could be demonstrated that showed a functional relationship with the fetal toxin.

Until 1936 the serologic approach had been unsatisfactory. Then Jonsson showed that one could often predict the future group status of the fetus by the titering of maternal antibodies. With an O group mother and an A group husband, the rise of the *a* antibody above average allowed the prediction of an A group child. A group B prediction could be made when the *b* antibody rose above average with a group B husband.

Now, these were the cases in which toxemia had been

found by obstetricians since 1919, and the phenomenon could be interpreted as a response of an antitoxin to a toxin. Many maintained that the A and B antigens could not be defined serologically as toxins, nor could the *a* and *b* antibodies be defined as antitoxins. They were by serologic definition merely simple antigens and agglutinogens, and antibodies and agglutinins. Even if one were serologically in error to the extent of interpreting them as possible toxins and antitoxins, how could one account for the many cases of toxemia in which no blood group incompatibility existed between child and mother? This had been the insistent question that led to the exploration of other fields of proof in the fetal toxin problem. Possibly the toxin was of a nature not demonstrable by blood group incompatibility. This line of thought led to the development of a maternal skin test, which, like the Mantoux test in tuberculosis, seemed to show that in pregnancy toxemia the mother was immunized to a specific toxin coming from the fetus. But this test did not identify the toxin, and it could be used only after the birth of the child.

Then came the discovery of the so-called Rh factor by Landsteiner and Wiener and the work of Levine, Katzin, and Burnham, showing the relationship of the Rh factor to erythroblastosis fetalis, abortions, stillbirths, and macerated fetuses. To the investigator of the toxemias of pregnancy these discoveries took on a much wider significance than was manifest in their obvious importance in erythroblastosis and blood transfusion. This discovery of the Rh factor furnished a possible answer to the insistent question mentioned above, and the work on erythroblastosis furnished further evidence in regard to the fetal toxin hypothesis by completing the circle of

the classical and accepted toxin-antitoxin mechanism. At first the Rh factor held the field, but it soon became apparent that the A and B antigens could bring about erythroblastotic injury and disaster when the Rh status of husband and wife was similar. It became apparent that the only reason why the Rh antigen or agglutinogen had not operated in the original setup of the blood groups was because its specific antibody, or antitoxin from the standpoint of disease, happened not to be inheritable. Had it been inheritable, our knowledge of the blood group setup would probably have been delayed many years, possibly until 1941.

It would seem that the mounting serologic and obstetrical evidence of forty years demands a reassessment of the genetic purpose of the blood groups and a change in definitions. It appears that the A, B, and Rh antigens function genetically as toxins, and their corresponding antibodies as antitoxins. These are their essential properties in the genetic setup, and thus, by the rules of logic, these properties must appear in their adequate definition. In nature, their properties as agglutinogens and agglutinins are used as secondary weapons in the genetic toxin-antitoxin battle. Here the red cells act just as do bacteria under antitoxin attack. Their original definition was conditioned by the nature of the experiments that brought about their definition, namely, the gross mixture of incompatible bloods, a situation which does not obtain in nature and against which the genetic mechanism was not set up. From the point of view of phylogenetic ontogeny it would seem that the A and B toxins were incorporated as inheritable long before their specific antitoxins were inheritable. By the same token, it would seem that the Rh toxin was incorporated as inheritable later than the A and B toxins, and too late for its antitoxin to become inheritable.

Now to get back to the Rh antigen. If this antigen is interpreted as a toxin, why is it that we find only a 30 per cent correlation between erythroblastosis and the manifestations of pregnancy toxemia? It may be suggested that the same law holds here that obtains in snake venom poisoning; namely, that, all things being equal, the manifestations of toxemia in the host vary directly with the strength and amount of the toxin and indirectly with the strength and amount of the generated or artificially administered antitoxin. Maternal antibody titers tend to show the functioning of this very law. Where the anti A, B, or Rh antibody titers tend to be low we see toxemia, but as soon as the fetus with its antibody absorptive power is removed the antibody jumps to many times its antepartum strength, with a rapid subsidence of toxic symptoms and signs. It may jump, for example, from 1-1000 antepartum to 1-100,000 five days postpartum. The highest jumps have been found in cases of erythroblastosis in which no toxemia was found, or at least noticed. One such case jumped from 1-8000 antepartum to 1-8,000,000-plus postpartum. Here the reasoned interpretation is that the antitoxin strength was high enough to protect the mother, but so high that it injured the fetus. This is the pattern. Only time and hundreds of observations can sustain this law as a functional generalization.

The studies of antibodies would seem to show that the link between toxemia of pregnancy and premature separation of the normally implanted placenta is the basic toxin-antitoxin setup. One of the interesting features of this approach is that you can check your outstanding cases of toxemia and premature separation for years back if the mothers and children are available.

A most interesting and obstetrically significant finding was that during an outstanding infection a titer might rise from ten to twenty times its former strength and then return to its preinfection level. This finding is significant from the point of view of the high correlation of infection and fetal death and abortion. It also furnishes some substantiation of the claim that so-called placental infarcts can be presumed to have taken place during an infection—an occurrence said to be impossible because bacteria and the usual signs of inflammation are not found in or around infarcts. It is probably a toxin-antitoxin reaction involving fetal red cell agglutination at the sites of breaks in the integrity of the placenta. This mechanism probably accounts for the high correlation between toxemia and placental infarction.

This seems to be one of the purposes of the agglutination function. It is probable that the comparatively few fetal red cells that gain access to the maternal circulation are agglutinated, and this agglutination merely marks the beginning of their demise and disintegration, as with the clumping of bacteria under antitoxin attack. The result is that the liberated toxin merely augments the toxin already in the serum. It is the toxin that injures the maternal cells. Thus we see in toxemia autopsies the effects of the toxins free from the obscuring features of agglutination and hemolysis seen in transfusion deaths. In transfusion deaths the agglutinating and hemolytic features, which usually cause rapid death, obscure the pathology caused by the toxin. We see a closer similarity between the pathology of pregnancy toxemia and the pathology found in delayed transfusion deaths.

Antibody studies lead to the following practical interpretations and applications: Where one finds that the A, B, and Rh status of husband and wife is similar or compatible, one can feel quite sure that toxemia, premature separation of the normally implanted placenta, or erythroblastosis will not supervene and that the likelihood of abortion is much reduced. Again, if blood is needed for the mother, the blood of the husband can be used without loss of time. Any variation from these ideal conditions forewarns one and indicates preparation well in advance for possible contingencies.

From the point of view of prophylaxis in toxemia and erythroblastosis, it is well to clear up all foci of infection and caution the mother to avoid all sources of general infection during pregnancy.

If you are following a toxemia serologically, do not be misled by a temporary amelioration of symptoms during an infection. It may be due to a rise in antibody strength. Instead, visualize the likelihood of gross infarction, with serious consequences when the antibody strength drops back to preinfection level and the necrosing infarcts increase the strength of the toxin attack.



Experience corroborates the lag between acute infection and the severe accession of toxemia. These patients should be watched daily.

The time will probably come when a safe antitoxin antepartum therapy can be worked out for toxemics. The direction is obvious. However, until the fetus is separated from the mother the danger of such an approach is also obvious. Such therapy would appear to be as reasonable as the transfusion of blood in erythroblastotic babies, in postpartum eclampsias, and in mitigating the deleterious effects of the toxin in postpartum recovery. In order to get an effectively high antitoxin titer, one needs to have at hand a woman who is recovering from a recent similar toxemia or an erythroblastotic experience, has reached the fifth day postpartum, when the titer is generally at its highest point, and whose blood is otherwise compatible. A large order, but it will be worked out.

From the point of view of transfusion, if a woman is Rh negative, beware the possibility of isoimmunization in even the first transfusion if she is pregnant or has ever been pregnant or transfused. More important still is the responsibility resting upon all to use Rh similar blood in the transfusion of all women, to prevent the possible consequences of isoimmunization. It has been estimated that transfusion is ten times more likely to isoimmunize a woman than is a pregnancy. Failure to follow this injunction may at any time before menopause destroy a woman's ability to bear viable children. The frequency of transfusion in the interests of therapy is increasing rapidly, and the end is not yet in sight.

Now as regards erythroblastosis, which is so rare, owing to nature's placental and other safeguards, that few make it a point to determine the A, B, and Rh status of the husband and wife as routinely as the Wassermann status. Obviously all can be determined with one drawing of blood.

For the past four years at Abbott Hospital, Minneapolis, the blood of every newborn has been examined for evidences of erythroblastosis by Dr. Koucky and his staff, not only to direct immediate treatment, but also to direct examination of the blood status of husband and wife. Until a definite fetal disaster occurs this seems to be the best approach for practical purposes. The tests are simple and can be carried out in any physician's office. Any infant is viewed with suspicion if the hemoglobin is 100 or under or the erythroblasts number over 10 per 100 leucocytes counted. After one fetal disaster, however, if in the next pregnancy the antibody at fault appears or the rising titer of the antibody points to the presence of another offending fetus—it must always be remembered that this fetus might be consonant with the mother—the most successful attack appears to be the separation of the fetus by cesarean as soon as it has reached the age of viability, with all preparations made for multiple transfusions as indicated. If, however, the Rh antibody is what is known as a blocked antibody, this approach is useless. In such a case the baby either dies before reaching the age of viability or will be born diseased beyond the aid of multiple transfusions. Dr.

Koucky states that in his serologic experience he has seen only one possible exception to this eventuality in about forty cases.

This brings up a problem that is troubling many men. We know what the ravages of pregnancy toxemia do to disable and shorten the lives of women. Why should we blithely believe that the horrible pathology exhibited by some erythroblastotic infants can be cleared up without leaving results that may cruelly handicap the child? There are many blood dyscrasias that may well stem from this very injury in fetal life. Our responsibilities are clear when the baby is born erythroblastotic. It is not so clear, however, that we should increase the danger to the mother by the use of cesarean section, in the face of the uncertain outcome for the child. In an attempt to solve this problem by analogy, experiments are being set up to determine the consequences to young rattlesnakes of giving them rattlesnake antivenom. These experiments will be watched with interest, for theoretically, if the hypothesis of the toxin antitoxin setup in human beings is correct, if it were biologically possible to attach a rattlesnake of low-grade virulence to its host as a fetus is attached to its mother, one could probably protect the host and injure or kill the snake *in situ* by the adequate use of antivenom in the host.

#### CONCLUSIONS

Genetics decrees that the relationship between fetus and mother is a toxin antitoxin relationship if the fetus contains toxic antigens not possessed by the mother. Three of the now known and lettered antigens, the A, B, and Rh antigens, are, by definition, toxins when functioning under these conditions.

Agglutination and further hemolysis of the fetal red cells, if they can gain access to the maternal circulation, are but steps in the further liberation of toxins, which augment the strength of the toxins already in the serum.

The symptoms, signs, and pathology of the toxemias are caused by one or more of these three antigens. There may be other antigens, yet unknown.

In erythroblastosis fetalis we are witnessing the destructive action of the corresponding specific antitoxins on the cells from which the toxins arose.

One of the functions of the placenta is to act as a first line of defense in the genetic toxin antitoxin battle. Owing to the anatomic structure of the placenta this line of defense is at times broken down. Nature attempts to seal these leaks by the formation of so-called infarcts.

An understanding of the toxin antitoxin relationship suggests the proper direction of therapy in toxemia, erythroblastosis, and delayed transfusion pathology.

If a woman is Rh negative, beware the possibility of isoimmunization in even the first transfusion, if she is pregnant or has ever been pregnant. A great responsibility rests upon all to use Rh similar blood in the transfusion of all females, to prevent the possible consequences of isoimmunization. Transfusion is ten times more likely to isoimmunize a woman than is a pregnancy. Failure to follow this injunction may at any time before menopause destroy a woman's ability to bear viable children.



# Free Plasma Service in North Dakota

Melvin E. Koons, M.S., M.P.H.  
Grand Forks, North Dakota

**F**REE blood plasma for civilian use is a reality in North Dakota. The State Health Department has conclusively shown during the past year that such a program is feasible on a state-wide basis and can be operated economically.

Recently a plan was worked out for the participation of the American Red Cross in civilian blood donor programs for civilian use throughout the nation. Details of the new Red Cross service were given in a report in the July 7, 1945, issue of the *Journal of the American Medical Association*. Because of the tremendous interest this report may arouse for the future establishment of civilian blood plasma programs by state agencies, a description of the experiences encountered in setting up the North Dakota program may be of value. The purpose of this paper, therefore, is to outline the establishment and operation of a state-wide blood plasma program which has proved to be a practical venture for a state health department.

There is no question of the value of blood plasma in the civilian practice of medicine. Many articles have appeared in the literature during the past several years to substantiate the fact that blood plasma and its derivatives are responsible for the saving of many lives. However, health authorities have debated whether or not such a program should or could be handled by health departments or whether it should be left to hospitals or some other medical agency. In a paper presented before the health officers section of the American Public Health Association in October 1944, Dr. J. B. Alsever<sup>1</sup> remarked: "It may be desirable for public health laboratories to undertake serum center projects. This may be accomplished by interesting and aiding large hospitals to expand their blood plasma banks to include such a service, or by establishing a plasma or serum service in a public health laboratory. It is also important that the reserves of pooled normal adult plasma developed to meet the needs of those injured in disasters be maintained after the war, so that injured civilians can receive the same excellent and prompt care that has been possible in most of the serious accidents occurring during the past year. This would seem to be the logical interest of health officers who should promote, properly control, and further such a program."

The development and maintenance of plasma reserves through a free state-wide distribution program for the treatment of the sick and injured is a real challenge to those charged with guarding the health of the state and the nation. North Dakota's program<sup>2</sup> started in March 1944 with an appropriation of funds by the state legislature for the purpose of establishing a free blood plasma service by the State Department of Health in cooperation with the University of North Dakota. The program embraces the procurement of blood from volunteer

donors, its processing to the desired state, and free distribution of the final product.

## TYPE OF BLOOD PLASMA

The first problem to be decided was in what form plasma should be prepared—liquid, frozen, or dried. In processing blood full consideration must be given the characteristics of the end product. Ideally, the composition of the stored plasma should be as much like that of the freshly prepared product as possible. In thinking of a state-wide service, factors to be considered are the degree of stabilization desired, the storage facilities available, and the amount of handling or transportation anticipated. The separated plasma can be stored in the liquid state, can be frozen, or can be dried from the frozen state.

Liquid plasma is the most economical to prepare; however, it does have certain disadvantages. In the liquid state plasma retains the colloidal properties necessary for the treatment of shock, but the more labile components, the prothrombin and fibrinogen concerned with blood coagulation, the complement and antibodies concerned with immunity, deteriorate with time. The possibility of contamination and failure to detect it clearly indicated the need for a more stable product which could be used safely under any and all rural conditions, since North Dakota is primarily a rural state. For an economical civilian program, therefore, liquid plasma has distinct limitations and was considered unsatisfactory for our purposes.

In the frozen state, the labile components of plasma are better preserved. Here the limitation is the inconvenience of storage and transportation for immediate emergency use. In order to transport frozen plasma from the central processing laboratory to points in the state, dry ice would have to be used and every precaution taken to insure that the product remained frozen at all times. Then, too, the depots would have to have adequate low temperature storage, which would limit the range of distribution. Also, frozen plasma has to be placed in a 37°C. water bath for at least thirty minutes before administration. For these reasons, frozen plasma was not considered a practical product for a state-wide program.

Dried plasma seemed to be the product of choice. In the dried state most of the labile components of plasma are preserved. This product is easily restored to the liquid state by the addition of the proper diluent, and the solubility time is less than three minutes, with a small amount of shaking. The dried plasma can survive a wider range of temperature variation without denaturing or precipitating protein than any of the other types of plasma. It can be more efficiently transported and does not require any special place for storage. The only

disadvantage of dried plasma is that restoration to the liquid state requires additional manipulation.

#### PROCESSING LABORATORY

The next important problem confronted in establishing the program was the choice of the type of equipment and laboratory facilities necessary for the production of dried plasma. A completely new laboratory was finally set up in three rooms located in the same building with the public health laboratory at the University of North Dakota. The standard apparatus\* used for dehydration is that developed by Dr. Max Strumia and Dr. John S. McGraw<sup>3</sup> of the Bryn Mawr (Pennsylvania) Hospital. This apparatus is capable of shell freezing and dehydrating over five thousand units of plasma per year.

The laboratory itself has one room for the refrigeration of whole blood, centrifuging of blood samples, and desiccation of the plasma; a second room which serves as a preparation and washing room; and a third room which is a sterility room for storing frozen plasma and pooling and dispensing plasma.

A closed system is used throughout the technical procedure and most of the supplies are reusable. Plasma is prepared in accordance with the requirements of the National Institute of Health and as outlined in the Office of Civilian Defense Manual.<sup>5</sup>

A small staff is adequate to operate a program such as we have in North Dakota. The entire program is administered by the Director of Laboratories of the State Health Department, who schedules and manages the donor clinics and controls the distribution of the final product. A trained bacteriologist is in direct charge of the plasma laboratory and is responsible for all technical procedures. One nontechnical assistant in the laboratory and a dishwasher complete the staff. The director and the bacteriologist in charge of the processing laboratory set up all clinics and assist local personnel in their operation. The local people, including the physician, furnish all other help on a volunteer basis.

#### BLOOD DONOR CLINICS

Blood is procured from volunteer donors only, without the payment of a fee. Prior to the institution of the program, no public donor clinics were ever held in North Dakota. The people naturally had heard and read of National Red Cross programs for the Armed Forces, but the Red Cross had not been in any part of the state. This meant that we should in no way interfere with the Red Cross program.

Before clinics were held an educational program had to be set up, stressing the fact that there was a need for a state-wide civilian plasma program and that all blood collected would be retained and used within the state. This was accomplished on a more or less local basis in the communities where clinics were to be held.

During the first year many problems presented themselves, and it is the belief of the writer that each state attempting such a program will have its own individual problems to consider. In North Dakota we found that such things as weather and time of the year were important factors to be considered. Difficulty was encountered

in trying to get people out to clinics during the severely cold months, and during the planting and harvest seasons communities were not responsive to holding clinics because people could not afford to lose time from the fields.

Under the North Dakota program local volunteer help is used to a great extent and we depend upon local physicians to collect blood from the donors. Thus far this system has proved satisfactory. Not only does it cut down the expense of the program; we find also that the donors are more responsive and prefer that their local physicians procure the blood. The only disadvantage is that this method limits the number of communities in which clinics can be held. Many small towns have requested an opportunity to hold a blood donor clinic but must be refused because they lack a physician. However, these communities have a depot in close proximity, so that plasma is available to them.

The enrollment of volunteer donors is always handled through some local organization. A date for holding a clinic or clinics is generally suggested by the director of the program. Usually some civic or commercial organization or the local hospital is selected as a sponsoring agency. In this way the clinic becomes a local function. The sponsoring agency is responsible for the enrollment of donors, the registration of donors at clinics, the furnishing of volunteer help to assist with the clinics, the selection of a suitable place for the clinic, the canteen service, and all publicity. The type of publicity varies in each community and depends a great deal on the sponsoring agency.

Clinics are held in easily accessible public buildings, such as churches, schools, memorial buildings, and hospitals. Hospitals are preferred when there is only one in a community, although some of our best clinics have been held in other public buildings. In the larger cities donors always seem a little hesitant about attending a clinic when it is held in a hospital, although this has not been found true in the smaller places. Volunteer help is obtained from nurses' aides, hospital staff nurses, student nurses, and trained nurses who have become housewives. We have had no difficulty in obtaining sufficient volunteer help to assist in running efficient clinics. On the appointed date the Health Department sends out a mobile unit, which carries all the necessary supplies for the operation of the clinic. Generally two technicians accompany the director and the unit to assist the local people in conducting the clinic. Clinics are generally held from 8:30 A.M. to 11:30 A.M. On some occasions evening clinics starting at 6:00 P.M. have been held. Our experience has shown that evening clinics are less desirable, because many of the donors fail to obey instructions and eat before appearing at the clinic. Plasma obtained from donors who have eaten, especially those who have eaten fatty foods, within four hours of reporting at the clinic is generally not satisfactory for use.

The size of any given clinic depends a great deal on the quota of donors set by the director and the physical setup of the clinic. We have found that we can average four donors per bed per hour, including registration and physical examination. From this figure we can estimate

\*Manufactured by the Precision Scientific Co., Chicago, and distributed through the A. S. Aloe Company, St. Louis.







bottles into a pool. At the beginning of the program we were pooling approximately 15 samples into one pool, but at present we are using a larger pool, consisting of 36 to 40 samples. After the plasma has been pooled a preservative (1:50,000 dilution of phenyl mercuric borate) is added to each pool. The pool is then shaken and allowed to set overnight, after which it is dispensed into the final container in 250 cc. amounts.

During the dispensing process bacteriologic cultures are taken to determine whether or not the plasma is sterile. Cultures are made in liquid thioglycollate medium at the beginning, middle, and end of each pool. These cultures are then placed in a 37°C. incubator and observed over a period of seven days.

*Freezing of Plasma.* After the plasma has been dispensed into the final container it is frozen by a method known as shell freezing, accomplished by the use of a portion of the plasma dehydrating unit. The shelling apparatus is an insulated metal pan containing cooling coils and a mechanical device for rotating the bottles. The rotating wheels are so arranged that the bottles are rotated slowly ( $\frac{1}{2}$  to 1 r.p.m.) with 12 mm. immersion in alcohol, cooled to  $-30^{\circ}\text{C}$ . Shell freezing is a very important step in the process, and unless it is done properly inadequate drying will result. The freezing apparatus will handle 12 bottles every hour. After they are frozen, the bottles of plasma are placed in a low temperature ( $-20^{\circ}\text{C}$ .) cabinet until they are desiccated.

*Drying of Plasma.* Under our system desiccation from the frozen state takes place in the final container. This method is preferred because it provides for maximal preservation of all elements of the plasma, maximum solubility, and minimal opportunity for contamination during the drying process.

The standard dehydrating apparatus is capable of drying 24 bottles of plasma every 20 to 22 hours. The method used for dehydrating plasma is completed in an efficient, practical apparatus and produces a product which in all ways complies with the regulations of the National Institute of Health. The product obtained, when regenerated for administration, is as nearly as possible identical with the original material.

The Strumia<sup>3</sup> method is simple and economical and the apparatus is so designed and operation so controlled as to be constant, thus insuring a uniform product. The resultant dried plasma is a light porous material of amber color, containing a maximal content of complement and of prothrombin.

After drying, a vacuum sufficient to draw in up to 350 cc. of restoration fluid is created in each bottle. The rubber stoppers are then covered with gel caps and labeled. Before any plasma is released for use, further tests are made to insure its safety for intravenous administration. Toxicity and sterility tests are made on pilot bottles from each pool, and if they are satisfactory all plasma prepared in that batch is released for distribution.

*Restoration Fluid.* The laboratory also prepares the fluid for restoring the dried plasma to the liquid state for administration and distributes it with each unit of plasma. At present a 0.1 per cent citric acid solution is being used. It has been pointed out in the literature that

restoration with 0.1 per cent citric acid will give a fluid having a pH varying from 7.4 to 7.8, whereas with distilled water the pH varies from 8.2 to 9.3. Pyrogen tests are run on each batch of fluid prepared before it is released for use.

*Intravenous Set.* An intravenous administration set is furnished with each unit of plasma distributed, except to the larger hospitals. It is felt that the lack of necessary precautions in the proper preparation of administration sets will tend to discredit the operation of the program, since it is the common inclination to ascribe pyrogenic reactions to the plasma rather than to improperly prepared equipment. Thus far our system has worked out satisfactorily.

#### DISTRIBUTION OF PLASMA

Under the North Dakota program a complete package of plasma is distributed. Each package sent out contains one bottle of dried pooled normal human plasma, one bottle of 0.1 per cent citric acid solution for restoration of the plasma to the liquid state, and a complete intravenous administration set and directions for its use. This complete unit makes it possible for a physician to administer plasma in an emergency, eliminating the necessity for moving patients to a hospital. This is important in North Dakota because of farm accidents and the lack of adequate hospital coverage in the state.

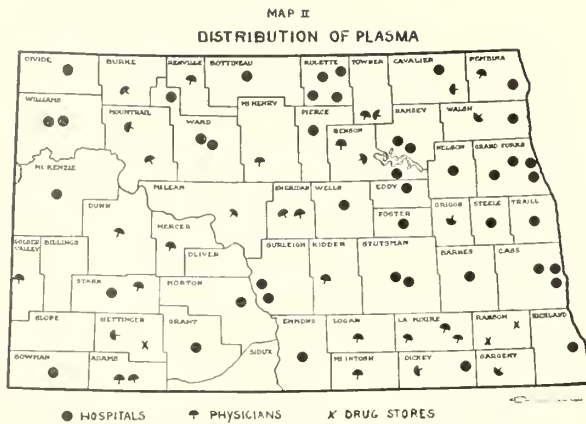
For a program of this type to be successful the product must be available to as many people as possible all the time. Therefore, the first objective of the program was to make supplies of plasma available in every part of the state. Map II shows the distribution of plasma during the first year. Plasma supplies are located in 44 hospitals, 3 drug stores, and the offices of 31 private physicians, making a total of 78 depots in 49 of the state's 53 counties. These depots constitute our mobile reserve which can be shipped to other communities to meet emergency needs. Such a wide distribution is important if the program is to serve its purpose—that of having plasma available to everyone.

Thus far in the program, 2400 units of plasma have been distributed. The amount of plasma located in each station depends somewhat on the normal supplies needed in the routine practice of the local physicians, plus a sufficient number of units for emergencies. As soon as reports are received in the laboratory on the use of plasma, these units are replaced with others. Thus predetermined supplies are maintained in the field.

#### THE USE OF PLASMA

The recognition of the value of human blood plasma as a therapeutic agent is one of the outstanding advances of medical science in recent years. The use of human blood plasma is now firmly entrenched as an important factor in the modern practice of medicine. Its therapeutic value has been definitely established by both experimental and clinical observation.

In military medicine plasma has been used mostly to combat shock due to traumatic injury. However, in the civilian practice of medicine plasma has been used with success in other conditions, such as hemorrhage, operation, obstetrical complications, burns, hypoproteinemia, and infections, as well as in the prevention and treat-



Map II. Showing distribution of plasma in first year.

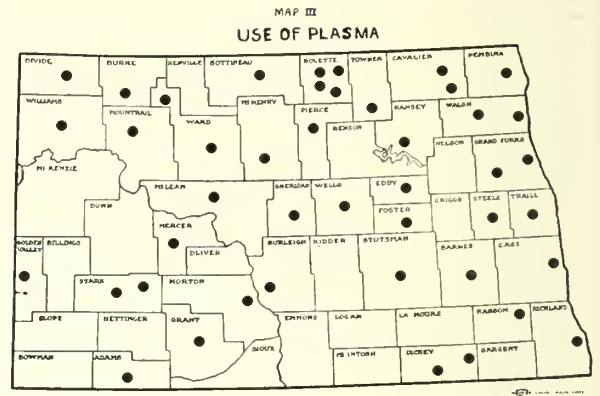
ment of measles, scarlet fever, mumps, pneumonia, and other infections which do not respond to specific treatment.

The most spectacular results with plasma are seen in the treatment of traumatic and burn shock. The ready availability of plasma is resulting also in better preoperative preparation of surgical patients who show decreased plasma proteins. Transfusions of plasma are often indicated during convalescence because of continued depletion of blood proteins. Convalescence is smoother and shorter when the blood components are kept within the normal limits.

The use of plasma is extremely simple, requiring no complicated transfusion apparatus. Plasma, properly prepared from citrated blood collected from healthy donors, can be administered intravenously to patients without regard to blood grouping or cross-matching. Properly prepared plasma can be administered without causing untoward reaction. Reactions following the administration of pooled liquid human plasma are chiefly of thermal and allergic types.<sup>4</sup> Our experience has been that reactions of the thermal type are largely preventable if scrupulous care and detailed attention are given to the prevention of pyrogen contamination in the laboratory.

The first plasma prepared under this program was sent out on August 27, 1944. Thus far 2400 units of dried plasma have been sent out from the processing laboratory. In the first year\* of operation reports received show that 1380 units were used on a total of 746 patients. Table I gives a classification of the types of cases on which plasma was used. As would be expected, the greatest number of units of plasma were used on postoperative shock patients. One can readily see that in the civilian practice of medicine there is a large variety of medical cases for which plasma is indicated and can be used to good advantage. Judging from reports received, we feel that no plasma was used indiscriminately; rather it was used where it was distinctly beneficial to the patient. This statement is made because there has been some fear that plasma would be used indiscriminately because it was free.

\*Reports received to October 31, 1945, show a total of 1700 units used on 920 patients.



Map III. Showing that plasma was used in 35 of 53 counties and in 44 communities.

Plasma has been used rather widely over the state. One of the first objectives of the program was to get a wide distribution so that people throughout the state would benefit from the program. Map III indicates that plasma has been used in 35 of the 53 counties of the state and in a total of 44 different communities. The greatest amount is of course used in the larger urban centers, but it is gratifying to note that it has been used in the rural areas as well.

Chart I shows the use of plasma by months. On the basis of one year this chart may not be of much significance other than to show the month by month use. However, when compared with future years it may be possible to determine some pattern.

At the beginning of the program many hospitals had supplies of commercial plasma and also small liquid plasma banks. This fact probably accounts for the slow beginning of the use of plasma. At any rate, it is interesting to see the way in which the amount used increased gradually from month to month. Eventually we may be able to level off and ascertain with some degree of reliability how much plasma will be used at any given time during the year. With physicians returning from the armed forces to private practice the use of plasma may increase materially, since these physicians are better acquainted with its advantages.

#### COST OF THE PROGRAM

At the conclusion of the first year of operation the blood plasma program is established on a sound financial basis and is an economical project. In the beginning no one could have given a reliable estimate of the cost of operation for one year. The initial cost of basic equipment and supplies has been high, but the equipment will last for many years and most of the supplies are reusable. The cost per unit of plasma for the first year was \$12.56. This figure represents the entire cost of the program. The word "unit," as used here, means a complete package, with intravenous administration set in approximately 75 per cent of the packages and the loan of Baxter drip filters to the larger hospitals.

During the second year of operation it is estimated that the plasma package will cost less than three dollars per unit. It would appear to be proved that plasma for



TABLE I  
Reports Received on the Use of Plasma  
August 27, 1944 - August 31, 1945

| Condition                                 | Number of Patients | Number of Units |
|-------------------------------------------|--------------------|-----------------|
| Postoperative shock                       | 263                | 415             |
| Prophylaxis shock                         | 21                 | 31              |
| Operative shock                           | 29                 | 46              |
| Shock (unclassified)                      | 9                  | 16              |
| Traumatic shock with marked hemorrhage    | 60                 | 112             |
| Traumatic shock without marked hemorrhage | 46                 | 65              |
| Hypoproteinemia                           | 46                 | 218             |
| Ectopic pregnancy with severe hemorrhage  | 9                  | 16              |
| Placenta praevia                          | 17                 | 28              |
| Postpartum hemorrhage                     | 71                 | 103             |
| Abruptio placenta                         | 3                  | 4               |
| Caesarean section                         | 3                  | 8               |
| Hemorrhage from abortion                  | 22                 | 26              |
| Infection                                 | 30                 | 47              |
| Gastric hemorrhage                        | 13                 | 22              |
| Miscellaneous hemorrhage                  | 17                 | 25              |
| Postoperative hemorrhage                  | 9                  | 16              |
| Burn                                      | 34                 | 98              |
| Communicable disease                      | 6                  | 17              |
| Miscellaneous                             | 25                 | 36              |
| Not classified                            | 12                 | 16              |
| * Unsatisfactory                          |                    | 17              |
| Total                                     | 746                | 1380            |

\* Wasted at time of restoration in hospital, prior to administration.

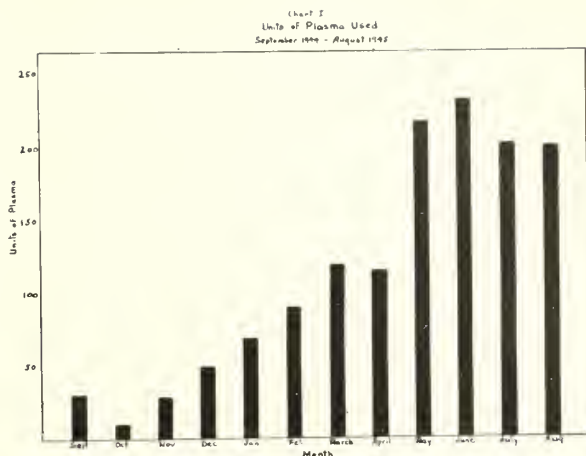


Chart I. Showing use of plasma by months.

a state-wide program can be produced with considerably less expenditure than would be necessary if it were purchased on the open market.

We believe that if plasma had been purchased either by the state or by private physicians and individual hospitals such a plan would not have had the success our program has had. By distributing plasma free of charge the State Health Department is making plasma available on a much wider basis, to be used wherever needed in the state. Needless to say, many patients' lives have been saved, and the convalescence of many more patients helped by having plasma available. If plasma had had to be purchased, we should never have had the wide distribution that now prevails in North Dakota, because the cost of such a program would have been prohibitive.

CONCLUSION

It is believed that the North Dakota State Health Department's free plasma service has adequately proved that there is a need for this type of program in the civilian practice of medicine. Through such a program civilians can now have the use of a service developed for the armed forces. No one who requires plasma need be without it, as the general distribution of plasma, with reserves over the entire state, makes it always available for immediate use. The plasma service has saved the people of North Dakota many thousands of dollars they would have had to spend to purchase this material on the open market.

The people of North Dakota have proved by their cooperation in volunteering their blood that they are

aware of what it means to have supplies of plasma available locally for immediate use. The medical profession and hospitals have accepted the State Health Department program with enthusiasm and regard it as a step forward in the advancement of medical aid.

Production of plasma will be expanded to meet demands, for there is evidence that the use of plasma will increase as the program progresses. The increased benefits to patients from the administration of plasma will naturally extend its use. The return from the armed forces of medical men cognizant of the value of plasma will also increase its use in the state.

It is the firm conviction of the author that this type of program should be set up in every state and that it can be administered very effectively by a state health department.

REFERENCES

1. Alsever, John B.: Plasma reserves for civilian defense, their distribution, control, preparation and clinical use. *J.A.P.H.A.*, 34:165 (Feb.) 1944.
2. Koons, Melvin E.: Free plasma for North Dakotans. *Pub. Health Repts.*, 60:4 (Jan. 26) 1945.
3. Strumia, Max M., and McGraw, John J.: A method and apparatus for shell freezing and rapid drying of plasma and other products from the frozen state by low temperature water vapor condensation in vacuo. *J. Lab. and Clin. Med.*, 28 (June) 1943.
4. Miller, Edward B., and Tisdall, Leslie H.: Reactions to 10,000 pooled liquid human plasma transfusions. *J.A.M.A.*, 128 (July 21) 1945.
5. The operation of a hospital transfusion service. Technical Manual No. 2220. Washington: Office of Civilian Defense, March 1944.
6. Strumia, Max M.: Preservation of prothrombin in dried plasma. *J.A.M.A.*, 119:710, 1942.
7. Cohn, Edwin J.: Blood proteins and their therapeutic value. *Science*, 101 (Jan. 19) 1945.

VICTORY CLOTHING COLLECTION

A Victory Clothing Collection appeal will be made in January, following up the 1945 collection, which provided some 25 million persons in the liberated countries with clothing. Large as this number of persons helped through the generosity of Americans appears, it is only a fraction of the number who still need help. Give clothing—all you can spare—in the collection. It will help to maintain morale and health and to inspire the international friendship needed to mold the brave new One World.

## Short Leg Backache

John M. Butler, M.D.  
Hot Springs, South Dakota

AT the present time the medical and surgical literature is flooded with articles and discussions on the subject of backache. The herniated disk is considered responsible for most back and leg pains today and it is gaining continually in popularity. One has only to read the late papers of Dandy<sup>1,2,3</sup> of Baltimore, a recent article by Keegan<sup>4</sup> of Omaha, and more recently, a paper by Key<sup>5</sup> of St. Louis, to get the idea that, with few exceptions, every case of backache has a protruded disk as the etiologic factor.

Since the demonstration of the herniated intervertebral disk as a definite pathological entity by Mixter and Barr<sup>6</sup> in 1934, there has been a rapid development of surgical technic for the treatment of this condition. These developments in surgical technic have simplified the operative procedure and shortened the period of convalescence until the risk of the operation is not nearly as great as it was formerly. These advancements have resulted in an increase in the number of surgical explorations for ruptured intervertebral disk to the point where it has reached almost fad proportions. The lay people are beginning to talk about disk protrusion in the same way that they discussed their sacroiliac strain a few years ago.

Lest we, as professional people, get to the point where "we cannot see the trees for the forest," it is considered timely to present this rather simple explanation of many cases of backache for the consideration of those men who first see the patient.

It is not the purpose or intent of this paper to enter into any lengthy discussion of the subject of backache, but instead, to call attention to a frequent cause of backache which is often not recognized, or if recognized, is disregarded and considered unimportant.

The cause of backache to which reference is made is inequality in the length of the two legs and more specifically those cases of what might be called minor inequality where a difference of one fourth inch to one inch exists.

The privilege of practicing in a city which has for many years been looked upon as a spa-resort for this section of the country has afforded considerable opportunity to examine and treat the so-called "chronic case." These people naturally seek the spa because of long standing disability of one type or another which has not responded to the ministrations of their family physician. Almost without exception these people have been in the hands of many and various types of unorthodox practitioners and usually state "they helped me but it did not last." Many of these people have been to the best diagnostic and treatment centers and have failed to receive the desired relief but have been permanently relieved by the simple procedures to be outlined below.

Before entering into a specific discussion there are two or three points that should be brought out from the

standpoint of physiology and anatomy. In the first place the body is normally supported by bone with the ligaments to keep bone structure unified and to limit the range of motion. In the second place, we have the muscular system which serves the purpose of restoring the bony segments to a state of equilibrium once this state has been disturbed. Normally with the body in a standing position, the weight of the upper body is supported by the spine and at the pelvis is transferred to the legs so that the body weight is distributed equally between the two lower extremities. Provided these two lower limbs are exactly equal in length the horizontal plane of the pelvis is parallel with the floor, and in this state the spine rests on the pelvis in a line perpendicular to the horizontal plane of the pelvis. The body weight is then carried by the spine and transferred equally to the two legs without the use of muscle action or ligament strain to maintain body equilibrium. Just as soon as the parallelism of the horizontal plane of the pelvis with the floor is disturbed and the pelvis drops down on one side, the spine can no longer remain in a perpendicular line and maintain postural balance. In order then to maintain this balance, the muscles and ligaments of the spine must come into use. This results in ligamentous strain and muscle spasm with the establishment of a pain and fatigue-producing mechanism.

Barker<sup>7</sup> in discussing backache due to faulty balance states that "many of these backs do not give trouble until some form of trauma has occurred." The various names that have been applied to the conditions falling under this category are simple evidence of the fact that they have been imperfectly understood. Back trouble diagnosed as weak back, hysterical back, neurasthenic spine, railroad spine, irritable spine, pelvic backache, chronic lumbago, sacroiliac relaxation and more recently fascitis are examples of conditions quite often due to the above described mechanism. Barker<sup>7</sup> states that "it is probable that the majority of backaches falling into the hands of the family physician fall within this group of muscular imbalance." These backaches are usually more common in women than in men and are especially common among those who are chronically weak and tired, and they are more often seen in the twenty to fifty age group.

The symptoms of which these patients complain are many and varied. Pain in some region of the back is the most common and next in frequency is nervousness and easy fatigability. Other complaints are inability to sleep, pains radiating around the chest, pains in the legs and knees, suboccipital head and neck pains and pains in arms and shoulders. Pain of sciatic radiation is frequently encountered. In the past three months seven patients with sciatic pains have been cured by the therapy outlined below.

The short leg is a common cause of muscle imbalance



or of the so-called postural imbalance in an apparently otherwise healthy individual. Many authors of articles on the type of backache here discussed stress the importance of faulty posture and muscle spasm along the spine as being the factor producing the pain, but search of the literature has failed to find a single article which even mentions the short leg as the basic cause of the faulty postural balance.

Many of these patients who come to seek relief from backache can be diagnosed merely by careful observation of their gait and standing habits. In men, one frequently sees that the belt of the trousers does not set parallel with the floor but instead, tips to one side. In women, one hip is more prominent and the hollow of the flank is less on one side. One shoulder is, almost without exception, carried low and if fairly snug clothing is worn, one can notice the scoliosis in the back. In watching these patients walk, it is very easy to notice the heavy step on the short leg side.

In examining these patients unclothed, all of the above mentioned findings are exaggerated and more clearly seen except those in reference to the way clothing is worn. In addition to these, one can readily detect spasm along the back muscles by palpation. Also, one finds the patient must be asked to stand squarely on both feet for he is prone to stand with the weight entirely on one leg and use the other merely as a balance prop. Another finding in these cases is the unilateral development of an ankle valgus and a unilateral development of lower extremity varicosities. The ankle valgus is usually on the short leg side, whereas it has been impossible to establish a rule for the side in which the varicosities develop. It seems that varicosities develop according to the standing habits of the individual—some prefer standing on the longer leg, others on the shorter one.

In further checking, one will notice that the posterior spinous processes fail to fall in a straight line. As pointed out by Sever<sup>8</sup>, the posterior spinous processes should align under a weighted string so held that the lower end hangs in the gluteal cleft.

In determining the amount of shortening present, the first check is leg measurement. A simple and fairly accurate method of doing this is to have the patient lie flat on the back, grasp the feet and exert a slight amount of traction and ask the patient to lie relaxed with the toes allowed to roll outward. Measurement is then made from the anterior superior iliac spine to the lower border of the internal malleolus of the ankle on each side. The final check then is to have the patient stand without shoes and build up under the short leg, with wooden plates or with magazines, the amount necessary to raise the low side of the pelvis until the horizontal plane of the pelvis is parallel with the floor. Then check the alignment of the posterior spinous processes. Sufficient lift should be given to the short leg to level the pelvis and be content regardless of the alignment of the spine, for occasionally one will find a back with so much muscle spasm that it will not align itself immediately but eventually will come back to neutral position after the precipitating strain has been removed. An article by Mock<sup>9</sup> stresses the fact that back braces and supports are abso-

lutely contraindicated in these cases, for the support thus afforded causes more disability by producing muscle weakness and atrophy.

After the amount of shortening has been determined, the patient is instructed to compensate for this shortening by one of the following methods. In women, the advice varies with the height of heels they are accustomed to wearing on their shoes. A Cuban type heel fortunately is more commonly encountered and lends itself more readily to alteration. To compensate for one half inch difference they are asked to have one fourth inch put on the heel of the short leg and remove one fourth inch from the heel of the long leg shoe. Often one can place a one fourth inch lift on the inside of the short leg shoe. Any arrangement of alterations—adding to a heel, cutting off a heel or a combination of these two, or pads placed under the heel in the shoe will usually accomplish the purpose in women, who are more used to walking with the weight thrust more toward the metatarsal heads.

In men, one cannot as a rule make great changes in heel heights without running into difficulty. Consequently, men are advised to have the shoe on the short leg side half-sole and then make the heel adjustments where the difference is one half inch. When the leg shortness is greater than one half inch, it is better to put more lift on the sole rather than to make too much change in the heels alone.

#### SUMMARY

Anatomical variation in the length of the legs of an individual is a frequent finding in everyday practice.

Faulty posture resulting in muscle spasm is a frequent cause of backache and is more commonly seen in women than in men and in those who complain of being chronically weak and tired. The short leg is a common cause of faulty posture and muscle spasm in the back.

Every patient with chronic backache should be carefully checked for short leg and back muscle spasm.

Supports and braces are contraindicated because they add to the disability of the individual by the creation of muscle weakness and muscle atrophy.

Every patient with backache who has a short leg should be given a therapeutic test by compensating for the short leg as herein described before being submitted to myelography or other extensive diagnostic tests or to major therapeutic procedures.

#### REFERENCES

1. Dandy, W. E.: Concealed Ruptured Intervertebral Disks. A Plea for the Elimination of Contrast Mediums in Diagnosis. *J.A.M.A.* 117:821 (Sept. 6, 1941).
2. Dandy, W. E.: Treatment of Recurring Attacks of Low Backache without Sciatica. *J.A.M.A.* 125:1175 (Aug. 26, 1944).
3. Dandy, W. E.: The Treatment of Spondylolisthesis. *J.A.M.A.* 127:137 (Jan. 20, 1945).
4. Keegan, J. Jay: Diagnosis of Herniation of Lumbar Intervertebral Disks by Neurologic Signs. *J.A.M.A.* 126:868 (Dec. 2, 1944).
5. Key, J. Albert: Intervertebral Disk Lesions are the Most Common Cause of Low Back Pain with or without Sciatica. *Annals of Surgery* 121:534 (April 1945).
6. Mixer, W. J., and Barr, J. S.: Rupture of the Intervertebral Disk with Involvement of the Spinal Cord, *New England Journal of Medicine* 211:210 (Aug. 2, 1934).
7. Barker, Lewellys F.: *Backache*. J. P. Lippincott Co., 1931, Chapter VII.
8. Sever, J. W.: *Principles of Orthopedic Surgery*, 3d Ed., Macmillan Co., 1940.
9. Mock, H. E.: Low Back Pain, *Wis. Med. J.* 42:389 (April 1943).

# Some Common Skin Diseases and Their Treatment

Herbert C. Leiter, M.D.

Sioux City, Iowa

**T**HIS paper is designed to be an unpretentious, informal, practical discussion of the etiology, diagnosis, and management of some common skin diseases as they are encountered in general practice.

Often it appears that skin diseases and those who try to make a specialty of treating them do not rate too high. We dermatologists are sometimes considered not quite full-fledged physicians but some kind of narrow-gauge practitioners, the legitimate target of more or less good-humored jokes. You have perhaps heard the story of the dermatologist who was asked by a friend why he took up this specialty. He answered: "For three good reasons. One, I don't have to get up at night. Two, my patients never die. Three, they never get well."

And there is the story of one dermatologist, a professor at a famous university, who took on some young assistants subject to the promise that they would study under him for three years before going into practice on their own. One bright young fellow stayed only one year before opening his own office. Bitterly reproached by his former principal, he retorted: "It might take the average man three years to find out the secret of skin diseases, but it took me only one year. The secret is that there are only two kinds of skin diseases: one is the kind that gets well no matter what you do; the other kind doesn't get well no matter what you do."

There is some truth in these jokes. It is true that skin diseases are plainly visible and open to the examining eye. There is no need to resort to complex diagnostic procedures like X-ray. Still, it is sometimes difficult to come to an exact diagnosis, because lesions that look similar may be of very different origin. The skin reacts similarly to very different kinds of injuries and insults. For instance, scarlet fever, a systemic infection, produces a rash that is in appearance exactly the same as a mercury dermatitis from the external application of ammoniated mercury ointment on a sensitive skin. Again, it is sometimes difficult to distinguish between a chronic patch of psoriasis and eczema. A common cold sore may look like impetigo; or if you should see this same lesion on the lip of an older person your first thought might be that you had a malignancy to deal with. Moreover, lesions of leukemia, syphilis, Hodgkin's disease, or tuberculosis produce skin lesions that may look very similar.

This may sound complicated and confusing, but actually the number of skin diseases commonly seen in general practice is limited. With some experience they can usually be diagnosed fairly easily and treated successfully with means at the disposal of the general practitioner.

In any case of skin disease it is important to take a short history. It pays to do so for several reasons. We find that certain types of skin disease, especially eczemas, do affect more often a certain type of personality—the

nervous, high-strung, ambitious, overactive type, often bordering on the neurotic. A little conversation with the patient when taking the history will often prove enlightening in this respect. It will reveal the patient's frame of mind and possibly enable the physician to extend a helping hand. Such help sometimes does more good than any salve or paste, and no one is better qualified to practice this bit of psychotherapy than the general practitioner, who, intentionally or otherwise, is constantly giving such help.

The patient should be questioned about his occupation, for certain occupations expose those who follow them to certain skin hazards. I need only mention the eczema of bakers and painters; dermatitis in florists and gardeners, for instance from primroses; ragweed dermatitis in farmers; and erysipeloid in butchers. If the occupation gives no indication, the avocation or hobby may do so. Thus the patient's gardening hobby may be the clue. Also, hereditary factors (atopic family-history) and factors that might point toward an infectious origin of the condition under examination, such as similar cases in the patient's surroundings, should not be overlooked when taking a case history.

I shall discuss a few of the more common skin diseases: scabies, pyogenic infections, acne, warts, fungus infections, drug eruptions, and contact dermatitis.

*Scabies.* Scabies is due to infestation with a mite, *Sarcoptes scabiei*, so small that it can barely be seen with the naked eye. It burrows tunnels in the skin, and lives, feeds, multiplies, and deposits its metabolic products in the burrows. The clinical picture is a dermatitis consisting of red papules and dark grayish burrows, distributed especially between the fingers, on the flexor side of the wrists, in the armpits, on the breasts, and around the navel, buttocks, and genitalia. In neglected, long-standing cases the whole body, with the exception of the face, scalp, and neck, is affected. Crusty, pussy lesions of secondary impetiginization from scratching are frequent, as well as secondary eczematization.

The infection usually occurs through intimate bodily contact, such as sleeping in the same bed, wearing the same clothes, or possibly from riding on the same seat in trains or cars. It is improbable that such casual contacts as writing with the same pencil or pen are sufficient to transfer the disease. Owing to the tremendous increase in travel and migration in and out of the country due to military transfer, travel of migratory and war workers, and overtaxed and therefore inadequate hotel accommodations, the condition increased greatly during the war. Scabies used to be a disease of the lower classes and unclean persons and it was highly embarrassing to both physician and patient to diagnose it in a lawyer, doctor, or society woman, but this is no longer so and scabies now affects persons in all walks of life.

The history is typical. There is intense itching, always



worse at night after the patient becomes warm in bed. Usually several members of the family are afflicted. It is essential that all persons in the family who may have contracted the disease should be treated, and treated at the same time. Otherwise a vicious cycle is established, one member after another will be affected, and reinfections will occur.

Treatment should begin with a thorough tub bath. The patient should soak in the bath for some time and use soap and a brush in order to open the lesions. Thus the medicaments used can penetrate into the lesions and reach the parasite. The best drug for treatment used to be sulphur ointments, 10 to 20 per cent, possibly with balsam of Peru; the salve was massaged in all over the body, with the exception of scalp and face, twice a day for a total of four to six treatments. This treatment is now being replaced by lotions containing benzyl benzoate, which are much cleaner in application and of which two applications usually suffice. The patient should not change his clothing or wash during the treatment. A cleansing bath should be taken twelve to twenty-four hours after the treatment is completed. At that time all clothing and bedding should be changed and the soiled clothing and bedding should be boiled, dry cleaned, or pressed.

*Pyogenic infections* of the skin are common, and most common among them is *impetigo*, which is a staphylococcal or, less commonly, a streptococcal, infection. The infection is superficial. The first lesion is a little vesicle filled with clear fluid which soon breaks and leaves a profusely oozing raw surface. The serous exudate spreads the infection to the surrounding area, where new lesions soon appear. The exudate dries fast and soon covers the lesions with thick, honey-yellow or sometimes brownish-colored crusts. The oozing raw surface can be seen after removal of the crusts.

This highly contagious condition is common in children but is not exclusively a children's disease. It is seen also in adults and even in very old people. Usually all children of the family show the infection at the same time. The lesions are usually on the face, and frequently also on the scalp. Through contact with the fingers the infection may be spread over the body.

In treating impetigo all scabs and crusts must first be removed. Otherwise the drugs applied will not reach the site of infection. The crusts can be removed by washing with soap and water, but preferably are removed with tweezers or a similar small instrument. This process sometimes entails a struggle with the little patient. Some bleeding from the lesions at this time is unimportant. After removing the crusts—and they should be removed at least twice a day—the medicine should be applied to all lesions and a well-fitting dressing bandaged on. When the lesions are on the face a muslin face mask will often be necessary.

Ammoniated mercury, 5 or 10 per cent, the drug of choice until recently, is being replaced by 5 per cent sulfathiazole ointment. In my experience the sulfathiazole ointment definitely clears up the lesions more satisfactorily, but is also more prone to produce a dermatitis,

owing to sensitivity to the drug. Painting of the lesions with a 2 per cent aqueous solution of gentian violet is popular and effective, but messy. Tub baths with potassium permanganate, 1 to 10,000, may facilitate the removal of crusts. Cleanliness is essential to prevent spreading the infection to other members of the family, especially to the mother who is treating her infected child at home.

*Barber's itch*, or *sycosis vulgaris*, a condition the practitioner often has to battle, is a staphylococcal infection of the hair follicles, showing as a little pustule, more or less inflamed, around each hair of the bearded area. In rare instances other hairy surfaces may be affected. In acute fulminating cases inflammation may be extreme, with redness, swelling, and pussy exudation from the whole area. The infection is often, but not invariably, contracted in barber shops. Scratching with contaminated fingernails is enough to start the condition.

Treatment is sometimes very difficult and tedious, and relapses are frequent. In the acute case hot wet packs, with 3 per cent boric acid solution or one half per cent aluminum acetate solution many hours a day will quickly reduce the inflammation. After the acute phase is over every affected hair must be taken out with tweezers. Disinfectant salves, like ammoniated mercury ointment, or lotions with sulphur or cinnabar or ichthyol, are helpful, especially if combined with hot packs. Sulfonamides, given internally, are valuable, and penicillin often gives dramatic relief.

If these methods do not help and the condition continues to flare up, the patient should have X-ray treatment, with or without temporary epilation. X-ray treatment often achieves results when everything else has failed. Vaccines may be used to advantage.

*Hydrosadenitis*. All that has been said about *sycosis vulgaris* holds true for *hydrosadenitis*, an infection of the sweat glands of the axillae. The treatment is identical, with the exception that surgical intervention is more often necessary in *hydrosadenitis*.

*Acne*. Every busy practitioner will see many teen-age boys and girls seeking treatment of the acne of adolescence. The cause of this disorder is probably to be sought in the somewhat unbalanced activity of the endocrine glands at this age, which leads to overstimulation of the sebaceous glands in the skin, especially of the face, and sometimes also the chest and upper back and shoulders. This condition in turn results in a more abundant secretion of oil and a greasy appearance of the affected parts, the so-called seborrhea. The blackheads that result plug up the openings of the sebaceous glands and prevent further passage of oil from the gland, which will overextend and act as a foreign body, causing an inflammation visible as a red papule on the face. If secondary infection of this mass in the obstructed gland takes place little pus-containing abscesses will be formed, and then we have what is commonly called a pimple. This condition is highly embarrassing to the young boy or girl, and often causes unhappiness and personality difficulties entirely out of proportion to the actual disfigurement.

It is imperative that the practitioner have some means at hand to help these young persons. Even if the results are sometimes disappointing the patient will be thankful if the doctor makes an effort to help him. Treatment consists first in the elimination of such aggravating factors as constipation, stomach disorders, irregularity of menstruation, anemia, and foci of infection. A diet containing plenty of fresh fruits, vegetables, and lean meat, and restriction of carbohydrates and fats should be instituted—though the actual value of such a diet in overcoming acne may be disputed. Plenty of sunshine and outdoor exercise and congenial company should be recommended, and, in well-to-do families, possibly removal to a high altitude region.

Local treatment consists of a weekly shampoo, possibly with tincture of green soap, at least two daily washings of the face with soap and water to remove excess oil—a sulphur soap is often helpful—and nightly application of a sulphur lotion, such as *lotia alba*, or a calamine type lotion containing 2 per cent resorcin and 10 per cent sulphur. Face creams should be avoided.

The patient should be strictly forbidden to pick at the lesions, but small abscesses should be opened by the physician with fine incisions, to avoid unnecessary scarring, and comedones should be extracted at the office. Auto-genous or stock vaccines are often employed, but not too much should be expected from their use. Ultra-violet treatments are of decided value in many cases.

In stubborn cases the patient should if possible have X-ray treatments, which often give good, permanent results when other means have failed. The treatments should of course be attempted only by those experienced and qualified to give them.

*Warts.* The common wart may be single or multiple, small or large. It may be found anywhere on the body, but occurs most commonly on the hands and face. Warts appear to be the result of a virus infection. Not only can they be spread through inoculation of particles from warts, as in shaving warts on the bearded area of the face, but it is possible to cure warts with vaccines prepared from warts that have been removed, then crushed and filtered.

The wart can be extremely capricious in response to treatment. Sometimes suggestion alone is sufficient to cause the wart to disappear. This may account for the many magic cures for warts, varying from charms and incantations to the application of various inactive but usually unsavory concoctions. It has been proved that warts do at times disappear without treatment. Methodical painting with some such dye as gentian violet, which in itself would not cure the wart, can bring about a cure if the patient can be convinced that it will cure him. On the other hand, even the most vigorous surgical treatment will not eradicate a wart in some instances, to the despair of both patient and physician, and an old wart will sometimes appear again even after thorough destruction in the scar.

Ordinarily treatment should be directed toward the destruction of the single wart or multiple warts either with chemicals like trichloroacetic acid or formalin, or

surgical curetting, possibly with subsequent cauterization with an acid, actual cautery, or by coagulations or desiccation with diathermy. Whatever method is employed, one should take care to destroy the wart without injury to the tissues underneath, to avoid delay in healing and undue scarring.

In instances where it is especially important not to cause injury—for example, when treating a wart on a violin player's fingers—it is often possible to effect a cure by means of X-rays or radium. The stubborn and painful plantar wart may be cured in the same way, and often responds better to X-ray or radium than to destruction by surgical means, and with much less discomfort to the patient.

*Fungus infections.* The following classification of skin diseases due to fungus infections is not a scientific one, but merely the one that seems most practical and least confusing for the purpose.

*Epidermophytosis*, the condition called athlete's foot, consists of a superficial invasion of the skin of the feet, especially between the toes and on the soles, with certain kinds of fungi. Clinically we find painful cracks between the toes, maceration and inflammation of the skin between the toes, at times with a cheesy odor, and superficial ulceration after removal of the macerated skin. There is sometimes considerable redness and swelling, pain, and incapacitation due to secondary infection. There are often vesicular and pustular eruptions on the soles; that is, small blisters filled with a clear fluid or pus, with more or less inflammation and redness of the skin of the soles. In other cases we find only redness and more or less pronounced scaliness of the soles. Sometimes we find both the pustular and the scaly form at the same time. There is sometimes cracking and, in chronic cases, very marked thickening of the skin. In the acute phase the condition is very tender and painful, owing to inflammation. In the more chronic cases itching is a prominent feature. At times the palms of the hands and the fingers may be affected in the same way, owing to infection with the same organism or absorption of toxic products.

In treating this common disorder one basic mistake must be avoided. While the condition is in the acute phase, with considerable inflammation, no strong medications should be used, for they tend to aggravate the condition. In the acute phase the patient should if possible be off his feet for a few days. Cold wet packs with 3 per cent boric acid solution, potassium permanganate solution, or some other mild disinfectant solution should be applied for many hours each day. Pus pockets should be opened and dead skin should be carefully removed. In the intervals between wet packs, soothing, slightly disinfectant salves, such as boric acid ointment, should be used. After the acute phase has passed more active treatment may be instituted, such as applications of Whitfield's ointment, of one fourth, then one half, then full strength, and finally double strength. Or some other approved, strong fungicidal remedies in the form of salves or alcoholic solutions may be used. Soap and water are not helpful in this condition.

*Tinea cruris*, or *gym itch*. Fungi often attack the



moist area in the groin, and sometimes in the armpits, under the breasts, or in the folds of the abdomen of obese persons. This condition is called *tinea cruris*, or, more popularly, gym itch. The condition is aggravated by summer heat and marching. There are well-defined red, inflamed patches in the groin, at times slightly elevated and pustular. The scrotum and penis and the area around the rectum are sometimes affected. The same condition is seen in the other areas affected. Itching is a prominent feature and is sometimes extremely annoying, though in very acute cases the patient will complain more of a burning pain. In acute cases treatment consists of cold wet packs and a soothing lotion, such as calamine lotion. After the acute phase an active fungicidal drug such as Whitfield's ointment or a lotion with sulphur, resorcin, and salicylic acid should be used. Even mild chrysoarobin lotions may be used to great advantage. Soap and water should be avoided.

*Tinea corporis*, or ringworm of the body. The practitioner is often called upon to treat this fungus infection of the hairless skin. Clinically it shows more or less inflamed, reddish or brownish scaly patches, at first small, about pea-sized, then growing up to the size of a quarter or even a dollar. The condition usually starts with one spot and spreads to new patches. The inflammation may be moderate or considerable. Little pus pockets or blisters may be visible on the border of the lesion. As the lesion increases in size it heals in the center, thus forming a red, scaly ring with normal skin in the center and giving the condition its name of ringworm. In rural areas the condition is frequently contracted from cattle. It is also contracted from cats and dogs, which sometimes suffer from fungus infections.

One encounters also a different type of lesion which is accompanied by much more inflammation and causes boil-like lesions with considerable swelling and drainage of pus from numerous small abscesses.

The superficial type is easily amenable to treatment, which is similar to that for *tinea cruris*. The deep type, however, responds better to hot wet packs, combined if possible with X-ray therapy.

*Kerion celsi*. The hairy parts of the body—the scalp and in grown men the bearded areas of the face—may also be the site of fungus infections. Farm youngsters with scalp lesions the size of a quarter up to the size of the palm, or even larger, are encountered. The affected area of the scalp will be badly swollen, the lesion raised up to one inch above the surface of the rest of the scalp, with much inflammation. Most of the hairs will have fallen out or will be loose; pus will be draining profusely from many small openings and partly dried on in crusts. The lesion has a boggy feeling to the touch. However, actual abscess formation rarely occurs. The lesion is spectacular. The lymph glands on the back of the head are usually swollen, and the temperature is often high and the patient ill. Similar lesions are seen in the bearded area of grown men, especially farmers or cattle men. This condition is nearly always contracted from infected cattle.

Though these lesions seem so dramatic, the treatment is usually simple and a cure may be achieved without

resorting to heroic measures. Treatment consists in the persistent use, day and night, of continuous hot wet packs with any of the solutions commonly used for hot compresses. This treatment will reduce the swelling in the course of a few weeks. Usually there will be very little scarring and most of the hair will grow in again in the affected places. Mechanical removal of the hairs from the affected areas sometimes hastens recovery.

Another form of fungus infection of the scalp, much less spectacular than these so far discussed, is accompanied by relatively little inflammation, and may be combined with patches of ringworm on other surfaces of the body. The inflamed patches, varying from the size of a penny to a half dollar, are sometimes slightly red, scaly with partial baldness, and in other cases grayish, with little scaliness. This condition is seen exclusively in children. It is sometimes extremely recalcitrant and the most meticulous treatment with fungicidal salves will not cure it. It is worth trying to treat the scalp for several weeks as follows: Clip the scalp and treat with ammoniated mercury ointment with the addition of salicylic acid, or with a sulphur ointment and daily shampoos with tincture of green soap. If no definite improvement is visible after a few weeks it will be necessary to refer the case for an exact mycological diagnosis, made microscopically and by culture. If necessary the whole scalp should be treated with X-ray in such a way as to cause a total loss of hair about three weeks after treatment. Six or eight weeks after the hair has been shed it will start to grow back. Our local remedies take effect in this interval between the loss and the regrowth of the hair, and it is only during this interval that a cure can be effected. However, self-healing takes place in these cases as soon as the patient reaches puberty.

This condition is not commonly seen in rural areas, where the ringworm infections of the scalp due to a fungus pathogenic for animals are more usual. However, in the large cities of the East, and recently in the Midwest, this type of highly infectious scalp infection is prevalent. The organisms causing the disorder are primarily human pathogens and hence do not cause enough reaction in the affected person to cause self-healing or to assist materially in the healing of the condition. For this reason it is necessary to treat these cases with X-ray epilation.

Most ringworm infections of the scalp with animal pathogenic fungi, of the sort commonly encountered in rural areas, clear up satisfactorily with local treatment, because they cause so much reaction from the side of the system of the patient that this reaction, together with our local application, effects a cure. Hence it is unnecessary in such cases to resort to X-ray epilation.

I have not considered microscopic examination or cultures of fungus-infected material, nor examination of the scalp under the so-called dark light, not only because these procedures are not at the command of the general practitioner, but also because in the typical case of ringworm commonly seen in rural areas the general practitioner can establish a diagnosis and institute appropriate treatment without recourse to these procedures.

*Drug eruptions* are seen fairly frequently by the gen-

eral practitioner nowadays. They may be due either to drugs administered by the physician or to some medicine the patient has been getting from the drug store and taking on his own account. Since the advent of the sulfa drugs the former kind of rash is much more common, for sulfa drugs are prescribed so often at present and cause reactions so frequently that every practitioner will be confronted with a case of sulfa eruption at some time or other. Moreover, there is almost no drug that will not cause an eruption in some individual.

Drug eruptions may be classified into those that resemble measles, those that look like scarlet fever, and those that are like urticaria. They are usually distributed over the body and are frequently associated with much itching. Slight fever, malaise, and headaches are associated features. Desquamation after subsidence of the rash is frequent. Severe cases may show severe exfoliative dermatitis, with redness, swelling, oozing, crusting, and scaliness of the skin of the whole body.

Drugs that not infrequently cause eruptions are too numerous to mention. The more common ones are sulfa drugs, quinine, aspirin, barbiturates, coal-tar derivatives, including many laxatives, antineuralgics, and headache tablets, gold, and nearsphenamin and other arsenical drugs. Serums for lockjaw, pneumonia, and diphtheria may cause serum sickness associated with hives and a rash like that of scarlet fever or measles. A similar condition is sometimes caused by an injection of penicillin.

If a physician has prescribed a medicine likely to cause a drug eruption the diagnosis will be established easily. However, in any itchy, generalized skin eruption of uncertain origin the possibility of a drug eruption should be kept in mind and the patient should be questioned about the use of drug store remedies.

In treating drug eruptions a diagnosis is essential in order to effect a withdrawal of the offending drug. No sedative that might possibly aggravate the condition should be given. Oatmeal baths, the application of such soothing lotions as calamine lotion, and the avoidance of soap and water will usually clear up the condition in a week or two. In cases of severe exfoliative dermatitis, however, the course will be doubtful and the prognosis doubtful.

It may be worth while to mention that drug eruptions may be caused by external application of, for example, blue ointment or ammoniated mercury ointment, and that sulfa ointments frequently cause skin irritations.

*Contact Dermatitis.* The skin disease most frequently seen in both the general practitioner's office and that of the dermatologist is contact dermatitis, which accounts for more loss of time from work than any other skin disease.

An explanation of the term may be helpful. In this form of dermatitis the sensitive individual coming in contact with a certain substance breaks out with a skin eruption at the site of contact, and the condition may spread to other parts of the body. By definition the substance must be one that causes no irritation in the average person. Thus irritation from contact with sulphuric acid, which is irritating to all, should be called a chemical burn and not contact dermatitis.

Contact dermatitis usually appears first on the exposed parts of the body likely to come in contact with the offending substance: the hands, face, and neck, and in the male the genitals, to which the patient carries the offending substance with his hands when he urinates.

The clinical picture of acute contact dermatitis is that of redness, swelling, a papular and vesicular eruption, frequently with oozing of a clear, serous fluid, at times profuse. The affected area is at times fairly well, at other times poorly demarcated from the normal skin and gradually fades into it. The affected part is hot to the touch, and the patient suffers from a burning and itching sensation that may be extremely annoying. If there is persistent contact with the irritating substance and the condition becomes chronic, the redness and swelling will be less pronounced, but there will be a greater tendency to thickening of the skin, dryness, and cracking, and the itching will be a more pronounced feature.

For practical purposes one may classify contact dermatitis into three categories, according to source of origin: that acquired in industry or other occupation, that from clothing, and that from cosmetics.

Though this is not the rule, in some instances the contact dermatitis acquired in the performance of occupational duties may appear after the individual has worked on the same job for many years and suddenly acquires a sensitivity to the materials with which he works. Some of these occupations and the substances that may cause irritation in those who follow them are: bricklayers, lime and concrete; bakers, flour; nurses and doctors, bichloride of mercury and formaldehyde; gardeners, primroses or other flowers and tomatoes or other vegetables; printers, newsprint; painters, turpentine and paint thinners; fur workers, fur dyes; farmers, weed pollen; munition workers, workers in chemical plants, or workers in plants producing or utilizing plastics, and workers in petroleum industry—all subject to innumerable chemical substances likely to cause trouble; housewives, soap, ammonia, floor wax, and other household substances; and carpenters, domestic and tropical woods.

Another group of contact dermatitis affections are caused by clothing. Shoe leather may cause trouble, owing to the tanning of the leather or the shoe dye or polish used. Leather hat bands may produce a dermatitis of the forehead; the industrial processes used in making felt hats may also cause trouble. The substances used in finishing underwear to give it eye appeal on the merchandise counter may also cause trouble when the underwear is worn before it is laundered. Dye in garments, especially in black-dyed furs, may produce a dermatitis, and many women experience trouble from the substances used when they dye materials. The material in nickel wrist watches, leather or plastic wrist watch bands, metal and rubber suspenders and garters, and nylon hosiery may also produce a dermatitis in some persons.

Cosmetics are another source of contact dermatitis. The most common offender is probably nail polish. It is noteworthy, however, that the dermatitis is found not on the hands or around the nails but on parts of the body touched with the fingers, especially the face, neck,



and eyelids. In particular cases powder, creams, lotions, perfume, soaps, and deodorants cause trouble. Mascara and hair dyes are especially likely to cause dermatitis.

The patch test is a valuable procedure in diagnosing contact dermatitis. The general practitioner, however, will seldom have the time, patience, or equipment needed to perform patch tests with the many substances that might be causing the trouble in industrial contact dermatitis. When the source is likely to be clothing or cosmetics the procedure is a simple one. A bit of the suspected substance should be placed on the skin, possibly moistened, then covered with a piece of paper and fastened to the skin with overlapping pieces of tape. After it has been in place 48 hours the site should be inspected. A definitely positive test will show a reaction similar to the original dermatitis. An unaffected place, such as the thigh, should be selected for the patch test, and one must not be misled by the irritation on the skin caused by the tape.

To treat contact dermatitis successfully one should elicit and eliminate the cause if possible. To treat acute contact dermatitis it is necessary to avoid in the beginning any strong or irritating remedies, such as tar medication. Otherwise one adds insult to injury and only

increases the distress of the patient and prolongs the disability.

In the acute phase cold wet packs with 3 per cent boric acid solution or a weak aluminum acetate solution are imperative. The packs must be cold, must be changed as soon as they become warm, and must be applied for many hours each day. If the patient is hospitalized the packs should be made all day long. A mild, soothing salve, such as cold cream, boric acid ointment, or a calamine liniment-type emulsion should be applied when the packs are not applied. When no oozing is present a calamine lotion, possibly with a very small amount of phenol or menthol, may be used to advantage. Soap and water are strictly forbidden. The affected parts should be cleaned with a bland vegetable oil. Oatmeal baths are soothing and comforting when the dermatitis is extensive. Mild sedation is often necessary.

It is important to know that a patient who has recovered from a contact dermatitis does not acquire immunity but will probably suffer a recurrence when he comes into contact again with the offending substance. Consequently a person who has acquired a sensitivity to one of the substances he works with should be shifted to a different job where he will not be exposed to the offending substance.

---

## FACTS ABOUT THE PROPOSED HEART HOSPITAL OF THE NORTHWEST

The Variety Club of the Northwest, sponsor of the proposed Heart Hospital to be erected on the medical campus of the University of Minnesota, calls the hospital its crowning achievement of eighteen years devoted to humanitarian endeavors.

In a brochure announcing plans for the new hospital, the Variety Club states that the building will be a \$325,000 structure on a site overlooking the Mississippi River, in a situation ideal for the treatment and rehabilitation of rheumatic fever patients.

Facilities will comprise a 100-bed hospital, completely equipped with the most modern accommodations and equipment. The institution will also include a clinic where doctors throughout the Northwest can study this disease, as well as an out-patient department in which ambulatory patients from this area can be examined and obtain diagnoses.

The staff will include specialists in heart disease and related diseases. The research facilities at the University of Minnesota will provide cooperation in all phases of medical science. In the heart hospital it will be possible to study not only rheumatic fever in children but also all phases of cardiac disease in adults.

## Book Reviews

**Physical Chemistry of Cells and Tissues**, by RUDOLPH HÖBER, with the collaboration of DAVID I. HITCHCOCK, J. B. BATEMAN, DAVID R. GODDARD, and WALLACE O. FENN. Philadelphia: The Blakiston Company, 1945. Pp. 676; 70 figures. \$9.00.

Höber has, in a sense, lived through the development of the subject matter of this book, the application of physical chemistry to biological problems. As early as 1902, only a decade or so after Van't Hoff and Arrhenius elucidated the properties of dilute solutions, Höber published a book in German entitled *Physical Chemistry of Cells and Tissues*, which subsequently went through six editions, the last one in 1926. Dismissed as president of the University of Kiel because of his anti-Nazism, he has, since 1934, published many original papers as a member of the Department of Physiology at the University of Pennsylvania. For over forty years, therefore, the editor and main contributor to the volume under review has been an active teacher and major investigator in his chosen field.

This volume, although it has the same title and much in common with the German tome, is not a translation of the latter. The tremendous advances made since 1926 have necessitated an entirely new book, to which others have contributed sections. It begins with a review of certain selected principles of physical chemistry and a discussion of the properties of large molecules. The subjects of permeability and the influence of some extracellular factors on cell activity are then taken up. The remainder of the book is devoted to the two most important general questions of physiology: (1) The energy releasing mechanisms of the cells, and (2) the application of the released energy to the performance of work, mainly mechanical work by contractile tissues, and chemical work (secretion, absorption, and osmoregulation) by living membranes. Written on a graduate level, this volume by Höber and his collaborators will be useful mainly to advanced students, investigators, and specialists. To these it should prove exceedingly, and probably uniquely, valuable both as a reference work and as an introduction to the important problems in certain fields. But there are few readers with biological interests who will not find it stimulating, informative, and rewarding.

In some instances there is room for disagreement with conclusions arbitrarily stated; in others, the essential reasoning involved in reaching conclusions from experimental data is omitted. Moreover, clearer presentations of certain of the topics are available elsewhere. However, such faults are in large part inevitable and certainly not to be overemphasized in relationship to the positive virtues of the book as a whole.

**General and Plastic Surgery, with Emphasis on War Injuries**, by J. EASTMAN SHEEHAN, M.D. New York and London: Paul B. Hoeber, Inc., 1945. 356 pages, 856 illustrations. Price, \$6.75.

This book is not a complete treatise in any sense of the word. Those portions of it which deal with the problems of war surgery, despite their timeliness, probably detract from the value of the book. The author has made no attempt to treat the subject matter in a critical manner. The author's opinions concerning a wide variety of subjects do not conform at all to those opinions held by surgeons treating combat casualties in the Mediterranean and European theaters of war. The greater portion of the book is replete with obsolete or unorthodox ideas and phrases, vague in meaning, such as, "septicaemia of the colon," "denser muscles," etc.

To the reviewer it seems misleading to state that "In our armed forces each man's blood type is determined in advance and recorded on his identification tag. Thus transfusion is possible without the preliminary delay necessary in typing." Actually it was recognized early in the war that the blood group designated on the identification tag could not be depended upon and that preliminary typing was necessary if many serious transfusion reactions were to be avoided.

The statement is made in the section dealing with wound excision that "local anesthesia is preferable." This is absolutely contrary to the policy followed in the Mediterranean Theater, where it was found that local anesthesia was rarely if ever adequate for debridement or wound excision. It is also stated in a discussion of the dressing of excised wounds that "vaseline gauze, closely but lightly applied, gives good tissue support." This statement may be true. The reviewer does not know what "tissue support" means, but as a dressing applied to freshly excised wounds vaseline gauze has proved much inferior to plain fine mesh gauze.

In a discussion of anesthesia for chest wounds the following remarkable statements are made: "If inhalation anesthesia must be used because of the patient's resistance to other anesthetics irritating vapors that stimulate respiratory activity must be avoided. Intubation must also be avoided since the air passage must be kept free at all times." It is to be regretted that books proposing to cover the problems of war surgery should be written by men whose experience with this phase of surgery has been, to say the least, inadequate.

Those chapters of the book which deal with plastic surgery are much better written and of some real value. They comprise about one-third of the total content of the book. The 856 illustrations, of which the majority are pen and ink drawings, are well executed.

**The Herbal of Rufinus**. Edited from the Unique Manuscript by LYNN THORNDYKE, assisted by FRANCIS S. BENJAMIN, JR. Chicago: University of Chicago Press, 1945. Pp. xliii + 476. \$5.00.

This handsomely produced and scholarly volume makes available the text (in Latin) of *De virtutibus herbarum*, by Rufinus, called "the forgotten botanist of the thirteenth century." It was transcribed from a rotograph of the unique manuscript in the Laurentian Library at Florence received by the Columbia University Library just before Italy entered the war.

Rufinus, a monk and teacher who "pursued the seven liberal arts in the cities of Naples and Bologna," is distinguished among mediaeval herbalists for his accurate and extensive observations of plant life. The cultural background of the botany and materia medica of the authorities he cites is predominantly oriental, but the foreground, including his own additions, is of his own time and environment.

**Essentials of Allergy**, by LEO H. CRIEP, M.D. Philadelphia: J. B. Lippincott Co., 381 pages, 1945, price \$5.00.

This small manual, a complete book on allergy, is divided into seventeen chapters. The first three discuss clearly hypersensitiveness, anaphylaxis and the mechanism of allergy. The remainder are devoted to the usual allergic diseases and include one on allergy in children and another on diagnostic cutaneous tests. Subject matter is arranged to appeal to medical students. Case histories illustrate most of the allergic diseases which are discussed. At the end of each chapter there is a short summary and bibliography. This feature is of special usefulness to the doctor who is beginning to take an interest in allergy.

The author has made a special effort to eliminate all controversial material and to present only the approved procedures of diagnosis and treatment.

**Sex Endocrinology: A Handbook for the Medical and Allied Professions**. Bloomfield, New Jersey: Schering Corporation, 1944. Pp. 88, index, illustrations.

This attractive handbook summarizes what is known at present about sex endocrinology. After an introductory chapter on endocrinology, the subjects discussed include chemistry of the sex hormones, history of sex endocrinology, sex function and anatomy, control of the sex hormones, the sex estrogenic hormone, estrogenic hormone therapy, the corpus luteum hormone, corpus luteum hormone therapy, the male sex hormone, male sex hormone therapy, the gonadotropins, and gonadotropic hormone therapy.

The handbook is available to physicians without charge from the publishers.

# The JOURNAL LANCET

Serves the *Medical Profession of*  
MINNESOTA, NORTH DAKOTA, SOUTH DAKOTA AND MONTANA

Official Journal of the American Student Health Assn., Great Northern Railway Surgeons' Assn., Minneapolis Academy of Medicine, Montana State Medical Assn., North Dakota Society of Obstetrics and Gynecology, North Dakota State Medical Assn., Northwestern Pediatric Society, Sioux Valley Medical Assn., South Dakota Public Health Assn., South Dakota State Medical Assn.

## ADVISORY COUNCIL

### *North Dakota State Medical Assn.*

Dr. James F. Hanna, *Pres.*  
Dr. A. E. Spear, *Pres.-Elect*  
Dr. L. W. Larson, *Secy.*  
Dr. W. W. Wood, *Treas.*

### *North Dakota Society of Obstetrics and Gynecology*

Dr. E. H. Boerth, *Pres.*  
Dr. Paul Freise, *Vice Pres.*  
Dr. G. Wilson Hunter, *Secy.-Treas.*

### *Minneapolis Academy of Medicine*

Dr. Ernest R. Anderson, *Pres.*  
Dr. Jay C. Davis, *Vice Pres.*  
Dr. Cyrus O. Hansen, *Secy.*  
Dr. Thomas J. Kinsella, *Treas.*

### *South Dakota State Medical Assn.*

Dr. William Duncan, *Pres.*  
Dr. F. W. Howe, *Pres.-Elect*  
Dr. H. R. Brown, *Vice Pres.*  
Dr. Roland G. Mayer, *Secy.-Treas.*

### *South Dakota Public Health Assn.*

Dr. J. M. Butler, *Pres.*  
Dr. C. E. Sherwood, *Vice Pres.*  
Dr. Gilbert Cottam, *Secy.-Treas.*

### *Sioux Valley Medical Assn.*

Dr. D. S. Baughman, *Pres.*  
Dr. Will Donahoe, *Vice Pres.*  
Dr. R. H. McBride, *Secy.*  
Dr. Frank Winkler, *Treas.*

### *Montana State Medical Assn.*

Dr. S. A. Cooney, *Pres.*  
Dr. M. A. Shillington, *Pres.-Elect*  
Dr. R. F. Peterson, *Secy.-Treas.*

### *Northwestern Pediatric Society*

Dr. G. B. Logan, *Pres.*  
Dr. Geo. Kimmel, *Vice Pres.*  
Dr. Northrop Beach, *Secy.-Treas.*

### *Great Northern Railway Surgeons' Assn.*

Dr. W. W. Taylor, *Pres.*  
Dr. R. C. Webb, *Secy.-Treas.*

### *American Student Health Assn.*

Dr. Ralph I. Canuteson, *Pres.*  
Dr. Glenadine Snow, *Vice Pres.*  
Dr. G. T. Blydenburgh, *Secy.-Treas.*

## BOARD OF EDITORS

DR. J. A. MYERS, *Chairman*

Dr. J. O. Arnson  
Dr. D. S. Baughman  
Dr. Ruth E. Boynton  
Dr. Gilbert Cottam  
Dr. H. S. Diehl  
Dr. L. G. Dunlap  
Dr. Ralph V. Ellis  
Dr. W. A. Fansler  
Dr. A. R. Foss

Dr. James M. Hayes  
Dr. A. E. Hedback  
Dr. E. D. Hitchcock  
Dr. R. E. Jernstrom  
Dr. A. Karsted  
Dr. L. W. Larson  
Dr. W. H. Long  
Dr. O. J. Mabee  
Dr. J. C. McKinley

Dr. Irvine McQuarrie  
Dr. Henry E. Michelson  
Dr. C. H. Nelson  
Dr. N. J. Nessa  
Dr. Martin Nordland  
Dr. J. C. Ohlmacher  
Dr. K. A. Phelps  
Dr. C. E. Sherwood  
Dr. M. A. Shillington

Dr. J. C. Shirley  
Dr. E. Lee Shrader  
Dr. E. J. Simons  
Dr. J. H. Simons  
Dr. S. A. Slater  
Dr. W. P. Smith  
Dr. C. A. Stewart  
Dr. S. E. Sweitzer

Dr. W. H. Thompson  
Dr. E. L. Tuohy  
Dr. M. B. Visscher  
Dr. O. H. Wangenstein  
Dr. S. Marx White  
Dr. H. M. N. Wynne  
Dr. Thomas Ziskin,  
*Secretary*

LANCET PUBLISHING CO., *Publishers*, 84 South Tenth Street, Minneapolis 2, Minnesota

MINNEAPOLIS, MINNESOTA, JANUARY, 1946

## THE MEDICAL OUTLOOK IN THE NEW YEAR

During the recent war the medical profession and its allies made a demonstration in disease control and the saving of lives among the physically injured which far exceeded that of all previous time. The efficaciousness of the various immunizing agents was again clearly displayed. Chemotherapeutic agents such as the sulfonamides, sulfones, and antibiotics, particularly penicillin and streptomycin, were developed and used so effectively that for all time the past decade will be regarded as one of the most important eras in the advancement of chemotherapy. Standard surgical techniques, together with those developed during the war, combined with new specific drugs, saved the lives of large numbers who, at any earlier time, would have died.

Likewise at home advances were made in maintaining and improving the health of the civilian population.

Scientists, public health workers, nurses, and physicians everywhere, although handicapped by limited numbers, worked diligently. Many long since retired returned to active practice. Serious epidemics were prevented; surgery and chemotherapy advanced to the benefit of thousands. Even tuberculosis mortality, which had increased in every previous war and markedly increased in most of the nations during the recent war, actually decreased annually in the United States, reaching the all time low rate of approximately 38 per 100,000 in 1945. Everywhere one heard expressions of sympathy for the over-worked physicians. We who stayed at home deserved no sympathy or special praise—strenuous work at home is not a sacrifice; it is a privilege. Those who left their homes and subjected themselves to the hazards of warfare deserve sympathy and praise which can never be expressed in any manner in proportion to the sacrifices they made and the service they rendered.



Despite all that was accomplished during the war, some medical problems were increased or created. Many contracted malaria and are returning to areas where it was not previously endemic. In some of these areas the potential vector exists; therefore, to prevent spread of the disease great care must be exercised in mosquito control. Many in military service overseas became infected and reinfected with tubercle bacilli. In most of them the disease has not had time to mature to "significant" clinical proportions. Nevertheless, many of these infections will be reflected in morbidity and mortality within the next few decades. Other diseases which have been extremely rare in this country, such as tsutsugamushi, paragonimiasis, and schistosomiasis, have been contracted by members of our service forces abroad.

Many physicians have returned from military service, and it is anticipated that the majority will soon be discharged, so in 1946 we can unite in solving the problems created by the war and resume our combined efforts against the destroyers of health and life. To achieve continued success we are better equipped than at any time in the history of our profession.

J. A. M.

#### A.M.A. HOUSE OF DELEGATES MEETING

At the A.M.A. House of Delegates session held in Chicago recently the standpatters suffered considerable defeat at the hands of the progressives. The waiting, drifting policy of the past few years was superseded by one of aggressive action. This change is best illustrated by the fact that the house instructed the Board of Trustees and the Council on Medical Service and Public Relations, without a dissenting vote, to develop immediately "a specific national health program with emphasis upon the nation-wide organization of locally administered prepayment plans." In the past the house has repeatedly deplored the sad state of public relations for medicine but has done little about it. Now the Board of Trustees is to engage an expert consultant to examine this entire field, with a more constructive policy in mind for the future. Indicating that they will brook no delay, the House of Delegates will hold two sessions annually. The house voiced the opinion that there is need of developing among the young men of the profession an interest in serving medical organizations—an opinion in keeping with the trend of the times. We already have this trend manifested in the existence of junior chambers of commerce, junior republican clubs, and some medical societies limiting their membership to young men. And so "the old order changeth, yielding place to new . . . lest one good custom should corrupt the world." We believe that liberal youth and conservative age will find a harmonious solution of the whole problem.

A. E. H.

We make the third part of medicine regard the prolongation of life: this is a new part, and deficient, though the most noble of all.—Francis Bacon, *Novum Organum*.

## ANNOUNCEMENTS

### American College of Physicians Resumes Annual Meetings

The American College of Physicians will resume its annual meetings in 1946. The 1946 meeting will be held in Philadelphia, May 13–17 inclusive, with headquarters at the Philadelphia Municipal Auditorium, 34th Street below Spruce. The meeting will be conducted under the presidency of Dr. Ernest E. Irons, Chicago, and the general chairmanship of Dr. George Morris Piersol, Philadelphia. Other medical groups are urged to plan their meetings at times that will not conflict with that of the College.

### Directory of Approved Surgical Training Plans Published by American College of Surgeons

Chiefly as an aid to medical officers returning from war duty, the American College of Surgeons, 40 East Erie Street, Chicago, has published a directory listing and describing the approved programs of graduate training in surgery in 240 civilian hospitals in the United States and Canada and in 32 Naval, 7 Veterans Administration, and 10 U. S. Public Health Service hospitals. The total number of approved training plans in the 289 hospitals is 228 in general surgery and 522 in the surgical specialties. Approximately 2000 surgeons may be trained in these 750 training plans in 289 hospitals, while the College points out that training facilities for at least 5000 are urgently needed for returning medical veterans whose training in surgery was interrupted by their military service. Publication of the directory is expected to stimulate the formation of additional programs of training in suitable hospitals.

### 1946 Examinations, American Board of Ophthalmology

The 1946 examinations of the American Board of Ophthalmology will be held in Chicago, January 18–22; New York in April, probably 10th through 13th; San Francisco, June 22–25; and Chicago, October 9–12. The examination originally scheduled for Los Angeles, January 28–31, has been cancelled, owing to transportation difficulties. The San Francisco examination has been substituted. Officers for 1946 are: Chairman, Edward C. Ellett, Memphis; Vice Chairman, Georgiana D. Theobald, Oak Park, Illinois; Secretary Treasurer, S. Judd Beach, Portland; Assistant Secretary, Theodore L. Terry, Boston; Consultant, Walter B. Lancaster, Boston.

A new ruling requires that previously accepted candidates mail their lists of surgery to the Board office at least 60 days prior to examination. New applicants are now required to send their lists with application.

### Graduate Course in Ophthalmology

The sixth annual spring postgraduate course in ophthalmology and otolaryngology will be held in Portland, Oregon, April 15–20, 1946. Guest speakers will be Dr. Algernon B. Reese of Columbia University and Dr. Gabriel Tucker of the University of Pennsylvania Graduate School. The program will include lectures, clinical demonstrations, and ward rounds. Further information may be secured from the secretary, Dr. Harold M. U'Ren, 624 Medical Arts Building, Portland 5.

## MEET OUR CONTRIBUTORS . . .

DR. RAE THORNTON LA VAKE, who has practised in Minneapolis since 1912, is a graduate of Yale University (B.A., 1905) and of the College of Physicians and Surgeons, Columbia University (M.D., 1909), with graduate work in New York hospitals (1909-12). He is assistant clinical professor of obstetrics and gynecology at the University of Minnesota, and a member of many societies, including the American Association of Obstetricians, Gynecologists, and Abdominal Surgeons, the American College of Surgeons, the A.M.A., and the Minnesota Academy of Medicine. Dr. La Vake first contributed to the JOURNAL LANCET in 1913.

MELVIN ELWOOD KOONS of Grand Forks, North Dakota, has been with the North Dakota State Health Department for twelve years and associate professor of public health at the University of North Dakota since 1942. He is a graduate of the University of Maryland (B.S., 1930), and holds the degree of M.Sc. from Pennsylvania State College and the degree of M.P.H. from the Johns Hopkins School of Hygiene and Public Health (1939). He is a graduate of the course in tropical and military medicine given by the Army Medical School (December 1943). He is secretary-treasurer of the State and Provincial Public Health Laboratory Directors' Conference, a Fellow of the American Public Health Association, and a member of the Society of American Bacteriologists, the A.A.S., and the North Dakota Academy of Science.

DR. JOHN MILTON BUTLER of Hot Springs, South Dakota, has practised in that city for ten years. A graduate of Nebraska Wesleyan, he had his medical training at the University of Nebraska College of Medicine (B.S.M., M.D., 1934), and following his graduation held a preceptorship in orthopedic surgery. His specialty is general and orthopedic surgery. He is chief of staff of Lutheran Hospital, Hot Springs, consultant in surgery for the Veterans Administration, and orthopedist to the State Crippled Children. A past president of the South Dakota Public Health Association, he is a member of the A.M.A., the Black Hills District Medical Society, and the South Dakota State Medical Society.

DR. HERBERT C. LEITER of Sioux City, Iowa, has practised in that city for five years. A graduate of the medical school of the University of Graz (Austria), Dr. Leiter did graduate work at the Clinic of Syphilology and Dermatology, University of Vienna. He is a member of the Society of Investigative Dermatology of the College of Allergists.

### MEDICAL CONTINUATION COURSES AT UNIVERSITY OF MINNESOTA

Winter and Spring 1946

The University of Minnesota Center for Continuation Study announces a series of courses for graduates in medicine whose plans for continuation education were interrupted by military service. The generous financial assistance of the W. K. Kellogg Foundation, Battle Creek, Michigan, has made this program possible.

The courses of study have been arranged for physicians who plan to (1) accept an association with a specialist, (2) obtain a residency, (3) prepare for American Board examinations, or (4) return to practice.

Headquarters for the continuation courses will be the Center for Continuation Study, located near 17th Avenue S.E. and University Avenue on the Main Campus, University of Minnesota. The Center contains a parking garage, registration desk, administration offices, classrooms, commons, chapel, dining hall, and living rooms. Erected in 1937, it is used for the continuation education of professional graduates; it is said to be the only institution of its kind in the United States.

Classes will be taught at the Center for Continuation Study, Medical School, University of Minnesota Hospitals, Minneapolis General Hospital, Ancker Hospital, St. Paul, and affiliated teaching institutions.

Faculty will consist of representatives from the faculties of the Medical School, other University departments, and the Mayo Foundation, Rochester; in addition, teachers from other medical centers will participate.

Registration for less than one quarter will not be accepted. Each course will occupy the full time of the registrant. A certificate of attendance will be issued after the completion of each quarter; a statement indicating the subjects studied and a mark of satisfactory or unsatisfactory will be given. Students whose study or attendance record is unsatisfactory will be asked to withdraw.

Successful applicants will report January 4, 1946 at 9 A.M. to complete their registration and to meet with their advisers. Representatives of the Veterans Administration will be present to explain existing regulations. In addition there will be discussions on recent developments in medicine, hospital service, and social welfare. Orientation session closes January 5, noon. Classes start Monday, January 7, 1946.

#### PROGRAM

1. CONTINUATION COURSE IN MEDICINE, January 4 to March 30, 1946. Subjects: Infectious Diseases; Diseases of Respiratory Tract, Blood, Blood-forming Organs, Liver, Gallbladder, Pancreas, Skin, Heart, Arteries, Veins, Kidney, Endocrine Glands, Metabolism, Osseous System, Central Nervous System, and Diseases Peculiar to Childhood. Lectures and conferences, Monday through Saturday, 8:30 A.M. to 12:30 P.M. Ward walks, clinics, demonstrations, Monday, Wednesday, Friday, 2:30 to 4:30 P.M. Elective periods Tuesday, Thursday, and Saturday afternoons. Tuition \$150 and incidentals. *Registration limited.*

2. CONTINUATION COURSE IN SURGERY, April 8 to June 29, 1946. Subjects: Diseases of the Gastrointestinal Tract (Upper), Colon and Rectum, Bones, Joints, Muscles, Chest, Urogenital Tract, Eye, Ear, Nose, Throat, Nervous System, Female Genitalia. Obstetrics; Anesthesiology; and Physical Medicine. Lectures, conferences, and colloquia, Monday through Saturday, 8:30 A.M. to 12:30 P.M. Ward walks, clinics, demonstrations, Monday, Wednesday, Friday, 2:30 to 4:30 P.M. Elective periods Tuesday, Thursday, and Saturday afternoons. Tuition \$150 and incidentals. *Registration limited.* NOTE: Physicians enrolling for the first time will report for registration and orientation April 5 and 6, 1946.

3. CONTINUATION COURSE IN BASIC SCIENCES, January 4 to March 30, 1946. Subjects: Anatomy, Pathology, Physiology, Physiological Chemistry, Bacteriology, Immunology, and Pharmacology. Physicians will also attend departmental exercises in specialty they wish to study; the various clinical departments will be represented by advisers. Tuition \$150 and incidentals.

4. CONTINUATION COURSES IN BASIC SCIENCES (CONCLUDED), April 8 to June 29, 1946. Tuition \$150 and incidentals.

5. CONTINUATION COURSE IN PATHOLOGY OF DISEASES OF THE SKIN, January 21 to February 20, 1946. Arranged for dermatologists, residents in dermatology, and physicians who plan to take a residency in dermatology or an association with a dermatologist. Tuition \$50 and incidentals.

6. CONTINUATION COURSE IN OTOLARYNGOLOGY, January 14 to 18, 1946. Arranged for otolaryngologists, residents in otolaryngology, and physicians who plan to take a residency in otolaryngology or an association with an otolaryngologist. Tuition \$25 and incidentals. *Registration limited.*

7. CONTINUATION COURSE IN HOSPITAL ADMINISTRATION, January 21 to 25, 1946. For hospital administrators, assistant hospital administrators, graduate students in hospital administration, and physicians and others who plan to take a course in hospital administration. Tuition \$15 and incidentals.



## News Items

The Office of the Surgeon General announces that by January 1 more than 14,000 doctors will have been returned to civilian life, which is more than a third of the total number comprising the Army Medical Corps at its peak. By June 1946 it is expected that all but 11,000 doctors will be released. Meanwhile, news of Northwest doctors resuming practice after medical service with the armed forces in all theaters of World War II, sometimes for five years or more, continues to come into the JOURNAL LANCET office at a rate that precludes individual notice.

The Black Hills (Ninth) District Medical Society met at Deadwood, South Dakota, on November 29, 1945, with 22 present. Capt. Dalton M. Welty spoke on "The Unstable Colon," Col. Peter A. Peffer and associates of Fort Meade Veterans' Facility on "Neuropsychiatric Problems," and Dr. W. E. Olson on "Electroshock Convulsion Therapy." Newly elected officers are Dr. W. A. Dawley, Rapid City, President; Dr. N. Wells Stewart, Lead, Vice President; Dr. H. E. Davidson, Lead, who expects to return to private practice in January, Secretary-Treasurer, succeeding Dr. Stewart, who becomes Vice President.

The Yankton District Medical Society met December 13 at Yankton, South Dakota, with 25 present, to hear Dr. R. N. Larimer of Sioux City, Iowa, speak on "The Treatment of Congestive Heart Failure," and case reports by Dr. George E. Johnson of Yankton. Newly elected officers are Dr. A. P. Reding, Marion, President; Dr. V. I. Lacey, Yankton, Vice President; and Dr. J. A. Hohf, who continues as Secretary-Treasurer. Dr. George E. Johnson, Dr. F. W. Haas, and Dr. F. J. Abts were elected censors.

Dr. J. Arthur Myers, Chairman of the Board of Editors of JOURNAL LANCET, has been elected Editor-in-Chief of the Journal of the American College of Chest Physicians.

Dr. A. F. Branton of Willmar, Minnesota, has left for Chattanooga, Tennessee, where he will be superintendent of the Baroness Erlanger Hospital.

*News from the University of Minnesota Medical School:* The Ebin Foundation of Minneapolis has made a gift of \$25,000 to the school in support of five graduate medical fellowships of \$1,000 a year each, to be awarded to veterans of World War II. The Medical School has set up a statement of conditions for the affiliation of hospitals with the school for the purpose of graduate training in the clinical specialties. An electron microscope, to be used in such investigations as intracellular identification of the agent responsible for the high percentage of mammary carcinoma in susceptible strains of mice, microscopic examination of bone, dentin, and enamel, and studies of the finer details of bacteria, has been set up in Millard Hall. News of the program of postgraduate courses offered to veterans will be found elsewhere in this issue.

Dr. Wesley W. Spink of the University of Minnesota Medical School gave the first annual Newton Evans Lecture in Bacteriology and Pathology at the College of Medical Evangelists, November 29, on "Brucellosis: Diagnostic and Therapeutic Considerations." Dr. Robert G. Green will present a lecture on "Health and Disease in Wildlife as Exemplified by Tularemia," before the Yale Medical Society on January 9, and will also conduct several seminars during his three-day visit.

Dr. Hart E. Van Riper, pediatrician, formerly of Madison, Wisconsin, has been appointed assistant medical director of the National Foundation for Infantile Paralysis. As assistant to Dr. Don W. Gudakunst, medical director, Dr. Van Riper will supervise the foundation's program of medical care and treatment for infantile paralysis patients throughout the United States.

The American Red Cross has appointed an Advisory Board on Health Services to coordinate activities in the health field. Dr. Gaylord W. Anderson and Dr. Harold S. Diehl, both of Minneapolis, and Dr. Henry Helmholz, Rochester, are among those appointed.

February 6, 1946, has been set as the date for National Social Hygiene Day. The American Social Hygiene Association, 1790 Broadway, New York 19, sponsor of the day, urges local social hygiene associations, medical societies, health departments, and other community agencies to cooperate in a meeting that will mark a milestone in a united drive toward the major objective of the social hygiene program: the protection of the family from the perils growing out of the venereal diseases, prostitution, and the failure to give young people wise guidance in meeting their sex problems.

Three major appointments to the staff of the North Dakota State Department of Health have been announced by Dr. G. F. Campana. Lt. Col. Lloyd K. Clark has returned to his former position as director of the Division of Sanitary Engineering, replacing Jerome H. Svore, senior sanitary engineer, who has been acting director. Dr. William H. Smith, who has been acting director of the Division of Preventable Diseases, was named director. Dr. Robert H. Kling will be tuberculosis consultant in this division.

At a farewell program for Dr. B. A. Bobb of Mitchell, South Dakota, whose retirement after more than fifty years as practicing physician and surgeon was noted in our November issue, Dr. F. D. Gillis estimated that Dr. Bobb had treated some 1,825,000 patients in his many years of practice. Dr. Gillis, one of four doctors who spoke in tribute to Dr. Bobb, said that the veteran physician had probably performed some 55,000 operations, delivered 6250 babies, set 6000 broken bones, and given some two million dollars worth of charity service. Dr. O. J. Mabee, in charge of the program, Dr. Edward Bobb, and Dr. J. H. Lloyd also spoke. A farewell dinner honoring Dr. and Mrs. Bobb, who will make their home in California, was given on November 21, 1945.

Dr. C. L. Wendt of Canton, South Dakota, celebrated the fiftieth anniversary of his practice of medicine there in November, 1945, with a dinner at his home for members of the Athenian Debating Society.

Dr. Cecil J. Watson spoke on "Hepatitis" before the Minnesota Pathological Society December 18, 1945, at the Medical Science Amphitheater, University of Minnesota.

Dr. Oscar Harvey has become director of the combined City of Sioux Falls and Minnehaha County health departments at Sioux Falls, succeeding Dr. Robert M. Ferguson.

Dr. Gilbert Cottam, superintendent of the South Dakota State Board of Health and a member of the JOURNAL LANCET Board of Editors, has returned to his office after attending a meeting of the House of Delegates of the A.M.A. and the meeting of the Western Surgical Association, in Chicago.

A survey conducted by the social studies committee of the American Association of University Women found health conditions and the public health set-up in Grand Forks and Cass counties to be the best in the State of North Dakota. The doctors, nurses, and welfare workers interviewed in the survey all favored setting up a full-time county public health unit in Grand Forks.

The North Dakota Physicians Service of Fargo, first nonprofit medical corporation organized under a 1945 enabling act, has named Dr. O. A. Sedlack as president, Dr. F. I. Darrow, vice president, and Dr. W. E. G. Lancaster, secretary-treasurer.

Dr. Carl William Hammer has been named physician in charge of the Student Health Service at Montana State College, Great Falls. Dr. Hammer, released from the Army Medical Corps in August, 1945, formerly practised in Oxford, Michigan.

The first cooperative hospital and health center to be organized in a rural Minnesota community has been incorporated under the name "Pelican Valley Health Center." It will serve Pelican Rapids and surrounding communities.

The services of A. G. Stasel, superintendent of Eitel Hospital and manager of Nicollet Clinic, Minneapolis, are in demand as an organizer of detailed health surveys of communities that want to establish hospitals. Social, economic, and medical factors are included in the survey, on the basis of which Stasel advises the community committee on the size of hospital desirable for their needs.

Dr. Henry A. Sincok of Superior has been elected president of the Interurban Academy of Medicine, whose membership is made up of physicians of the Twin Ports, Duluth and Superior.

The Sixth District Medical Society met December 11, 1945, in Bismarck, North Dakota, to hear reports from medical officers recently returned to civilian practice from service with the armed forces. Dr. Ralph Vinje, Beulah, spoke on "War Experiences in the South Pacific"; Dr. R. F. Nuessle, Bismarck, on "War Experiences in the European Theater of War"; Dr. R. B. Radl, Bismarck, on "Experiences as State Medical Officer of Selective Service in North Dakota and Minnesota"; and Dr. R. W. Henderson, Bismarck, on "Army Hospital Experiences in the United States."

Officers elected for 1946 are Dr. R. B. Radl, President; Dr. C. J. Baumgartner, Vice President; Dr. W. B. Pierce, Secretary-Treasurer; Dr. C. C. Smith, dele-

gate to the state medical association for a three-year term, with Dr. M. S. Jacobson as alternate; and Dr. F. F. Griebenow, Censor.

The Cascade County Medical Society, Great Falls, Montana, met December 21, 1945, for a dinner meeting, with 18 present. The newly elected officers are Robert J. Holzberger, President; Thomas Keenan, Vice President; L. L. Maillet, Secretary-Treasurer. Dr. Eugene Hildebrand was admitted to membership in the society in November.

Jon M. Jonkel, director of the American Hospital Association's public relations department, announces his resignation effective January 5. He will establish an organization specializing in the public relations problems of hospitals, and will offer assistance in the public relations programs of individual hospitals and as public relations consultant in fund-raising campaigns.

The JOURNAL LANCET directs attention to the services offered to physicians through the Family and Children's Service, as described in the following letter.

#### FAMILY AND CHILDREN'S SERVICE

*Combining the Services of Children's Protective Society and Family Welfare Association*

214 Citizens Aid Building : 404 South 8th Street  
Minneapolis 2, Minnesota

To the Physicians and Surgeons of Minneapolis and Hennepin County:

Physicians are doing double duty today. Not only is the number of patients increasing, but ill people are more difficult to treat because of the unrest and tension under which they live. In recognition of this many doctors have been using our services to complement their treatment.

An obstetrician recently referred a young woman to us. She was pregnant, alone, her husband still in service and she and the baby would be without housing when she left the hospital after confinement. Her original happiness over the pregnancy was fast waning and she was becoming depressed and ill. When she found in our counselor a person interested in her, one with whom she could talk freely and who would help her work out practical plans, her health, both mental and physical, improved.

A family was referred to us when the father's convalescence was hampered because he worried over finances and was afraid his wife couldn't manage the home and family alone. The "standing by" of one of our workers and some temporary financial help enabled him to return to his job soon, but not too soon for his own well-being.

Doubtless you are acquainted with our general purpose and services. They include counsel, budgeting, placement and, in rare cases, relief. Our help is professional, courteous, and completely confidential and you need not hesitate to refer any patient to us. Either he or you may call for an appointment.

If you care to call us, please feel free to do so (Main 5275). We want you to know and understand the kind of help we offer and to use it in the way that will be most helpful to you.

Sincerely yours,

CLARK W. BLACKBURN, General Secretary,  
Family and Children's Service of Minneapolis  
and Hennepin County, a Community Fund  
Agency participating in the War Chest.



## MEASURING THE COMMUNITY FOR A HOSPITAL\*

There are many considerations which must enter into any decision to build a hospital: the size of the community and its tributary population; availability of existing hospital facilities in nearby communities; the character of transportation and transportation routes available; the sickness rate of the community; the habits of the community as to utilization of hospital facilities; and the physicians available for staffing the hospital.

*Ratio of Beds to Population.* There have been many studies into the relation between the size of a community and its hospital need. The studies of the United States Public Health Service, as a part of the 1935 business census of the United States, indicate in general that the actual utilization of beds per 1000 of population increases with the density of population and with the economic level of the population.

Ponton's study of utilization of beds in the United States indicated an actual utilization of approximately 2.5 beds per 1000 population. The U. S. Public Health Service estimates indicate a need for about 4.0 beds per 1000 of population on a country-wide basis.

On the other hand, Morrill's study of the utilization of beds in the states of Indiana, Illinois, and Wisconsin for the year 1937 indicated actual bed utilization rates in cities of 10,000 to 25,000 varied from 11.1 beds per 1000 urban population to 1.54 of urban population and in cities of 25,000 to 75,000 from 8.6 beds per 1000 of urban population to 1.02 beds per 1000 of urban population. The obvious conclusion from these studies is that while an overall, country-wide figure may be correct, it cannot be taken as a suitable figure for any given community.

Care must always be taken in the interpretation of all bed figures, since some are based only on the population of the city in which the hospital is located, while others are based on the total population in both the city and its tributary area.

The size of the population tributary to any given town or city is affected by many variables. The most important, of course, is the availability of other hospital facilities within the general area. This involves not only the size of the neighboring hospital and the completeness of its equipment and its convenience from a transportation standpoint, but also the relative regard with which the physicians on its staff are held in the community.

Another factor which may be of great importance is what might be called the hospital "consciousness" of the community. Thus, one community may send five times as many of its maternity cases to the hospital as another community does. The latest available statistics, for instance, indicate that in Mississippi 15.8 per cent of all births occur in hospitals, while in Connecticut 89.4 per cent of all births occur in hospitals. On a country-wide basis the percentage of births occurring in hospitals rose from 33.6 in 1936 to 55.0 in 1941, 67.9 in 1942, and 72.1 in 1943. The total number of births occurring in

hospitals in the United States increased from 621,896 in 1939 to 1,924,591 in 1943.

In the farm areas and in towns having a large proportion of separate residences, the inclination of the sick to be treated at home is much greater than it is where a sizable proportion of the community lives in the more modern pigeonhole apartment, in which there is no room to be sick.

It is also necessary to distinguish between the demand incident to the wartime displacement of populations and what should be considered the permanent population, including due allowance for its probable future growth.

*Emergency Care.* An argument often advanced in favor of a hospital in every community is that it is necessary to have facilities available for emergency care. This argument is often given undue weight. The number of emergencies requiring the full facilities of a hospital is much smaller than is usually realized. Military experience demonstrates that beyond the treatment of shock, the arrest of hemorrhage, and the protection of the wound, the emergency surgical patient usually fares better if he can reach the facilities of a completely equipped and staffed hospital within six hours than he does if an attempt at more complete treatment is made where only meager facilities are available. Civilian application of this principle means that unless the hospital is large enough to afford complete facilities and the staff is qualified to deal fully with major life-threatening emergencies, the average patient would fare better to have only simple immediate emergency treatment and then be transported a reasonable distance—30 to 40 miles in most cases—to a hospital in which more complete facilities and a more highly skilled staff are available.

*Let's Be Neighborly.* It is not unusual to find that either local pride or the desires or ambitions of some local group, rather than the welfare of the community as a whole, determine the organization and construction of a hospital. A somewhat typical instance of this is seen in one community in which there are three towns located at three points of a triangle about 12 miles on a side. One of these towns with a population of 8000 has a city owned hospital of 40 beds. Another one with a population of 5500 has a voluntary nonprofit hospital of 50 beds, and the third one with a population of 2700 is now considering the construction of a new hospital to replace a purely proprietary hospital of 20 beds. From these three towns it is 40 miles to another city of about 6000 which has two hospitals of 40 and 50 beds respectively. It is about 150 miles to a larger city having a completely equipped hospital of over 200 beds and a highly capable staff including all the major specialties.

It is quite evident that this triangular area needs a good hospital, but it is quite as evident that no one of the three communities alone is large enough to justify as large or as well equipped a hospital as the general community deserves and could staff adequately if all the facilities for the three cities and their tributary territory were consolidated into a single institution.

*Availability of Professional Staff.* It is obviously unwise for a community to build and equip a hospital be-

\*Condensed from "The Individual Hospital," 1945 Hospital Review. Chicago: American Hospital Association, 1945.



yond the ability of the available physicians to use its facilities to the best interests of the patients.

It is generally accepted that if the patient is to receive the best care a certain proportion of it must be by specialists, and if the hospital is to give adequate care to its community such specialty care must be available.

There is usually the possibility of calling in specialists from nearby communities when adequately trained specialists are not available with the particular community. The special care of complicated cases is so much a matter not only of the best facilities but also of skilled teamwork in their use and of continuing careful supervision that the attending physician may often prefer to transfer the patient to the specialist rather than bring the specialist to the patient.

Studies of the need for physicians indicate that there is definite need for about one physician to 1500 of population and that it requires 10,000 or more of population to furnish sufficient patients to attract and support a specialist.

*Specialists.* The number and type of specialists required to staff a hospital sufficiently to give relatively good service to its patients is variable. The three basic specialties which should always be represented are internal medicine, surgery, and obstetrics.

The services of the general practitioner are largely in the field of internal medicine. While it is probable that a community of 10,000 or so could use the services of a specialist in internal medicine, or a "diagnostician" as he is commonly called, to the benefit of its people, it is probable that it would take a community of two or three times that size to justify a competent internist in preparing himself and limiting his practice to this specialty.

It is probable that there is enough surgery in a community of 10,000 population to justify the services of a fully qualified surgeon, particularly if the hospital adheres to the policy described by Dr. Malcolm T. MacEachern, Associate Director of the American College of Surgeons:

"The restricting of privileges to do major surgery to those who are qualified is most essential, and this protection for the patient is provided in the approved hospital. The approved hospital has a definite standard of training, experience, and competency, and a qualifications committee of the surgical staff which determines who is and who is not qualified to do major surgery.

"It is a growing custom for hospitals to limit appointments of heads of departments of the medical staff to Fellows of the American College of Physicians, Fellows of the American College of Surgeons, and diplomates of the respective American Boards for the various specialties. Such a provision assures a higher quality of clinical work and better supervision and control of the professional activities of the institution. To this end, hospitals are more and more restricting major surgical privileges to Fellows of the American College of Surgeons and diplomates of the American Boards for surgery and the

different surgical specialties, or to those of equal standing as determined by the qualifications committee."

The majority of patients enter the hospital to take advantage of its surgical facilities, and it is therefore the surgeon who is in most demand.

While the large majority of maternity cases fare well at the hands of the general practitioner, the fact is that prospective mothers are becoming so fully aware of the importance of the best obstetrical skill to their future well-being that the demand both for hospitalization and for skilled obstetricians is rapidly increasing. In view of all the elements entering into the question it is probable that a community of 15,000 to 20,000 is necessary to attract and support a fully qualified obstetrician.

Other basic specialties are women's surgery, children's diseases and diseases of the ear, nose, and throat. Women's surgery in the small community is usually handled by either the general surgeon or by the obstetrician. Children's diseases can usually be adequately cared for by the internist. Patients having diseases of the ear, nose, and throat are usually ambulatory, but are so common that a community of 15,000 or so will usually be sufficient to attract and support a qualified specialist.

Experience indicates that one roentgenologist can properly serve some 60,000 of population and a pathologist some 100,000. It has been shown that if each individual hospital is supplied with good technicians, the roentgenologist and the pathologist can serve several small hospitals by working on a "circuit rider" basis.

A community of 20,000 to 25,000 population could expect to have 18 to 20 active practitioners of whom three to five would be qualified specialists—an internist, a surgeon (possibly two), an ear, nose, and throat specialist, and an obstetrician. While such a community could support a hospital of 75 to 100 beds, it would still be necessary to have some sort of an affiliation with some larger community for professional service in the more limited specialties.

*Health Centers.* Even smaller communities may still be justified in providing limited facilities for minor and emergency surgery, normal obstetrics, and the simpler general medical diseases. It is this type of institution that is contemplated in the proposed health center which would at the same time provide clinical laboratory facilities for the practitioners of the community, space for the community public health agencies, and even, if desired, office accommodations for the physicians.

*Hospitals Attract Physicians.* One phase of this matter that is not generally understood is the influence that hospital facilities have on the general level of medical care in the community. The better trained physician is unwilling to locate where adequate hospital facilities are not available. The net result is that the better the hospital facilities, the higher the qualifications of the physicians in the community, while the community lacking hospital facilities must usually content itself with a lower grade of medical care.

*Costs.* The financial aspects of a hospital organiza-

tion must, of course, be taken into consideration. The initial capital expenditure for the building and equipment of a hospital ready to operate may range from \$4,500 to \$7,000 per bed. This capital cost is influenced by the simplicity of construction and limited facilities permitted in smaller communities as contrasted to the more complicated construction and more elaborate equipment required for the larger and better equipped hospital. Obviously the more complete the equipment and accessory facilities, the greater the cost. Another important factor is the skill with which the plant is planned to permit economy of construction without sacrificing utility. The cost of operation is somewhat variable depending on the range of salary levels in the particular community, the degree to which the physical plant is adapted to economical operation, and the extent of the accessory service provided.

So large a part of the operating cost is fixed, irrespective of the number of beds occupied by patients, that the cost per patient per day is quite as much a matter of the average percentage of total beds occupied as of the total cost of operation. As a typical instance, the cost reported by 100 community type hospitals for the year ending June 30, 1941, was \$6.48 per patient per day, as compared to a cost of \$4.96 per installed bed per day. During this period the average number of beds occupied to total beds installed was 76.64 per cent.

The operating revenue will depend both upon the average number of beds occupied, conditioned upon the economic status of the patient treated, the proportion who can pay full cost and the extent to which the community can be expected to assume the costs of those who are unable to pay.

Here the economic status of the community comes into the picture. The U. S. Public Health Service found, for instance, that counties having an average per capita income of \$600 had eight times as many physicians per capita as counties having an average per capita income of \$100 or less. Similar considerations would apply to the support of the hospital.

*Community Surveys.* At this point in the procedure, before establishing a hospital or health center, it is the part of wisdom to secure the advice of a qualified and unbiased hospital consultant. His expert appraisal of the conditions may save the community many serious mistakes. Even though his conclusions may be in the nature of an "educated guess" rather than mathematical demonstration of need, it will still be far safer than any estimate made by local inexperienced, or perhaps biased, persons. Incidentally, his advice, even if against action, may actually be of more value to the community than any advice for positive action he might give. There is no fixed formula by which to determine whether a given community should or should not establish any of the above mentioned types of facilities. It is only the seasoned and unbiased opinion of a qualified consultant which can determine with reasonable soundness the extent to which a community should go in developing its health service.

## Necrology

Dr. Frederick Brown, 65, who had practised in Valley City, North Dakota, for 18 years, died at his home November 13, 1945, after a short illness.

Dr. Floyd F. Clark, 64, who had practised medicine and surgery in Duluth for 36 years, died November 15, 1945.

Dr. Anthon Flath, 81, a physician in North Dakota for 47 years, died December 4, 1945, at Stanley. Dr. Flath was a native of Ontario, Canada, and received his medical education at the University of Toronto.

Dr. Thomas J. Gaffney, 72, Lakeville, Minnesota, died November 27, 1945, of heart disease and influenza.

Dr. William Walter Johnston, 71, died November 11, 1945, at Savage, Montana. A native of Byron, Minnesota, and a graduate of the University of Minnesota in 1904, Dr. Johnston had practised medicine in Savage for 35 years before his retirement two years ago.

Dr. Henry W. F. Law, 74, died December 2, 1945, at Grand Forks, North Dakota, where he had practised for 30 years before his retirement two years ago. He was a native of Brock, Ontario, and had resided in Hannah, North Dakota, before going to Grand Forks in 1913. He was associated with the Grand Forks Clinic and was chief of staff of the Deaconess Hospital.

Dr. Frederick Walter Minty, 63, died November 25, 1945, at Rapid City, South Dakota, of a heart ailment. Dr. Minty, a son of a pioneer Methodist missionary in the Black Hills and father of Dr. Earl Minty of Duluth, had practised in Rapid City since 1907. He was a member of the American College of Surgeons.

Dr. Victor N. Peterson, 66, died November 28, 1945, at St. Paul, after a year's illness. A physician in St. Paul for nearly forty years, he was a member of the American College of Surgeons and a former president of the St. Paul Surgical Society.

Dr. Lee Whitmore Smith, 53, died at his home near Polson, Montana, November 18, 1945, after an illness of more than a year and a half. Dr. Smith, who had practised in Butte for nearly 30 years, was a member of the American College of Surgeons and the American Board of Ophthalmology. A native of Wabasha, Minnesota, Dr. Smith was a graduate of the University of Minnesota Medical School. He was an ardent sportsman identified with wildlife programs in Montana.

Dr. Henry Loring Staples, 86, pioneer Minneapolis physician, died December 23 at his home. Dr. Staples had practised in Minneapolis from 1888 until his retirement ten years ago.

Dr. Jacob Thorkelson, 69, died November 20, 1945, at Butte, Montana. Born in Egersund, Norway, Dr. Thorkelson came to the United States 53 years ago. After a career as a master of sea-going vessels, he enrolled at the College of Physicians and Surgeons, Baltimore, from which he was graduated in 1911. He had practised in Montana since 1913. Dr. Thorkelson was a member of Congress for one term.

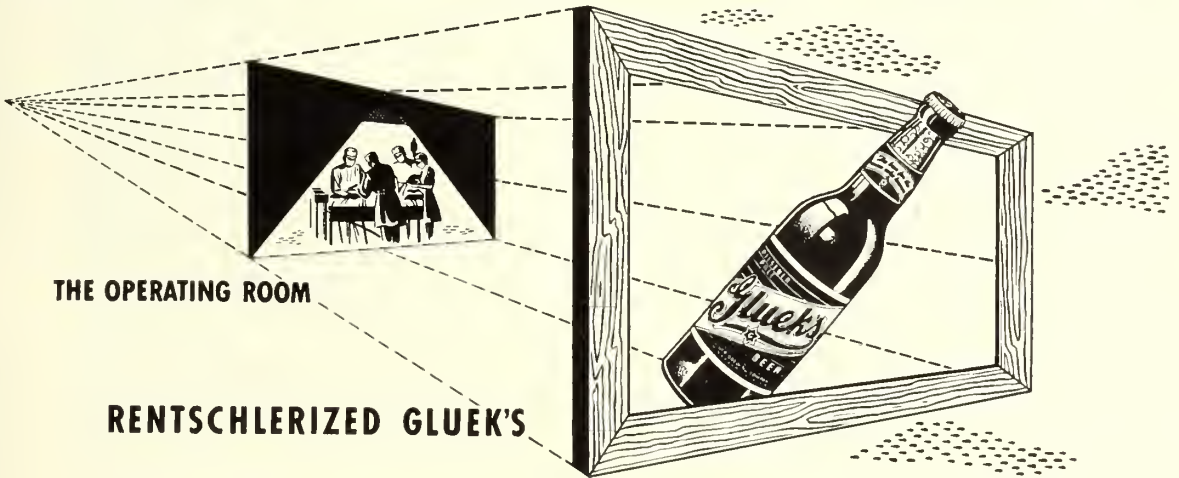
# PASADYNE

may be used whenever a potent sedative is needed, with every assurance that it will meet fully the demands made upon it.

Especially when a sedative must be continued over long periods will PASADYNE demonstrate its unusual therapeutic power as well as freedom from evil effects.

JOHN B. DANIEL, INC.

ATLANTA, GEORGIA



## ...both protected by ultraviolet ray Sterilamps

• When you prescribe Gluek's, you are certain of its purity protection, because it is brewed, aged, and bottled under bactericidal ultraviolet ray Sterilamps—the lamps first developed by Dr. Harvey C. Rentschler of Westinghouse to cleanse and purify the air in hospital operating rooms.

Just as Sterilamps destroy harmful bacteria in the operating room, so do they stand guard day and night in the Gluek

brewery to protect the flavor and purity of Gluek's Beer.

Uniform flavor—*delicious* flavor—purity protected—combine to make Gluek's Beer outstanding—the only Rentschlerized beer in the Northwest.

GLUEK BREWING COMPANY  
MINNEAPOLIS . MINNESOTA



## Classified Advertisements

### FOR SALE

Westinghouse 100 M.A. x-ray; automatic built-in bucky table. All new equipment used one year. A No. 1 outfit. Now in southern Minnesota. Address Box 832, in care of this office.

### PHYSICIAN WANTED

Nice southwestern South Dakota town lacking physician for 1½ years invites returning service doctor to make it his home, enjoy lucrative field for a medical practice from three fine towns in Douglas county. Prosperous territory, population 10,000 or more; other inducements. Correspondence invited. Address Chas. P. Crutchett, c/o Commercial Club, Armour, South Dakota.

### EXCEPTIONAL OPPORTUNITY

for beginning or established physician to share suite of offices with another physician or dentist. Individual treatment room or laboratory in new office building located in very best residential retail section. Address Box 761A, care of this office.

### ASSISTANCE AVAILABLE

Aznoe's, established in 1896, has available a number of well trained physicians (diplomates of the specialty boards, industrial physicians and surgeons, general practitioners, psychiatrists, tuberculosis specialists and residents). For histories, write Ann Woodward, Aznoe's-Woodward Medical Personnel Bureau, 30 North Michigan Ave., Chicago 2, Ill.

### WANTED

December 1945 issue of JOURNAL LANCET. Will pay 25c per copy or credit your 1946 subscription invoice with 50c on each of first 50 copies received. Business office THE JOURNAL LANCET, 84 S. 10th St.



For  
Professional Supplies  
and  
Service

**BROWN & DAY, INC.**

ST. PAUL 1, MINNESOTA



*Famous*

For Purity and  
Softness

Does not alter the  
flavor or bouquet of  
your favorite drink.

Highly Carbonated

Demand Chippewa  
at Your Club or Bar

**CHIPPEWA**  
Sparkling  
**WATER**

Delivered to your Door  
12 quarts **\$1 50**  
24 pints

or  
Coll Your Local Store



# List of Physicians Licensed by the Minnesota State Board of Medical Examiners, November 9, 1945

(OCTOBER EXAMINATION)

| <i>Name</i>                              | <i>School</i>                         | <i>Address</i>                                   |
|------------------------------------------|---------------------------------------|--------------------------------------------------|
| Berkman, David Scott                     | Med. Col. of Va., M.D. 1944           | Mayo Clinic, Rochester, Minn.                    |
| Bronson, Robert Glen                     | U. of Minn., M.B. 1944, M.D. 1945     | Minneapolis Gen. Hospital, Minneapolis 15, Minn. |
| Bush, Robert Philips                     | U. of Pa., M.D. 1944                  | Mayo Clinic, Rochester, Minn.                    |
| Carpenter, George Tyson                  | Northwestern U., M.B. 1944, M.D. 1945 | Mayo Clinic, Rochester, Minn.                    |
| Carpenter, Richard Everett               | U. of Chicago, M.D. 1943              | Mayo Clinic, Rochester, Minn.                    |
| Christianson, Charles S.                 | U. of Oregon, M.D. 1943               | Minneapolis Gen. Hospital, Minneapolis 15, Minn. |
| Conley, Francis William                  | U. of Iowa, M.D. 1943                 | Mayo Clinic, Rochester, Minn.                    |
| Daut, Richard Victor                     | U. of Iowa, M.D. 1945                 | Mayo Clinic, Rochester, Minn.                    |
| Dunn, John Hartwell                      | U. of Tenn., M.D. 1941                | Mayo Clinic, Rochester, Minn.                    |
| Ellis, Franklin Henry, Jr.               | Columbia, M.D. 1944                   | Mayo Clinic, Rochester, Minn.                    |
| Geiser, Peter Michael                    | Bowman Gray Med. Col., M.D. 1944      | St. Mary's Hospital, Minneapolis, Minn.          |
| Hagen, Paul Stickney                     | U. of Minn., M.B. 1940, M.D. 1941     | University Hospitals, Minneapolis 14, Minn.      |
| Hare, Helen Jane                         | Rush Med. Col., M.D. 1942             | Mayo Clinic, Rochester, Minn.                    |
| Henkel, Herbert Bowman                   | St. Louis Univ., M.D. 1944            | Mayo Clinic, Rochester, Minn.                    |
| Holt, Robert Perry                       | U. of Okla., M.D. 1943                | Mayo Clinic, Rochester, Minn.                    |
| Jones, John Robert                       | McGill U., M.D. 1943                  | Mayo Clinic, Rochester, Minn.                    |
| Kennedy, Richard Loren                   | Rush Med. Col., M.D. 1935             | 228 Lowry Med. Arts Bldg., St. Paul 2, Minn.     |
| Krusen, Edward Montgomery, Jr.           | U. of Pa., M.D. 1944                  | Mayo Clinic, Rochester, Minn.                    |
| Leinassar, Jorma Michael                 | U. of Ore., M.D. 1944                 | Ancker Hospital, St. Paul 1, Minn.               |
| Lindberg, David Oscar Nathaniel          | Boston Univ., M.D. 1915               | Buena Vista Sanatorium, Wabasha, Minn.           |
| Lowe, George Henry, Jr.                  | Northwestern, M.B. 1942, M.D. 1943    | Mayo Clinic, Rochester, Minn.                    |
| Macdonald, Ian Donald                    | U. of Ore., M.D. 1944                 | Mayo Clinic, Rochester, Minn.                    |
| MacMurtrie, William Joseph Aloysius, Jr. | U. of Pa., M.D. 1943                  | Mayo Clinic, Rochester, Minn.                    |
| McGuff, Paul Edward                      | Indiana U., M.D. 1944                 | Mayo Clinic, Rochester, Minn.                    |
| Miller, Edward Martin                    | Columbia U., M.D. 1944                | Mayo Clinic, Rochester, Minn.                    |
| Nelimark, Donald Robert                  | U. of Minn., M.B. 1945                | Providence Hospital, Detroit 8, Mich.            |
| Spray, Paul                              | George Washington U., M.D. 1944       | Mayo Clinic, Rochester, Minn.                    |
| Taylor, Ashton B.                        | Northwestern, M.B. 1944, M.D. 1945    | Mayo Clinic, Rochester, Minn.                    |
| Upshaw, Bette Young                      | U. of Texas, M.D. 1942                | Mayo Clinic, Rochester, Minn.                    |
| Weed, Lyle Alfred                        | U. of Iowa, M.D. 1939                 | Mayo Clinic, Rochester, Minn.                    |
| Winchester, Elsie Chilman                | Rush Med. Col., M.D. 1942             | Mayo Clinic, Rochester, Minn.                    |

BY RECIPROCITY

|                             |                                   |                                                  |
|-----------------------------|-----------------------------------|--------------------------------------------------|
| Clayton, Paul Algene        | U. of Mich., M.D. 1942            | Mayo Clinic, Rochester, Minn.                    |
| Craig, Marion Stark, Jr.    | U. of Ark., M.D. 1944             | Mayo Clinic, Rochester, Minn.                    |
| Davis, William Irving       | U. of Minn., M.B. 1939, M.D. 1940 | Mound, Minn.                                     |
| Gilliland, Martha Jordan    | U. of Louisville, M.D. 1941       | Mayo Clinic, Rochester, Minn.                    |
| Hazel, John Tilghman        | Georgetown U., M.D. 1928          | Mayo Clinic, Rochester, Minn.                    |
| Leavitt, Milo David, Jr.    | U. of Pa., M.D. 1940              | Mayo Clinic, Rochester, Minn.                    |
| Marshall, Helen Stewart     | U. of Wis., M.D. 1942             | Duluth Clinic, Duluth 2, Minn.                   |
| Parker, Warren E.           | U. of Minn., M.B. 1934, M.D. 1935 | Wadena, Minn.                                    |
| Pollard, William Henry, Jr. | U. of Wis., M.D. 1942             | 1300 University, Madison, Wis.                   |
| Pratt, Fred John            | U. of Ark., M.D. 1944             | Minneapolis Gen. Hospital, Minneapolis 15, Minn. |
| Schmidt, Edward Carl        | U. of Wis., M.D. 1940             | Mayo Clinic, Rochester, Minn.                    |
| Woodward, Robert Samuel     | Creighton U., M.D. 1943           | Ancker Hospital, St. Paul, Minn.                 |

NATIONAL BOARD CREDENTIALS

|                            |                                   |                               |
|----------------------------|-----------------------------------|-------------------------------|
| Fitzgibbons, Robert Joseph | Creighton U., M.D. 1943           | Mayo Clinic, Rochester, Minn. |
| Glynn, James Joseph        | Col. of P. & S., N. Y., M.D. 1943 | Mayo Clinic, Rochester, Minn. |
| Hartigan, John Dawson      | Creighton U., M.D. 1943           | Mayo Clinic, Rochester, Minn. |
| Henderson, Edward Drewry   | U. of Minn., M.B. 1943, M.D. 1944 | Mayo Clinic, Rochester, Minn. |
| Le Blanc, Leo James        | St. Louis U., M.D. 1941           | Mayo Clinic, Rochester, Minn. |

Announcing

**LUSYN**  
TABLETS

In functional  
gastro-enteropathies

A rational new application of three distinct components successfully complementing the action of each other, both pharmacologically and therapeutically, has resulted in the formulation of LUSYN in Maltbie's research laboratories.

Highly effective, yet non-toxic in recommended dosage, LUSYN's clinical efficacy lies in its unique threefold pharmacological action:

1. Its homatropine methylbromide ( $\frac{1}{24}$  gr.) relieves *gastro-intestinal spasm* without unpleasant side effects.
2. Its phenobarbital ( $\frac{1}{8}$  gr.) aids in providing *central sedation*, thus helping to control the psychogenic factor.
3. And its alukalin (5 gr.) is a potent *antacid* and *adsorbent*, which tends to *reduce irritability* and *add bulk*.

*Indications* include: pylorospasm—cardiospasm—unstable colon—biliary dyskinesia—biliary colic—and as an adjuvant to the dietary and medical management of peptic ulcer, intestinal flatulence and gastro-enteritis.

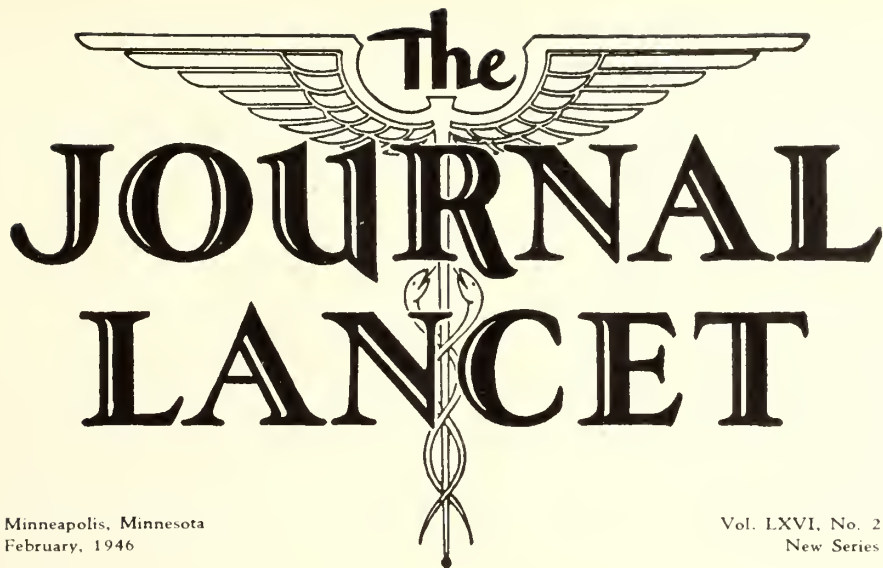
*Suggested dosage*: 1 or 2 tablets before meals.

Supplied in bottles of 100 tablets each.



**LUSYN**  
TABLETS

The Maltbie Chemical Company • Newark, New Jersey



# The JOURNAL LANCET

Minneapolis, Minnesota  
February, 1946

Vol. LXVI, No. 2  
New Series

## The Ulcer Problem

Owen H. Wangensteen, M.D., F.A.C.S.  
Minneapolis

IT is indeed a rare privilege to be asked to give one of the triennial lectures of your association commemorating Lister, easily first among all surgeons of all time. My sense of genuine appreciation of this high honor is marred not alone by the knowledge that this compliment is ill deserved, but also by serious personal misgivings over being able to bring something to you suitable to the occasion.

Pope once said: "His praise is lost who waits till all commend." So many eulogies have been spoken of Lister, his life and his great work, that it would ill befit me on this occasion to attempt to tell again what others before have said with luster. If I were to attempt to add another stone to the coping stone of encomiums with which Lister's life and work have been crowned, it would appear out of place and a slight to those who have done their work so well. Your own inimitable Archibald on a similar occasion said: "The chorus of his praise has become almost a liturgy, and one can only hope to write the liturgy in somewhat different phrases." It is fitting in contemplating the life of this great benefactor of surgery and society that we resign ourselves to the piety of memory, renew acquaintance with his ideals, and reflect for a moment upon the arduous labors and glory of this great and good man. We need the example of men like Lister more than they need our praise. On the occasion of the Lister commemoration, it is fitting that we rededicate ourselves to the noble tasks which he so greatly advanced.

The Seventh Listerian Oration, presented before the Canadian Medical Association, Montreal, Quebec, June 13, 1945, and first published in the Canadian Medical Association Journal (53:309, 1945), from which it is reprinted with the permission of the author and the editor of the Journal.

From the Department of Surgery, University of Minnesota Medical School.

Supported by special grants for surgical research from the following sources: Citizens' Aid Society, Augustus L. Searle, Dr. and Mrs. Harry B. Zimmermann, the Dr. Berenice Moriarity, and the Robert A. Cooper Funds, and a grant from the Graduate School of the University of Minnesota.

Accompanying publication of the first Listerian Oration by your own late John Stewart, of Halifax, the Lister Memorial Club of your association made this announcement: "The first Listerian Oration published herewith is very properly concerned with the life and work of Lord Lister himself; subsequent orations may draw not only upon the various items associated with Lister's life, but may include also the story of all great and important advances in scientific surgery and medicine." I hesitate to be the first to break with the tradition of dealing with surgery in a historical manner on this important occasion, but with the kind permission of your officers I shall attempt to tell you briefly something of the skirmishes that my associates and I have been having with the ulcer problem. Did not Lister himself break more forcibly with tradition in surgery than anyone else has before or since? Having the permission of your officers and the precedent of Lister's own example, I will embark on this undertaking without attempts at further justification.

### THE ASPECTS OF THE ULCER PROBLEM TO BE DISCUSSED

This is not the place for, nor would time permit presenting a general survey of the problem of ulcer. Your own Babkin (1944) has reviewed in a comprehensive manner the whole problem of gastric secretion and its relation to the ulcer problem. Rather, it is my intention in the time available to acquaint you with studies which my associates and I have been prosecuting on phases of the ulcer problem: (1) etiology, with special reference to an interrelationship between the vascular and the acid-peptic digestive factors in the genesis of ulcer; (2) characterization of a satisfactory operation which will protect against recurrent ulcer.

My associates who have lent special impetus to the experimental phases of the work reported herein are Drs. R. L. Varco, L. J. Hay, B. G. Lannin, K. A. Merendino,



F. Kolouch, and I. Baronofsky. These men have successively spent a year or more in the Experimental Laboratory of Surgery. And during the last seven years, covering the period of their tenure in the laboratory, various phases of the ulcer problem have been worked upon intently. All these men have had an important role in wresting from nature the observations reported here.

#### ULCER PRODUCTION

Ulcer of the stomach and/or duodenum may be produced experimentally by several means. A number of occurrences have suggested the great importance of the acid-peptic digestion factor in the origin of ulcer. Foremost among these are: (1) the Mann-Williamson operation (1923), in which the bile and pancreatic juice are diverted away from the gastric outlet; and (2) the attachment of an isolated gastric pouch to a short intestinal loop, attached in turn to the jejunum or ileum (Matthews and Dragstedt, 1932). Since these procedures leave no opportunity for the usual neutralization of the acid-peptic digestive juice by the alkaline digestive juices, ulcer follows both these operations in nearly all instances.

These circumstances, though they serve to emphasize the significance of unneutralized gastric juice in the genesis of ulcer, are nevertheless quite artificial. An important deterrent to general acceptance of the acid-peptic theory in the genesis of ulcer, as suggested by these experiments, was failure to produce ulcer by histamine, the most profound known stimulant of gastric secretion. Orndorff, Bergh, and Ivy (1935) carried out a diligent attempt to provoke ulcer in dogs with histamine. Ten dogs were injected subcutaneously with 2 mg. of aqueous histamine every two hours, day and night, ten times a day, with a 4-hour rest period daily. These daily injections extended over a period of 66 days. No ulcers were produced, but four of the nine dogs in which the experiment was completed exhibited superficial erosions in the duodenum.

In 1939-40 Charles Code, a graduate of the University of Manitoba Medical School, was working in our department of physiology at the University of Minnesota with Professor M. B. Visscher. Code was interested in the effects of histamine intoxication. Our laboratory in surgery was concerned with the problem of gastric secretion. We fused our efforts, and through Code's interest a tool was created that has proved of real worth in studying the ulcer problem. Code and Varco (1940) implanted histamine-in-beeswax to permit its gradual liberation and thereby were able to elicit a prolonged histamine action. Employing 30 mg. of histamine implanted in beeswax and injected once a day into dogs, ulcer could be produced quite regularly with doses not much larger than the total daily dose which was ineffective in the hands of Orndorff, Bergh, and Ivy (1935) when injected in aqueous solution.

The implantation of histamine-in-beeswax has proved a useful tool, not only indicating the importance of the acid-peptic factor in the origin of ulcer, but also in assaying the protective influence of a given operation against the ulcer diathesis.

In the earlier observations upon ulcer genesis reported from this laboratory stress was placed primarily upon the

acid factor. Subsequent observations have demonstrated that the peptic factor too is important in augmenting the injury occasioned by unneutralized acid. Kolouch (1945) observed that when gastric juice containing both acid and pepsin, obtained from dogs with isolated gastric pouches under the influence of histamine stimulation, was dripped onto exposed mucosal surfaces of the antrum or duodenum in the dog, mucosal injury was greater than when hydrochloric acid alone, of the same pH, was employed as the dripping agent. Furthermore, observations made during the past two years suggest definitely that ulcer may be produced by a variety of means that fail to augment gastric secretion. In these very experiments acid-peptic digestion is nevertheless an important agent in causing erosion and/or ulcer; that is, without the acid-peptic digestive mixture gliding over the mucous membrane of the stomach or duodenum, ulcer would not occur. Before detailing some of these experiments, however, I should like to summarize the evidence on ulcer production in various animals with histamine stimulation.

A. *The histamine-in-beeswax provoked ulcer.*<sup>29</sup> In Table 1 is shown, in summary, the incidence of ulcer production in various animals when the histamine-in-beeswax technique is employed. Only in the monkey and in the rabbit was it difficult to produce ulcer by stimulating the endogenous mechanism of the stomach to secrete. In the dog the usual site of ulcer after histamine was very much like the spontaneous ulcer in man; the duodenum and the antrum were the sites of predilection. In the chicken and duck the ulcers occurred in the gizzard; in the pig the squamous epithelium of the upper end of the stomach seemed most sensitive to acid-peptic digestion and all the ulcers occurred in the cardia with perforation onto the pancreas. Perforation was frequent in the cat and guinea pig. In the main, the duodenum in most of our experimental animals, as in man, appeared to be a favorite site of ulcer formation; in many, however, the ulcer was in the stomach, and a number of animals presented both gastric and duodenal ulcers.

It is interesting that it was possible to produce ulcer quite regularly in the rabbit by the histamine-in-beeswax technique upon discarding the cellulose pulp of cabbage,

TABLE 1  
INCIDENCE OF ULCER PRODUCTION IN VARIOUS ANIMALS  
ACCOMPANYING DAILY INTRAMUSCULAR IMPLANTATION  
OF HISTAMINE-IN-BEESWAX

| Animal      | No. in series | Daily amount of histamine base milligrams | No. of days of injections | No. of ulcers | Per Cent |
|-------------|---------------|-------------------------------------------|---------------------------|---------------|----------|
| Dogs        | 12            | 30                                        | 4-37                      | 11            | 87.5     |
| Guinea pigs | 8             | 5                                         | 2-11                      | 6             | 75.0     |
| Cats        | 5             | 5                                         | 3-28                      | 4             | 80.0     |
| Chickens    | 3             | 7.5                                       | 4-9                       | 3             | 100.0    |
| Ducks       | 2             | 20                                        | 20-26                     | 2             | 100.0    |
| Swine       | 3             | 40                                        | 13-15                     | 3             | 100.0    |
| Woodchucks  | 3             | 15-20                                     | 5-30                      | 2             | 66.0     |
| Calves      | 4             | 30 to 150                                 | 1-50                      | 2             | 50.0     |
| Monkeys     | 4             | 20-50                                     | 23-59                     | 1*            | 25.0     |
| Rabbits     | 8             | 7.5 to 30                                 | 5-41                      | 1*            | 12.5     |

\*Superficial erosive ulcer.

carrots, and lettuce, feeding only the juice that went through the press. By this means it was possible to get the rabbit's stomach empty, permitting the acid-peptic digestive mixture an opportunity to attack the gastric or duodenal wall directly. Perforated ulcers of the duodenum were produced in all four rabbits subjected to this modification of the experiment.

B. *The vascular factor in ulcer genesis.* Most of us come slowly to conclusions which are at variance with our previously held ideas. The import of the production of ulcers by the histamine-in-beeswax technique was to re-emphasize the significance of the acid-peptic digestion factor in the genesis of ulcer. "No ulcer without free hydrochloric acid" has come to be a commonplace expression. The frequency with which a bleeding ulcer becomes manifest for the first time in persons in the sixth or seventh decade has undoubtedly seemed a little unusual to clinicians who hold to the acid-peptic factor as the important determinant in ulcer genesis. If those patients harbored the ulcer diathesis, why did they not manifest symptoms earlier in life?

In 1931 suction applied to an indwelling duodenal tube became standard practice in this clinic in the post-operative management of abdominal cases, to prevent intestinal distension. Prior thereto hematemesis was observed occasionally as a postoperative complication, especially in peritonitic distended abdomens. With the commencement of the use of suction as a routine post-operative measure to prevent the occurrence of distension, hematemesis disappeared as a postoperative complication. Eiselsberg, it is to be recalled, described this occurrence in 1899, and attributed it to retrograde thrombosis of the gastric wall, reaching the stomach via the omentum and mesentery. Payr (1907, 1910), and Wilkie (1911) both observed that retrograde embolism of the veins of the stomach with resultant formation of gastric erosions and/or ulcer could be produced by injection of particulate matter into the veins of the omentum. Wilkie's paper is written with the clarity of style that characterized all his work. In addition, his paper is accompanied by beautiful illustrations, several in color.

#### 1. *Fracture and hematemesis.*<sup>69</sup>

##### CASE 1

In 1940, severe hematemesis was observed in a man, L. W., aged 36, admitted December 9, 1940, with multiple fresh fractures sustained in an automobile accident. Fat was demonstrated in the urine the day following admission. A few days later repeated hematemesis and melena, persisting a week and necessitating several transfusions of blood, occurred. The prothrombin time and vitamin C level in the blood were normal. The patient eventually made a satisfactory recovery and was dismissed to his physician on February 26, 1941. There had been no antecedent story of ulcer or bleeding.

##### CASE 2

The above occurrence was looked upon as a fortuitous circumstance until Mrs. K. A., aged 82, was admitted directly after having sustained a fractured neck of the left femur in a fall on March 15, 1942. During the next few days the patient was mentally confused and also incontinent. The hemoglobin was 11.9 gm. On March 25 vomiting of blood and melena occurred. There was quickening of the pulse and mild shock. Transfusions of blood and a constant intragastric drip of Varco formula No. II were begun on March 26; despite the transfusion of 1000 cc. of blood, the hemoglobin was only 7.8 gm.

The patient's condition worsened and death occurred March 29. There had been no antecedent story of ulcer prior to the fracture. At autopsy an ulcer 15 x 22 mm. was found in the first portion of the duodenum on the posterior wall. The edges and floor of the ulcer were soft and the base appeared somewhat necrotic. Bronchopneumonia was present and the presence of a fracture was verified. Microscopically, the ulcer extended through the circular muscle of the duodenum and an interstitial antral gastritis was found.

##### CASE 3

Soon thereafter a third patient, a young man aged 17, was admitted on July 31, 1942, 11 days after having been injured in an automobile accident. He was unconscious for five days following the accident. When admitted here, a compound fracture of the right femur was present with considerable comminution of the shaft; there was also fracture of the right ankle, a hematoma in the scalp, and a deep laceration of the right hand. Hematemesis occurred on August 8, 1942, and coffee-ground emesis thereafter was not infrequent, until death, which occurred August 15. The patient's course was febrile and stormy. Blood cultures were repeatedly negative. At autopsy the presence of multiple fractures was verified. A mucosal erosion 5 mm. in diameter was present in the midportion of the corpus of the stomach along the greater curvature. There was submucosal hemorrhage about it. A submucosal area of hemorrhage measuring 4 mm. in diameter was present at the lesser curvature, 2 cm. above the pylorus. Four additional hemorrhagic areas were present in the antral mucosa, measuring approximately 2 mm. in diameter. Microscopically, minute miliary abscesses were observed in the heart, liver, pancreas, and brain.

##### CASE 4

In the meantime, a fourth patient, a Mr. E. C., aged 68, was observed in whom melena occurred after fracture. He gave the following story. He was admitted with a fresh fracture of the neck of the right femur on March 27, 1942. On May 1, 1942, hematemesis and melena occurred. The stools were consistently positive for blood. The patient had undergone gastrojejunostomy elsewhere 18 years previously for a duodenal ulcer. He had experienced occasional transient epigastric distress in the intervening years, but this was the first hemorrhage since operation. An X-ray film on May 27, 1942, showed a large stomal ulcer 2 cm. in diameter. The patient did well on an ulcer regimen and was dismissed to his home on crutches on May 29, 1942. There has been no recurrence of melena.

The pathological records of Dr. Bell's department revealed, over a 7-year period (1926-32) 15 additional cases of fracture in which hematemesis, ulcer, and/or erosion, gastric and/or duodenal, were noted in the records of the post-mortem examinations on fracture cases.

2. *Experimental production of ulcer and/or erosion by fracture or curettment of bone marrow.*<sup>49,50</sup> These observations just reported suggested the necessity of determining whether ulcer could be produced by fracture. A series of six guinea pigs were subjected to fracture of a femur. Some of the guinea pigs received repeated fractures of other long bones at weekly intervals. One developed a gastric ulcer. Two others exhibited a gastroduodenitis. An equal number of cats were treated in a similar fashion. No gastrointestinal pathological results were noted.

Fifty-two dogs were subjected to a drill hole through both cortices of the humerus, a drill hole with curettage of the bone marrow, or fracture. These animals were sacrificed at various periods of time up to 23 days: 53 per cent developed gastroduodenal disease. Erosions and/or ulcer of the stomach or duodenum were produced in 11 dogs (21 per cent). In one instance a perforated duodenal ulcer was observed.



This evidence suggests a causal relationship between fracture and acid-peptic ulceration of the stomach and duodenum. Three possible explanations have been proposed: (1) A histamine effect from the fracture site, with stimulation of gastric secretion; (2) fat embolism; (3) a combination of these two factors.

The fasting gastric samples of 10 fracture patients were analyzed for acid and volume. These samples were obtained the day following fracture and for several subsequent days. No stimulatory effect on the gastric secretory mechanism was observed as judged in the light of responses of normal patients without fracture.

Six dogs with isolated gastric pouches were studied. The operative trauma consisted of a drill hole through both cortices of the humerus, a drill hole with curettement of the bone marrow, or fracture. One animal exhibited a prolonged (24-hour) stimulation of gastric acid and volume following fracture. This result could not be reproduced in the same dog during a subsequent experiment.

Subsequently 18 intact dogs (including three controls) were subjected to a drill hole through both cortices of the humerus. Gastric aspirations were carried out daily for 23 days. No stimulation of the gastric response was observed in excess of that of the control animals nor of each individual dog's standard fasting curve prior to the trauma to the bone. In consequence it may be concluded that a histamine effect is not the primary cause of the observed erosions or ulcerations of the stomach and duodenum following fracture.

3. *Ulcer production by the intravenous injection of fat.*<sup>3</sup> It remained to be determined whether ulcer could be produced experimentally by the intravenous injection of fat. Human breast or omental fat was employed, obtained from surgical procedures and extracted with ether. One and one half cc. of fat per kilogram of body weight was injected intravenously. It has previously been stated that rabbits are quite refractory to ulcer production by histamine alone. In each of six rabbits, whose weights averaged 1.74 kg., a single intravenous injection of 1.5 to 2 cc. of fat was made. Then 30 mg. of histamine-in-beeswax were implanted once daily for one to four days. No dietary strictures were imposed on the rabbits. A perforated ulcer occurred in each instance except one, and that rabbit died of pulmonary embolism shortly after the fat injection (Fig. 1). Three rabbits were injected with fat but were given no histamine. Ulcer did not develop. In two additional rabbits, a daily implantation of 30 mg. of histamine-in-beeswax was made over a period of 28 days; neither developed ulcer.

Similar studies were carried out on cats, dogs, and guinea pigs that received no histamine. A single intravenous injection of fat, 1.5 cc. per kilogram in amount, was made into each animal; of six cats injected, two developed ulcers; one at four, the other 18 days after the fat injection. Of two guinea pigs injected with fat, both exhibited typical gastric ulcers. Of seven dogs given a single intravenous injection of fat, a bleeding duodenal ulcer was found in one dog sacrificed 14 days

after the fat injection. Of three dogs that received 30 mg. of histamine-in-beeswax daily following a single intravenous injection of fat, all developed multiple bleeding duodenal and gastric ulcers within three days after the first injection of histamine.

Microscopic studies were made of tissues stained with Sudan III in all the 52 animals receiving fat intravenously; a single block of brain, lung, kidney, and stomach was studied in each instance. Table 2 shows

TABLE 2  
INFLUENCE OF TIME INTERVAL ON OCCURRENCE OF  
FAT EMBOLI ATTENDING THE INTRAVENOUS  
INJECTION OF FAT

| No. of animals sacrificed from 1 to 4 days after fat injections | Amount of fat injected | Percentage of tissues revealing fat emboli |       |        |         |
|-----------------------------------------------------------------|------------------------|--------------------------------------------|-------|--------|---------|
|                                                                 |                        | Lung                                       | Brain | Kidney | Stomach |
| (A) 23                                                          | 1½ cc./kg.             | 91                                         | 60    | 73.9   | 47.8    |
| Sacrificed from 5 to 21 days after fat injection                |                        |                                            |       |        |         |
| (B) 29                                                          | 1½ cc./kg.             | 41                                         | 11.1  | 34.4   | 3.7     |

that the identification of fat in the stained sections was considerably higher, especially in the stomach, in the animals sacrificed and studied within one to four days after the fat was injected intravenously.<sup>4a</sup>

4. *Interpretation of these observations.* Fat injected intravenously does not stimulate or augment gastric secretion in dogs with isolated gastric pouches. The mechanism of ulcer production undoubtedly is that of plugging the end vessels to the mucosa; the resultant anemic areas in the mucosa become less resistant to injury and digestion by the acid-peptic juice than is the normal mucosa. The rate of disappearance of the fat from the mucosal and submucosal gastric vessels is rapid, as indicated in Table 2. This circumstance undoubtedly accounts for the fact that hematemesis, erosions, or ulcer have not been observed more commonly to accompany fracture of long bones in man. That fat emboli in the lung and brain are common occurrences in patients dying early after fracture of long bones is well known (Le Count and Gauss, 1915; Bissell, 1916). In response to an inquiry addressed to fifty American orthopedic surgeons concerning the occurrence of hematemesis or ulcer after fracture, forty-two replies were received. None reported observing ulcer or hematemesis in patients not previously having ulcer. However, one instance very similar to Case 4 above was reported to me by Dr. R. C. Webb, of Minneapolis. His patient, like my Case 4, had undergone gastrojejunostomy previously for a duodenal ulcer; a temporary bleeding stomal ulcer appeared shortly after the fracture, which responded promptly to conservative management. Two surgeons each reported having observed hematemesis once after the manipulation of a stiff joint under anesthesia.

The only previous allusion to the occurrence of erosion and/or ulcer following fracture that I have been able to find in the literature is to be found in a discus-



sion of a paper by Sternberg (1907), entitled, "Experimental Production of Gastric Ulcers in the Guinea Pig." Sternberg was discussing the influence of alcohol in the production of ulcer and the process by which acute erosions become chronic ulcer. In the discussion of Sternberg's paper, Schridde stated that he had twice observed fat embolism at post-mortem in the submucosal gastric arteries accompanying fracture. In one patient, a 70-year-old man, there were numerous erosions and 20 superficial ulcers. The patient died of coma, which had persisted following the fracture. Schmorl, in a six-line discussion at the same meeting of the German Pathological Society (1907), stated that he too had observed punctate hemorrhages in the gastric mucosa due to fat embolism following fractures and severe bodily contusions.

Florer and Ochsner (1945) recently reported the instance of a boy of 14 who sustained rupture of the thoracic duct and chylothorax following injury. The chyle was reaspirated and injected intravenously. The boy died of a perforated duodenal ulcer 25 days after he was injured. Is one justified in wondering whether the fat from the injected chyle attained larger particulate size on standing in the pleural cavity, thus giving rise to embolism on injection? In other words, did the intravenously injected fat play an important role in the development of the ulcer?

These studies on the relation of erosion and/or ulcer to fat embolism following fracture or amputation are by no means complete. With the helpful cooperation of Professor E. T. Bell and his associates of the Department of Pathology, we are now beginning to collect evidence on the presence or absence of fat emboli in the mucosal and submucosal vessels of patients dying of multiple fractures shortly after receipt of injury. In the few patients thus far studied, it would appear that fat embolism of the gastric end-vessels is just as common as it was in the experimental studies reported herein. It may be justifiable to ask whether bacterial emboli may not also give rise to gastric hemorrhage.

5. *The epinephrine provoked ulcer.*<sup>4</sup> The production of ulcer by the intravenous injection of fat suggested that an attempt be made to produce chronic vasomotor arterial spasm, to note whether ulcer would follow.

Fourteen rabbits were subjected to daily intramuscular injections of 2 mg. of powdered epinephrine and 30 mg. of histamine dihydrochloride, computed as histamine base, each implanted in beeswax. The difficulty of pro-

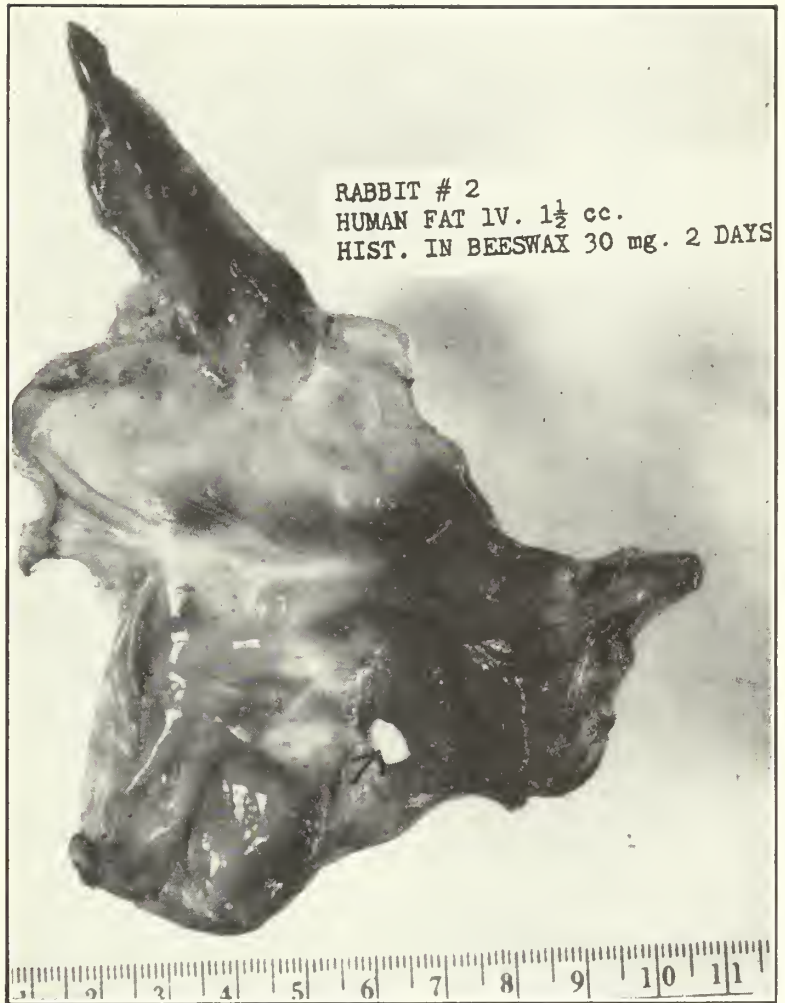


Fig. 1. Perforated ulcer in stomach of a rabbit after single injection of 1.5 cc. of human omental fat. Histamine-in-beeswax (30 mg.) was given for two days. The rabbit is quite refractory to the production of ulcer with histamine. In other words, the intravenous injection of fat sensitized the rabbit to ulcer. (Illustrations of ulcer produced in various animals by histamine accompany the paper by Hay et al. in *Surg., Gyn. & Obst.*, 75:170, 1942).

ducing ulcer in rabbits by implantation of histamine-in-beeswax alone has already been mentioned; however, in the 14 rabbits in which implantation of powdered epinephrine was made in beeswax, accompanied by the simultaneous administration of histamine-in-beeswax, ulcer or erosion occurred in each instance. Seven rabbits had one or more perforated gastric or duodenal ulcers. Of the remainder, two showed bleeding gastric ulcer, and the rest had multiple bleeding gastric ulcer in the fundus or pylorus. There was evidence of gross hemorrhage into the gastrointestinal tract in all. The average length of survival was four days. Controls given histamine-in-beeswax alone up to 10 days showed no evidence of either erosion or ulcer.

Two dogs were given intramuscular injections of 8 mg. of epinephrine-in-beeswax daily. One animal died of gastrointestinal hemorrhage after four injections and the other after two injections. Marked dilatation of the stomach and a severe gastritis and duodenitis with mul-

multiple erosions and bleeding points in both stomach and duodenum were noted in both these dogs. A small, shallow duodenal ulcer was noted in one. Fresh blood was present in the stomach and duodenum in both dogs. In two guinea pigs, 2 mg. of aqueous adrenalin were suspended in gelatin and injected intramuscularly. In both guinea pigs erosions and shallow ulcers were observed in the stomachs after the daily administration of this dose of adrenalin for three days. Repeated tests with adrenalin in aqueous form failed to reveal any definite stimulation of gastric secretion in Heidenhain and Pavlov pouch dogs.

6. *The pitressin provoked ulcer.* Dodds and associates (1934) produced superficial erosions and hemorrhages in the mucosa of the fundus of the stomach of several laboratory animals by a single injection of pitressin. Later (1935) Dodds and his associates reported having produced chronic ulcer with perforation in rabbits by giving 40 cc. of the British Pharmacopoeia pituitrin by stomach tube once a week over eight weeks. Ulcer was also produced by giving 5 cc. of the British Pharmacopoeia extract subcutaneously to rabbits every other day for four injections.

Dodds and his associates (1935) failed to obtain evidence of stimulation of gastric secretion with pituitrin. On the contrary, they observed evidence that pituitrin inhibited the usual stimulating effect of a small dose of histamine. Nedzel (1938) confirmed these observations of Dodds and his associates and stated that vascular interference with local nutrition of the gastric mucosa is the primary factor in the production of hemorrhages and erosions. Byrom (1937) observed that the giving of large single doses of pitressin (740 pressor units) produced gross lesions in the kidney, liver, and other organs characterized by ischemia and necrosis. Hemorrhagic erosions also were observed in the stomach. Byrom believed these changes to be caused by an intense arterial spasm which produced ischemia and necrosis.

The observations of Dodds and his associates and of Nedzel were confirmed in our own observations on cats, guinea pigs, and rabbits. The depressant action of pitressin on gastric secretion also was verified on dogs with isolated Heidenhain or Pavlov pouches. The conclusion is that the chronic arterial spasm invoked by epinephrine or pitressin produces local areas of anemia in the gastric mucosa, which then become susceptible to the acid-peptic digestive activity of the gastric juice.

7. *The production of bleeding from gastric and esophageal erosions and/or ulcer invoked by obstruction of the portal circulation.* Gastric hemorrhage in obstruction of the portal vein or its tributaries is not an uncommon clinical occurrence. Such bleeding usually has been attributed to the bursting of mucosal or submucosal esophageal varices. Patients with obstruction of the superior vena cava exhibiting esophageal varices do not bleed, however. May not the increased venous pressure resulting from portal obstruction render the gastric mucosa more susceptible to erosion of the acid-peptic digestive juice? It appears safe to conclude that arterial spasm of the gastric end-vessels invites erosion of the gastric mucosa by the acid-peptic digestive activity of the gastric

juice. Why should not mucosal congestion brought about by venous stasis lead to the same result?

To test the validity of this hypothesis, the following experiments were carried out on rabbits and dogs in three series. In each series a partial obstruction to the normal venous return of blood from the stomach to the portal system was made. In two of the series the normal flow of venous blood from the left gastroepiploic vein into the splenic was obstructed by a tie placed proximal to their juncture. In the third series cellophane was placed snugly around the portal vein as it lay in the gastrohepatic omentum. Pearse (1940) has shown that cellophane, when placed around the aorta, will slowly obliterate this vessel, an occurrence occasioned through the agency of a severe fibroblastic reaction within six weeks of the placement of the cellophane ligature. These procedures were tolerated very well by the animals, and all animals were eating and drinking normally as soon as the effects of the anesthetic wore off. After an interval of two days after operation in the splenic-tie series and an average of 113 days in the portal-tie series, the daily administration of 30 mg. of the histamine-in-beeswax mixture prepared after the method of Code and Varco (1940) was commenced. The time of sacrifice of the dogs was determined by the occurrence of spontaneous hematemesis, melena, or extreme weakness. The rabbits were sacrificed at varying periods of time. In all animals the stomachs were weighed. An effort was made simultaneously to garner control data on the weights of normal stomachs in both rabbits and dogs.

*Results.* Transient immediate increase in size of the spleen attended partial venous obstruction of the stomach and splenic vein. In the dogs with obstruction of the portal vein, a well-developed collateral circulation was noted. The veins of Retzius, the anastomosis of the superior hemorrhoidal vein, the esophageal veins, and the veins coursing through the omentum were uniformly enlarged and prominent.

In Series 1, consisting of five dogs, the splenic, the left gastric, and the left gastroepiploic veins were divided and tied. Two days later the administration of 30 mg. of histamine-in-beeswax was commenced. The dogs were sacrificed when they appeared ill, four on the fourth day after ligature of the splenic vein, and the other on the sixth day. All dogs exhibited severe bleeding and there were large duodenal and/or gastric ulcers in all. Three exhibited erosions in the lower end of the esophagus (Fig. 2). Five other dogs were employed as controls. In two the veins were tied, but no histamine was given. These dogs were sacrificed 71 days later. No ulcers or erosions were found. In three other dogs no vein ligatures were made, but the dogs were given 30 mg. histamine-in-beeswax daily, for two to four days before sacrifice. None of these exhibited erosions or ulcer. The stomachs of all dogs with vein ligatures were distinctly heavier than the two control dogs that received histamine alone.

In Series 2 there were four dogs, in all of which the portal vein was obstructed by a cellophane ligature. Two received histamine-in-beeswax; two did not. The two dogs receiving histamine were killed within three days



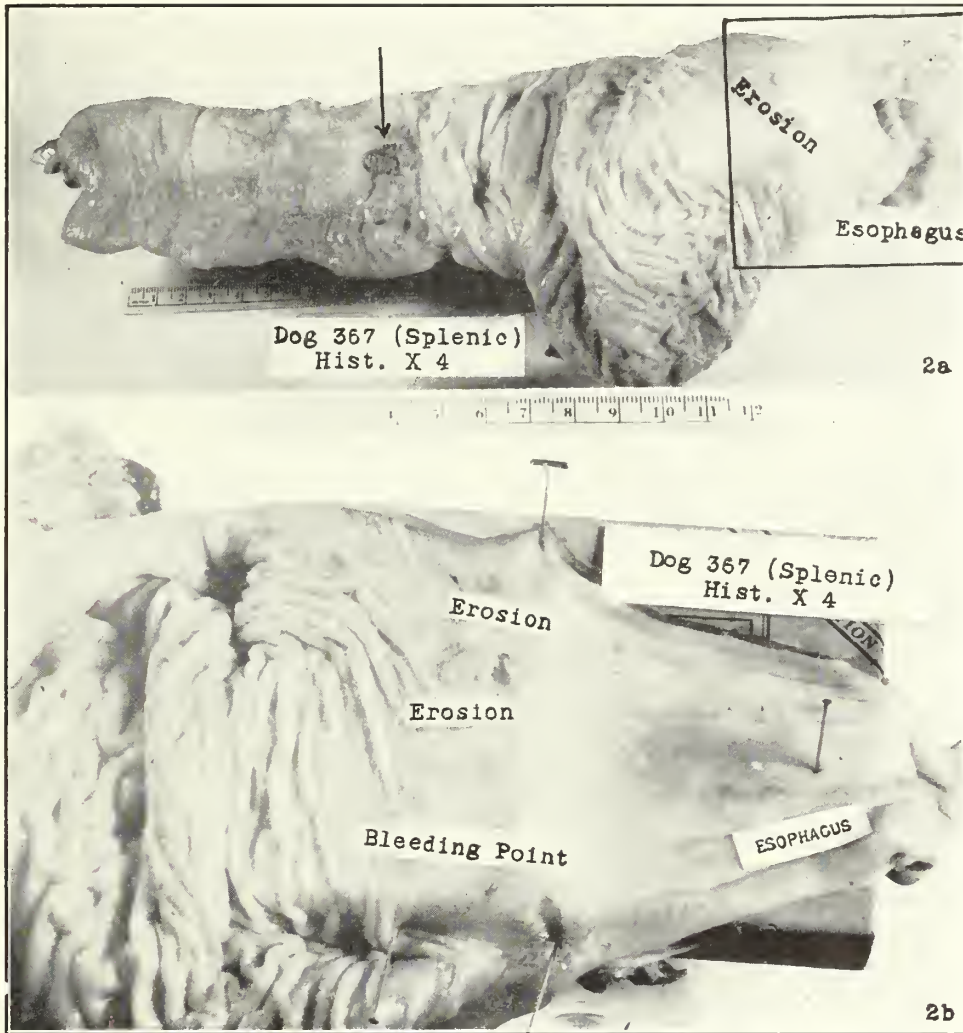


Fig. 2. Duodenal ulcer (a) and peri-esophageal erosions (b) in the upper end of the stomach in a dog after ligation of the splenic, left, gastric, and left gastroepiploic veins. The dog received 30 mg. of histamine-in-beeswax daily for four days. There was considerable blood in the stomach. (a) Orientation photograph. (b) Close-up of bleeding erosions in upper end of the stomach.

after commencement of its administration. Both these dogs exhibited large perforating duodenal ulcers. In one there was bleeding from an eroded esophageal varix. The other dog exhibited multiple bleeding gastric ulcers. The two dogs not receiving histamine had heavy stomachs, but exhibited no ulcers. In one there was a submucosal hemorrhage in the lower end of the esophagus. The portal vein had been obstructed 150 days before.

In Series 3 there were 18 rabbits. The vein ligatures were the same as in the dogs in Series 1. In nine rabbits the vein ligatures were followed by the daily administration of 30 mg. of histamine-in-beeswax for one to seven days before sacrifice. In eight of these nine rabbits bleeding erosions and/or ulcer were present. In two, bleeding erosive lesions in the lower esophagus were present. There were nine controls. In four rabbits the vein ligatures were carried out, but the animals received no histamine. There were no erosions or ulcers. Five received histamine, but the veins were not obstructed.

Neither erosions nor ulcers were observed in this group.

It is evident from these experiments that obstruction of the venous drainage from the stomach abets the ulcer diathesis. That is, erosions and ulcer are far more readily provoked with histamine in the presence of portal hypertension than when there is no obstruction to venous outflow of blood from the stomach. The difficulty of producing ulcer in rabbits by histamine alone has been mentioned already. However, as is indicated herein, bleeding ulcers and erosions follow regularly when histamine administration is preceded by ligation and division of the splenic vein. In the dog, too, ulcer is produced regularly in a surprisingly short time when the venous drainage from the stomach is obstructed, accompanied by the administration of histamine. Esophageal varices were observed regularly in the experiments of longer duration, in which the portal vein was obstructed. Esophageal erosions were observed in several of the dogs.

Another striking finding was the uniform increase in



weight of the stomachs of both rabbits (see Table 3) and dogs, in which obstruction to the venous outflow from the stomach had been established. Microscopically, this occurrence appears to be due to an edema of the entire gastric wall, but especially of the submucosa. Erosion of the mucosa by acid occurs readily when the blood supply has been altered by obstructing the venous outflow.

TABLE 3

WEIGHTS OF STOMACHS OF RABBITS SUBJECTED TO SPLENIC VEIN LEFT GASTRIC AND GASTROEPIPLOIC VEIN LIGATION WITH OR WITHOUT HISTAMINE

| No. of rabbits | Procedure                                                                                   | Average weight of rabbits | Average weight of stomachs in grams |
|----------------|---------------------------------------------------------------------------------------------|---------------------------|-------------------------------------|
| 13             | Splenic-tie                                                                                 | 1.8 kg.                   | 32.03                               |
|                | Histamine                                                                                   |                           |                                     |
| 11             | No splenic-tie                                                                              | 1.8 kg.                   | 21.4                                |
|                | No histamine                                                                                |                           |                                     |
| Controls: 4    | Histamine-in-beeswax 30 mg. every day for 17, 21, 21, 28 days, respectively. No splenic-tie | 1.8 kg.                   | 21.3                                |

C. *Clinical observations.* In this section it is my purpose to draw attention to two clinical features relating to the preceding recitation of experimental observations. The first of these relates to a group of cases presenting occult bleeding from the gastrointestinal canal, in which antecedent studies, if made before shock and severe anemia, supervened, are negative. The conditions represented in the case histories to be recited are well-known pathological entities. The cause of the bleeding remains obscure and death supervenes because of uncontrolled hemorrhage. At autopsy the surprise finding is usually a small superficial erosion with a sclerotic artery in the base of the erosion. If no ulcerative lesion in the mucosa is detectable grossly, microscopic examination discloses either an arterial thrombosis of a segment of the gastric wall or an ulcerative gastritis with atrophy of the mucous membrane. My special purpose in listing these cases is to indicate that the gastric mucous membrane is frequently a source, if not the usual source of occult bleeding from the gastrointestinal canal; and that a 75 per cent gastric resection, as is done for ulcer, will usually rescue these patients from death from hemorrhage.

The second group is represented by four patients with portal hypertension caused by cirrhosis of the liver or thrombophlebitis of the portal and/or splenic vein. In this group of patients, all of whom have presented severe anemia from hematemesis and/or melena, an extensive (90 per cent) gastric resection has been done on the thesis that the bleeding was an erosive process occasioned by acid-peptic digestion of the gastric and lower esophageal mucous membrane in the presence of portal hypertension causing venous stasis. The clinical and X-ray diagnosis of the cause of bleeding in all these patients has been *esophageal varices*.

#### 1. Hematemesis and melena from superficial gastric

*erosion, arterial thrombosis of a gastric vessel, or ulcerative gastritis.*

#### CASE 1\*

Mr. H. J., aged 44, admitted June 5, 1944, because of hematemesis and melena. Four transfusions for bleeding and shock before admission. Hemoglobin on admission, 4 gm. Hematemesis continued and despite several transfusions hemoglobin was brought only to 6.5 gm. Exploration on June 7. No lesion felt in the stomach or duodenum. A 75 per cent gastric resection was done and in the excised specimen, high on the lesser curvature, there was a tiny shallow ulcer about 2 mm. in diameter. The removed stomach weighed 130 grams. Microscopically, there was atrophy of the mucosa. There has been no recurrence of bleeding. On January 30, 1945, the hemoglobin was 14.2 gm. The patient reported again on May 2, 1945, stating that he was well and working.

#### CASE 2

Mrs. S. P., aged 56, admitted July 26, 1944, because of hematemesis and melena. Five transfusions were given prior to admission and the hemoglobin on arrival was 6 gm. By July 31, 1944, the hemoglobin had risen under large daily transfusions of blood to 11.6 gm. Exploration was done July 31, 1944, under cyclopropane anesthesia. No lesion in the stomach could be seen or felt, but a 75 per cent gastric resection was carried out. The removed stomach weighed 130 gm. High up on the lesser curvature, and just a little removed from it on the posterior wall, there was a shallow ulcer 3 mm. in diameter. Microscopically, its base was necrotic; there was also atrophy of the mucous membrane, with some leucocytic infiltration.

#### CASE 3

Mr. R. E., aged 48, admitted January 10, 1944, because of hematemesis. The hemoglobin was 4 gm. A diagnosis of carcinoma of the fundus of the stomach was made. After multiple transfusions, hemoglobin came up to 14.2 gm. On admission blood pressure was 120/65, but the patient gives a story of previous hypertension and the retinal vessels show evidence of sclerosis. The patient was prepared for operation by constant intragastric dripping of a high protein and carbohydrate and low fat diet (Varco II). Transthoracic exploration was done February 14, 1944. The spleen was larger than normal, and the main splenic artery appeared to run directly into the fundus of the stomach, high up on the greater curvature. The fundus of the stomach to the left of the esophagus felt rather thick and imparted a corrugated feel to the palpating finger. The spleen and a piece of fundic stomach 6 x 4 cm. were excised. This excised specimen was then subjected to X-ray examination. The arteries in the gastric wall exhibited considerable calcification in the X-ray film. On microscopic study calcification as well as thrombosis were apparent. The bleeding apparently was occasioned by the plugging of the end vessels in the gastric wall. The patient returned for observation on September 19, 1945. He was well and there has been no further bleeding.

#### CASE 4

Mrs. A. S., aged 49, admitted November 9, 1944, because of repeated melena. The patient is quite obese. She was hospitalized five times during the past year because of melena. X-rays of the alimentary tract were negative, as were gastroscopic and proctoscopic examinations. Hemoglobin 7.9 gm. Exploration on November 10, 1944. No findings. A 75 per cent gastric resection was done on the thesis that a small bleeding point, not palpable through the gastric wall, was present. The removed specimen weighed 140 grams but showed no bleeding point. Microscopically an ulcerative gastritis was present. The patient did well and the hemoglobin had risen to 12 gm. at time of dismissal. There has been no recurrence of melena and when the patient returned for observation on May 29, 1945, the hemoglobin was 13.1 gm.

#### CASE 5

Mr. F. K., aged 45, admitted July 5, 1944, because of hematemesis and melena. The hemoglobin was 7 gm. The patient had been studied in the out-patient clinic on several occasions over the preceding six years because of abdominal distress. Repeated X-ray studies of the gastrointestinal tract had been negative. Seven liters of blood were given prior to operation on

\* See p. 64 for follow-up notes.

July 11, 1944, at which time the hemoglobin was 6.9 gm. Exploration save for a few hemorrhages in the upper jejunum was negative. Dr. R. L. Varco called me to the operating room. I advised him to resect the stomach, indicating that one such resection already had been done by me for occult bleeding. The hemorrhages in the jejunum, however, appeared to be a more tangible source of the bleeding, and he removed a segment of the upper jejunum, which exhibited several hemorrhagic areas but no ulceration. The patient did poorly after operation, and continued to bleed. Six liters of blood were given in the post-operative period. The patient died of hemorrhage on July 17th.

At autopsy a very shallow erosion 2 mm. in diameter and less than 2 mm. in depth was found on the lesser curvature near the incisura angularis. There was an open vessel in its base. Additional areas of hemorrhage, very much like those observed at operation, were noted in the jejunum. Both the lumen of the ileum and the colon contained considerable blood. Microscopic study of the ulcer base revealed fresh granulations and a rather large arteriosclerotic artery in the submucosa beneath the ulcer.

#### DISCUSSION

The older pathological literature contains numerous references to patients who have come to autopsy in which death occurred from bleeding from a small, superficial erosion in the gastric mucous membrane, in which there was an open artery in the base. Lewin (1908) reviews the earlier literature and lists additional cases of his own. Instances of this sort already had been described by Gallard in 1884. Buday (1908), in reporting such an instance of fatal hemorrhage from a small erosion in the gastric fundus, located with difficulty at autopsy, states that the intimal thickening of the gastric arteries in the submucosa is frequently greater than in far larger vessels. Even extensive formal pathological studies relating to sclerosis of visceral arteries rarely mention the gastric arteries (Brooks, 1906; Dow, 1925). Arteriosclerosis, out of proportion to that found in the arteries of the body as a whole, may be encountered as a surprise finding in any vessel. Schwyzer (1907) reports such an instance, in which only the coronary arteries exhibited more arteriosclerotic changes than the gastric arteries.

Ophüls (1913) and Boles and associates (1939) stress arteriosclerosis of the gastric arteries in patients with ulcer as a part of a general process. Fetterman (1935), reporting from the Toronto General Hospital, indicates that intimal thickening of the submucosal arteries in resected stomachs removed at operation from patients with ulcer is a frequent finding.

Whereas such erosive processes as those reported herein appear ordinarily very innocent when the specimens are examined, the persistent bleeding from these areas belies their harmlessness. A sclerotic vessel does not close readily, and it is to be remembered that it is an artery that is opened usually. In a fatal hemorrhage, attending a mediastinitis following perforation of the cervical esophagus in which the carotid sheath was opened by me at operation to effect a more secure closure of the esophageal perforation, I was very much surprised to note that the bleeding occurred from the carotid artery (1938). My inference was that the thinner walled jugular vein should have been opened. Undoubtedly, however, the pulsations of the artery caused it to be the more easily eroded by the suppurative process.

Disse (1904) states that an end artery going out to the mucosa from the submucosal vessels supplies an area

2.5 mm. in diameter. The plugging of such vessels in older patients may be the precursor of bleeding from an erosive lesion.

2. *Extensive (90 per cent) gastric resection for erosive hemorrhage in portal hypertension.*

#### CASE I

Mr. F. K., aged 59, admitted to medical service January 27, 1945, because of recurrent hematemesis first noticed in 1938. In March 1944 esophageal varices were ligated elsewhere through a left thoracic approach. The patient bled again before leaving the hospital and there have been three additional spells of hematemesis since. A carcinoma of the right bronchus close to the carina also has been demonstrated since the ligation of the esophageal varices. The hemoglobin, when the patient was first seen in the medical outpatient department, was 7.52 gm. On February 6, 1945, a few days after admission to the medical service, the hemoglobin was 9 gm. On February 9, 1945, patient began bleeding again and 500 cc. of blood were given daily by the medical service over a period of five days; a total of 2500 cc. was given. At the end of this time the hemoglobin was 7 gm. After transfer to surgery, a liter of blood was given daily for nine days, including the day of operation; the hemoglobin rose slowly to 12.3 gm. Blood was demonstrated constantly in the stool. Gastric analysis without histamine showed a maximum of 27 free acid and a total of 39°. A bronchoscopy done on February 5, 1945, showed a squamous cell carcinoma to be present in the right main bronchus. The X-ray findings of the chest were consistent with a carcinoma of the right lung. Liver function studies were normal. There was no ascites.

On February 23, 1945, a 90 per cent gastric resection was done on the thesis that an increased portal pressure produced a passive congestion of the gastric mucous membrane, which, in the presence of free hydrochloric acid, made the mucous membrane more vulnerable to acid-peptic digestion. In other words, it is believed that bleeding from esophageal or gastric varices is primarily an erosive rather than a bursting process. The blood loss in the operation was 1190 gm.

The spleen, also large, was removed. It weighed 870 gm. The removed stomach weighed 225 gm. The portal and splenic veins were both large, and their walls, as in an atheromatous process, were somewhat thick. The portal pressure was 25 cm. of saline solution. The liver appeared normal. The operative diagnosis was, therefore, primary thrombophlebitis of the portal and splenic veins.

The microscopic study of the spleen showed a condition of fibrosis consistent with the diagnosis of Banti's disease. The liver was normal microscopically. There were no areas of atrophy in the gastric mucosa. There was a moderate amount of intestinal antral gastritis present, as is commonly observed in duodenal ulcer.

The patient did well after operation, and the hemoglobin promptly rose to 14 gm. There has been no further evidence of bleeding. The patient was dismissed on March 6, 11 days after operation. On March 27 he returned for excision of the right lung, which also was done by me on April 4. The lesion in the bronchus was quite near the carina, necessitating amputation close to the bifurcation of the trachea. The lung was universally adherent, but was excised without difficulty. The lung weighed 620 gm. There was no tumor in the removed lymph nodes. The tumor in the bronchus extended over a distance of 3 cm., and practically occluded the bronchus. The biopsy diagnosis of squamous cell carcinoma was confirmed.

A transfusion of 1000 cc. of blood was given for this operation; the blood loss in operation was 1450 gm. This is the only transfusion the patient has had since gastric resection. The patient did very well after operation, manifested very little operative reaction, and was dismissed on April 15, 11 days after operation. The hemoglobin on April 11 was 10.5 gm.

There has been no melena or hematemesis since the gastric resection in February. The hemoglobin on May 18, 1945, was 10.9 gm., and 12.2 gm. on June 5. The patient's weight was 122 pounds, 10 pounds less than before gastric resection and 6 pounds more than at the second admission for excision of the right lung. He believes he is making definite progress and appears to be doing very well.



## CASE 2

Baby boy, R. O., aged 3. On July 28, 1944, splenectomy was done because of repeated hematemesis and melena. The removed spleen weighed 170 gm. The liver appeared nodular and cirrhotic. A piece removed for biopsy showed definite cirrhosis microscopically. The patient was dismissed August 8, 1944. On April 11, 1945, the parents brought him back because of recurrent melena. In hospital vomiting of blood occurred, necessitating transfusions for shock. The hemoglobin, which had been 13.4 gm. on the first admission, fell to 5.6 gm. Under daily transfusions of 250 to 500 cc. of blood, the hemoglobin rose to 10.7 gm. on April 23, 1945, at which time a 90 per cent gastric resection was done. The liver appeared somewhat more nodular than at the last operation. The portal venous pressure was not determined. A specimen withdrawn prior to operation for gastric analysis contained largely blood. No transfusions were given after operation, and the hemoglobin rose to 14.2 gm. Blood disappeared from the stool and when the patient left the hospital on May 6, 1945, he was eating well.

## CASE 3

Mrs. M. V., aged 62: periodic melena, vomiting, and diarrhea over a period of years have been the patient's complaints. She also has pain in the back. X-ray examination discloses a hemangioma in the twelfth dorsal vertebra. The spleen is palpable and is believed to be enlarged. There has been blood in the stool persistently, and the hemoglobin was 4.5 gm. upon admission. There was free hydrochloric acid in the gastric juice (59°). Recently ascites has developed. The hemoglobin in July 1942, done elsewhere, was 7.4 gm. Between episodes of melena and diarrhea the hemoglobin improves. After the transfusion of 3 liters of blood, and iron and liver extract therapy, the hemoglobin rose from 4.5 to 12.9 gm.

Operation was done May 24, 1945. The spleen was large and weighed 520 gm. upon removal. The liver appeared to be definitely cirrhotic. A small piece of the liver edge was removed for biopsy. The portal venous pressure measured in one of the veins of the great omentum was 35 cm. of saline solution. There was a good deal of new vessel formation in the mesenteries. The veins of the mesentery and bowel appeared very prominent. The spleen was excised. A 90 per cent gastric resection also was done, with the consideration in mind of reducing the capacity of the stomach to secrete acid. The resection was very difficult and tedious because of the vascularity and thickening of the suspensory ligaments of the stomach. The removed stomach weighed 160 gm.; there were no erosions. Microscopically there was antral gastritis and cirrhosis of the liver with marked fibrosis. The present hemoglobin is 10.8 gm. The patient is still in the hospital under observation because of fever suggesting the possibility of a subphrenic abscess.\*

## CASE 4

Mrs. E. H., aged 27, admitted May 21, 1945, because of hematemesis, melena, and a feeling of faintness. Blood has been present persistently in the stool since May 19, 1945. The hemoglobin was 8.8 gm. In 1938 I removed this patient's spleen because of recurrent hematemesis and melena. A number of accessory spleneculi were found. The diagnosis was thrombophlebitis of the splenic vein. The liver appeared normal. There has been no recurrence of hematemesis or melena until just before admission. There is no ascites; liver function tests are normal. The patient had free hydrochloric acid in all four samples; the highest value was 36°. Three transfusions of blood were given, and the hemoglobin rose to 11.7 gm. on the day of operation. On June 4, 1945, a 90 per cent gastric resection was done. The liver appeared normal, no surviving splenic tissue was observed. The portal venous pressure measured in an omental vein is 49 cm. of saline solution. The mesenteric veins appeared full and were very prominent. The suspensory ligaments of the liver were extremely vascular and thick, making dissection difficult. The omentum was universally adherent in the upper right quadrant and contained prominent veins. The fundic portion of the stomach was intimately adherent to the left diaphragm and pancreas over a wide extent. The removed stomach weighed only 114 gm. There has been little operative reaction. The patient is convalescing nicely from the procedure.

\*This patient died subsequently of a subphrenic abscess which was managed in too dilatory a manner.

## DISCUSSION

The first operation in this group of patients with portal hypertension was done just a few months ago, and a longer lapse of time will have to occur before one can say with assurance that this is a satisfactory manner in which to control the bleeding in such patients. A fairly large number of patients with cirrhosis of the liver, as Eppinger (1937) has indicated, die of hemorrhage before ascites or liver insufficiency supervene. The operations proposed by A. O. Whipple (1945), of excising the spleen and left kidney and uniting the veins of these two organs over a Blakemore tube, or of making a direct Eck fistula between the portal vein and the vena cava, obviously constitute a more direct attack upon the problem of portal hypertension. However, an Eck fistula *per se* apparently does not constitute an altogether harmless diversion of portal venous flow, as indicated by the earlier report from Pavlov's laboratory (see Enderlen *et al.*, 1914) as well as by the more recent report of G. H. Whipple and his associates (1945).

It perhaps should be indicated, too, that gastric resection in a patient with portal hypertension may be a more difficult operation than in a patient with ulcer. The omenta and tethering membranes and ligaments of the stomach are thickened up, owing to the new vessel proliferation. Dissection, in consequence, may be difficult, because of obliteration of normal tissue planes. In the ordinary gastric resection for ulcer the operation may be accomplished with a blood loss of 300 cc. or considerably less; owing to a tendency for all the dissected surfaces in portal hypertension to bleed, the blood loss is usually much greater. The employment of dry gauze sponges and weighing them at operation (1942),<sup>66</sup> however, keeps the surgeon apprised continuously of the magnitude of the blood loss, which loss may be replaced by an equal amount of transfused blood.

At the moment we are engaged in determining whether the bleeding from gastric and esophageal erosions, which can be created experimentally by the administration of histamine in the presence of portal obstruction, can be prevented by preliminary extensive gastric resection. If such should prove to be the case it would augur well for the proposal of subjecting patients with hemorrhage from increased portal venous pressure to the operative procedure described here.\*

## CHARACTERIZATION OF A SATISFACTORY OPERATION FOR ULCER

The second portion of this presentation will concern itself with an attempt at evaluation of the criteria of a satisfactory operation for ulcer. As indicated in the reports of vital statistics by the United States Department of the Census, there has been a significant drop in the mortality from both appendicitis and intestinal obstruction in the last decade. On the other hand, the mortality from duodenal and gastric ulcer per 100,000 pop-

\*Preliminary experiments on dogs suggest definitely that a 90 per cent gastric resection affords real but not absolute protection against the histamine provoked ulcer in the presence of portal hypertension. Under these very same circumstances a 75 per cent gastric resection affords no protection against the histamine provoked ulcer—an occurrence which indicates how strongly portal hypertension abets the ulcer diathesis.



ulation has continued very much the same over a period of thirty years. The complications of perforation, hemorrhage, and obstruction account largely for this mortality. In order to prevent perforation we must learn to control the ulcer diathesis. The frequency with which the tragic complication of perforation occurs suggests that much remains to be learned concerning the control of the ulcer problem by conservative means. However, the opportunity should not be neglected to point out that the general application of the principles of closure of such perforations, as first enunciated by Roscoe Graham (1937) of the University of Toronto, have had a telling effect upon the mortality from perforation.

Surgeons have concerned themselves in an empirical fashion with the problem of attempting to relieve the ulcer diathesis for a period of more than fifty years. Out of this experience has grown a mass of conflicting data with reference to the accomplishment of the surgeon in the management of ulcer, without a clear-cut definition of the criteria of an acceptable operation for ulcer. The surgeon knew only that the object of his craftsmanship was to prevent ulcer recurrence, but he did not know how that end was to be attained, nor did he know or understand the items promoting or abetting the ulcer diathesis. Little wonder that he groped about aimlessly, striving to devise new procedures or modify old ones that might achieve his objective. Little wonder that the high incidence of recurrent ulcer after operation justified internists, actuaries, and the medical departments of our allied forces in their distrust of what surgeons affected to be able to accomplish for the patient with an ulcer refractory to medical management.

*Evaluation of the criteria of a satisfactory operation for ulcer.* This story has been told in part previously.<sup>37,38,68</sup> The histamine-in-beeswax technique has proved a most useful instrument in assaying the worth of a given operation. Before that tool became available, however, this study already was on its way. In brief, it may be said that in patients as well as in dogs to which histamine-in-beeswax is administered, to note whether a given operation will protect against the histamine-provoked ulcer, the results are in concurrent agreement. In man a study of the incidence of recurrent stomal ulcer after each type of operation is the method of procedure; obviously not a commendable manner in which to determine the criteria of a satisfactory operation.

From these studies, the characters of a satisfactory operation that protects against recurrent ulcer appear to be: (1) an extensive gastric resection (75 per cent), affording promise of reduction in gastric secretion; (2) excision of the antral mucosa. This proof emanates from operations on man alone, but appears to be well substantiated in the reports of Ogilvie (1938), Wangenstein and Lannin (1942) and McKittrick, Moore, and Warren (1944). The patient reported upon previously<sup>68</sup> from this clinic continues well, now almost five years after excision of the antral fragment of mucosa left behind in the first operation, in which a three-quarter resection was followed by a recurrent stomal ulcer. (3) Fairly complete excision of the lesser curvature of the

stomach appears justified, in that ulcer occurs primarily in the unruled portions of the first portion of the duodenum and along the lesser curvature of the stomach. Kolouch's (1945) drip experiment suggests that unruled mucosal strips are more susceptible to injury, in that periodic momentary escape from the unrelenting dripping of the acid-peptic digestive juice is not permitted the unruled surface. Hence the greater vulnerability of the unruled duodenal cap and the lesser curvature to the ulcer diathesis. (4) The importance of a short afferent duodenal loop in effecting gastrointestinal continuity after an extensive gastric resection appears to have been established. This item is as susceptible of proof in the dog as in the patient. The proof from both the experimental laboratory and the clinic will be cited herein, because it is my belief that this item is still, in many hands, an important factor in ulcer recurrence after an otherwise satisfactory operation for ulcer. The matter is important enough to warrant recitation in some detail.

The problem was subjected to experimental scrutiny in the following manner. Three series of experiments were carried out in dogs. In each series a three-quarter gastric resection (75 per cent) including excision of the pylorus and antrum was carried out. The only variable was the length of the proximal afferent duodenojejunal loop. The operations were carried out on the Billroth II plan of procedure, with the Hofmeister modification of dealing with the lesser curvature.

#### *A. Proof of the importance of a short afferent duodenal loop in gastric resection.*<sup>47</sup>

*Series 1.* Eleven dogs were used. These dogs were subjected to an extensive gastric resection (75 per cent). The gastrojejunostomy was performed as close to the inverted duodenal end as was technically feasible, the distance from the blind duodenal end varying from 12 to 15 cm. After this operative procedure three months were allowed to elapse. Then 30 mg. histamine base in beeswax, prepared after the method of Code and Varco (1940), was injected intramuscularly each day. A total of 40 to 45 injections were carried out on each animal. The animals were sacrificed after the last injection. In spite of severe histamine stimulation, not one gastrojejunal ulcer was encountered. This result is significant.

*Series 2.* The identical operation described above (75 per cent gastric resection) was performed on seven dogs, with one difference. In these animals a longer afferent duodenojejunal loop was employed. The distance from the inverted duodenal end to the site of gastrojejunostomy varied from 27 to 78 cm. Similarly, a rest period of three months was allowed to intervene. Following this period, 30 mg. of histamine base in beeswax were injected intramuscularly daily.

A large, frequently perforated gastrojejunal ulcer was observed in each instance (100 per cent). These results are in striking contrast to the results in Series 1. Three of the seven dogs in Series 2 died of generalized peritonitis attending perforation of a stomal ulcer. The dogs with the longest afferent duodenojejunal loops had the shortest survival periods.

*Series 3.* In a group of four dogs gastric resection was done, varying in extent from 50 to 75 per cent. The length of the afferent duodenojejunal loop in these four experiments varied between 78 and 144 cm. These dogs received no histamine. Two of the four dogs died of spontaneous perforation of a gastrojejunal ulcer located just beyond the efferent outlet (Fig. 3). One dog, in which a 50 per cent gastric excision had been done, accompanied by an afferent duodenojejunal loop of 78 cm., was sacrificed 210 days after operation. There was no stomal ulcer. One other dog is still alive and apparently well more than two years after operation.

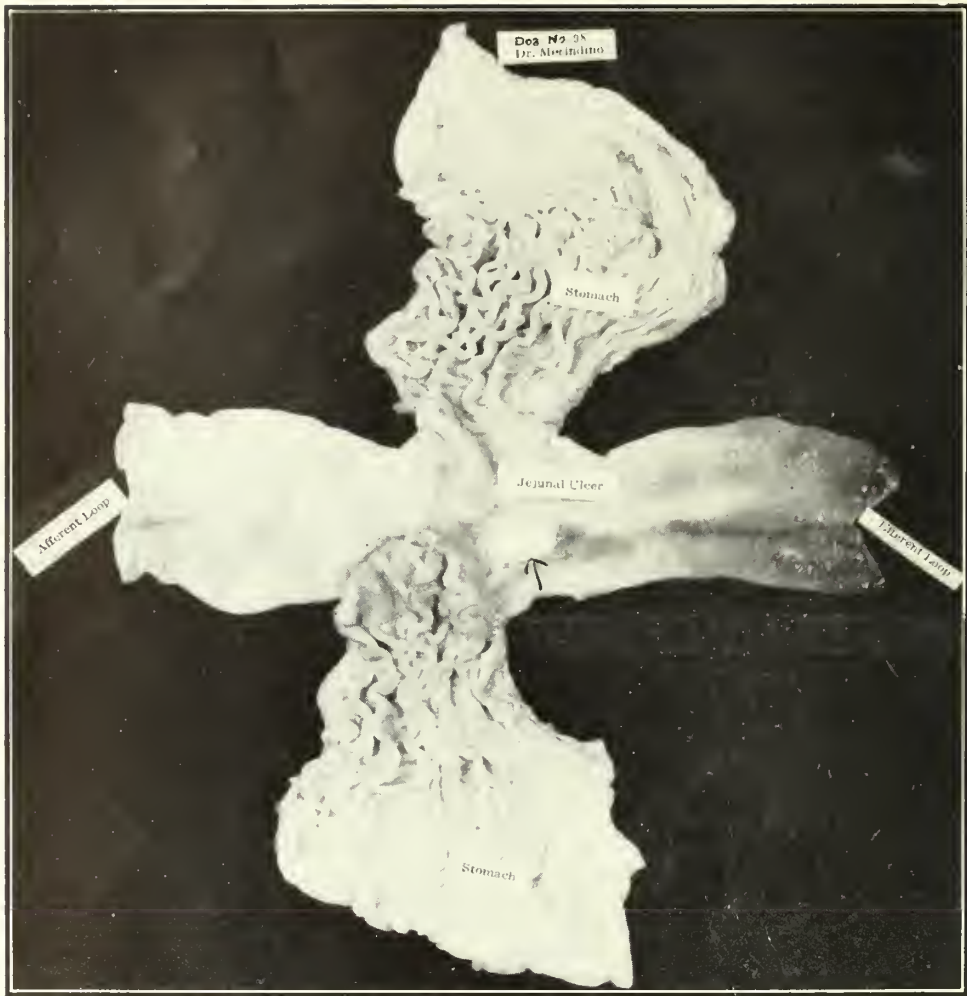


Fig. 3. Spontaneous perforation of a stomal ulcer (no histamine) in a dog in which a 50 per cent gastric resection (Billroth II) had been done, employing a long afferent duodenojejunal loop measuring 78 cm. in length from the inverted duodenal end. Death occurred from peritonitis 420 days after the operation. The over-all length of the small intestine was 323 cm. Of seven dogs in which 75 per cent gastric resection was done, employing a long afferent duodenojejunal loop, followed by the administration of histamine-in-beeswax, all developed perforating or perforated stomal ulcer. In dogs that have had a 75 per cent gastric resection, accompanied by a short afferent duodenal loop, a stomal ulcer cannot be produced by histamine.

#### COMMENT

The results of these experiments are striking. In 11 dogs (Series 1), with an extensive gastric resection (75 per cent), in which the afferent duodenal loop was short (12 to 15 cm.), stomal ulcer could not be provoked in a single instance by profound stimulation in gastric secretion with histamine-in-beeswax. In three of the 11 dogs superficial gastric erosions were noted. In seven dogs (Series 2), in which the extent of the gastric resection was the same (75 per cent), the only difference being that the afferent duodenojejunal loop was longer (27 to 78 cm.), a gastrojejunal ulcer occurred in each instance following histamine stimulation. In a third series of four dogs with long afferent duodenojejunal loops, which received no histamine after gastric resection, varying in extent from 50 to 75 per cent, two (50 per cent) developed spontaneous perforated gastrojejunal ulcer.

B. *The importance of the length of the afferent duo-*

*denojejunal loop in indicating whether stomal ulcer will occur in the Schmilinsky-McCann operation.* There has been much confusion and conflict of opinion concerning the item of complete intragastric regurgitation as it relates to the Schmilinsky-McCann operation. Schmilinsky (1918) suggested placement of the afferent duodenojejunal loop, in the Billroth II type of gastric resection, back onto the stomach in such a manner that all the duodenal contents drained back into the stomach. He termed this arrangement an "internal pharmacy" for neutralization of gastric acidity, an item that is looked upon as a desirable factor in gastric resection for ulcer. McCann (1929) reported that he had produced gastrojejunal ulcer in 80 per cent of 26 dogs operated upon according to the Schmilinsky plan. A number of other investigators, Ivy and Fauley (1931), Weiss, Graves, and Gurriaran (1932), Graves (1935), Maier and Grossman (1937), and Wangensteen and his associates (1940) re-



peated the McCann experiment with rather indifferent results. None of these investigators was able to confirm McCann's observations of a high incidence of gastrojejunal ulcer following complete drainage of the duodenal loop back into the stomach. Wangenstein and his associates (1940) indicated that disastrous results attended performance of the Schmilinsky operation on man and suggested that constant regurgitation of the duodenal loop content back into the stomach might stimulate the second or gastric phase of gastric secretion interminably. Kesavalu and Mann (1943) have shown, in dogs with isolated gastric pouches, that the Schmilinsky procedure definitely enhances secretion from the pouch.

*Methods of study and results.* A total of 17 dogs were studied. The Schmilinsky-McCann operation of complete intragastric return of the entire content of the duodenal loop was performed in each animal.

In the first series of 11 dogs the operation was accomplished in the following manner. These dogs were anesthetized, and under septic conditions a laparotomy was performed. The pylorus of the stomach was excised. The duodenal end was then closed and inverted in the usual fashion by means of interrupted cotton sutures. At distances of 8 to 15 cm. from the inverted duodenal stump the intestine was transected. The proximal transected intestine was anastomosed onto the stomach. Thereby complete intragastric regurgitation of the duodenal contents, including bile and pancreatic juice, was assured. The end of the distal loop of intestine was closed and inverted. A gastrojejunostomy, end-to-side, was then performed between the end of the stomach and the side of the distal transected intestine.

Following operation convalescence was rapid. After a brief period of time normal activity was assumed and appetite regained. At various intervals from 72 to 360 days these animals were sacrificed. In the 11 dogs in which a short proximal duodenal loop was employed in the Schmilinsky-McCann procedure, gastrojejunal ulcer occurred only once (9.1 per cent).

A second series of Schmilinsky-McCann operations was subsequently carried out on six dogs. The operation was identical in all details with that described in the first series of animals, with one exception. In the first series, the intestine was transected a short distance from the inverted duodenal stump. Thus a short proximal loop was obtained. However, in this second series of dogs the transection of the intestine was carried out at a lower level. The length of the proximal loop from the inverted or "blind" duodenal end varied from 76 to 90 cm. The transplantation of the proximal loop was high on the stomach in some instances, low in others. In this second series a short period of normal response was noted. As time progressed, however, the dogs became irritable, anorexic, and languid. Coma and death followed. The average survival period was 79.7 days. The area of the transplantation (high or low) of the proximal loop onto the stomach did not appear to alter the end result. The incidence of gastrojejunal ulcer in this series was 83.3 per cent (five out of six dogs). Four of the six dogs exhibited perforated peptic ulcers.

*Comment.* These results clarify the confusion in the literature concerning the results of complete intragastric drainage of the duodenal loop in dogs. The results of the experiments reported here suggest that the divergent results obtained by previous investigators are explicable on the basis of the length of the afferent loop employed. The agency through which the length of the afferent loop in the Schmilinsky procedure influences so definitely the occurrence of stomal ulcer is not apparent. One thing is clear, however. Exclusion of hydrochloric acid, the best physiological stimulus for the secretion of pancreatic juice with high buffer value, from contact with

the duodenal mucosa, the segment of mucosa richest in secretin, affords a plausible explanation for the greatly increased incidence of stomal ulcer in the experiments in which the long afferent loop was employed.

*C. Why does a long afferent duodenojejunal loop invite stomal ulcer?*<sup>34</sup> An attempt was made, without too much success, to determine definitely what the factor or factors are in a long afferent duodenojejunal loop that contribute to the occurrence of stomal ulcer. The operations depicted in Figure 4 were carried out in 12 dogs. The three items examined with respect to their importance in the genesis of stomal ulcer were: (1) secretin factor; (2) the factor of spatial separation of alkaline and acid digestive secretions; (3) the sensitivity factor, implying an increased susceptibility of the mucosa of successively lower segments of the small intestine to injury by the acid gastric secretions.

*Methods.* Six modifications of the total intragastric duodenal drainage operation of Schmilinsky and McCann were carried out in a series of 12 dogs (Fig. 4). The operations were devised to study the influence of both short and long afferent duodenojejunal loops on the development of stomal ulcer just beyond the efferent gastric outlet, with special reference to an attempt to evaluate the significance of the three factors enumerated above. In other words, in addition to varying the length of the afferent loop, the site of the efferent outlet of the stomach was varied, permitting testing of the importance of the secretin factor and the item of mucosal susceptibility to corrosion by the acid gastric secretions. These latter objectives of the study necessitated some rather complicated operative procedures. By transecting the duodenum just beyond the major pancreatic duct and interposing a loop of ileum between the proximal portion of the duodenum and the stomach, or by excising a portion of the duodenum and the upper jejunum in other experiments, it became possible to vary all the factors we wished to scrutinize. In some experiments the afferent loop was long, yet the requirements of a functional secretin mechanism were met satisfactorily by placing the entire length of the duodenojejunal segment beyond the major pancreatic duct at the efferent gastric outlet. By interposing a short segment of duodenal mucosa between a high ileal segment and the gastric outlet, it was possible to note when stomal ulcer followed, whether it occurred in the short duodenal segment or in the more susceptible high ileal mucosa beyond.

*Results.* Five of the 12 dogs died of ulcer; in four of these, perforation was present. All ulcers were stomal in character, that is, just beyond the gastric outlet on the afferent loop, save one which occurred in the fundus of the stomach (dog No. 3). In dog No. 6 the ulcer was not perforated; death was apparently due to obstruction of the short afferent loop, an item which probably had something to do with the occurrence of the ulcer. The dogs that did not succumb to ulcer were sacrificed at intervals of 53 to 185 days.

In only one of five dogs (20 per cent) in which the theoretic quality of the secretin mechanism was good did a stomal ulcer occur. In three of four dogs (75 per cent) in which it was poor, stomal ulcer occurred.



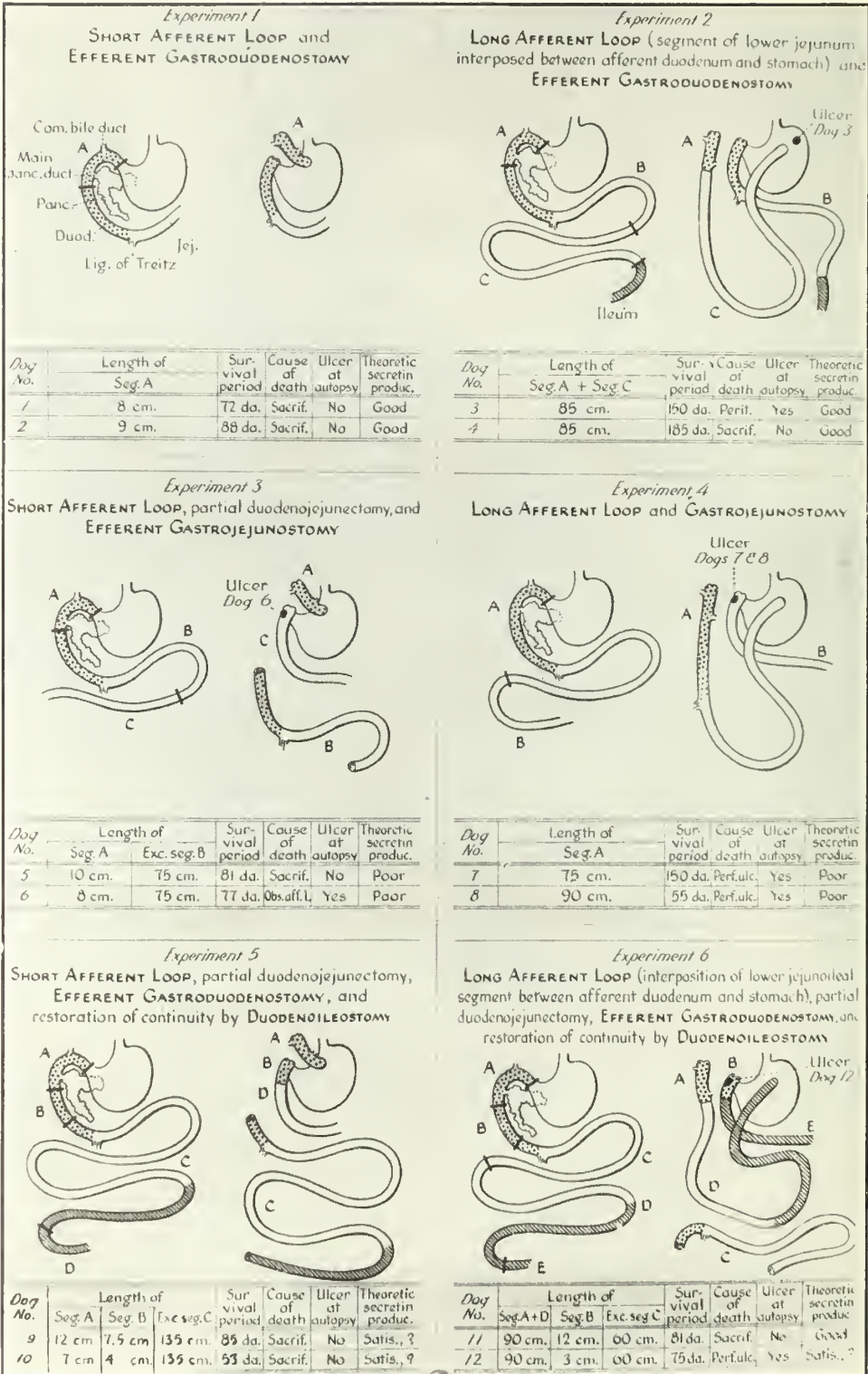


Fig. 4. Types of operation performed in an attempt to separate out the relative importance of the secretin "distance" and "sensitivity" factors in the role of the long afferent loop in the production of stomal ulcer in the Billroth II type of gastric resection.

In one of three dogs (33 per cent) in which the quality of the secretin mechanism was questionably satisfactory stomal ulcer occurred.

In six dogs in which the spatial factor was satisfactory (short afferent duodenal loop), stomal ulcer occurred only once (16.2 per cent). In four of six dogs, in which the spatial factor was unsatisfactory (long proximal loop) stomal ulcer occurred four times (66.6 per cent).

In eight dogs the gastric outlet emptied over the duodenal mucosa. Stomal ulcer occurred twice (25 per cent). In four dogs the gastric outlet met jejunal mucosa. Stomal ulcer occurred three times (75 per cent).

*Comment.* It is apparent from this analysis that it is difficult to separate out the eventual role of any single factor. That is especially true of the secretin and distance factors. Experiments 10 and 12 constitute an excellent example of the difficulty (see Fig. 4). In dog No. 10 the afferent loop was short; in dog No. 12 it was long. In dog No. 10 only 4 cm. of duodenal mucosa remained at the efferent outlet for the gastric secretions to glide over in provoking the usual secretin effect; in dog No. 12 only 3 cm. of duodenal mucosa remained at the efferent gastric outlet. Spontaneous perforation of a stomal ulcer killed dog No. 12; 75 days after the operation no ulcer was present in dog No. 10, when he was sacrificed at 53 days. In dog No. 10, however, with the short afferent loop (7 cm.) containing good secretin containing duodenal mucosa, regurgitation of gastric secretions into the short afferent loop may have sufficed to augment the secretin effect of the 4 cm. duodenal mucosal segment at the efferent gastric outlet. In dog No. 12, on the contrary, retrograde regurgitation of gastric secretions into the long 90 cm. afferent loop could not reach the rich secretin bearing area of the duodenal segment. This same dog, No. 12, provides a striking lesson in another respect. The stomal ulcer occurred in the short (3 cm.) duodenal segment at the efferent gastric outlet and not in the ileal mucosa just beyond (Fig. 5).

In this group of experiments stomal ulcer occurred only once in a dog with a short afferent loop (dog No. 6); in this instance, however, stenosis of the afferent inlet stoma was present, interfering with delivery of the alkaline secretions from the duodenal loop. Moreover, in long afferent loops, in which extraneous factors might influence the motility of the segment and hence delivery of the content of the loop, it would appear that such long afferent loops invite stomal ulcer.

A larger number of experiments in each group would undoubtedly be helpful in resolving the importance of each of the factors scrutinized in this study. In addition, the animals not dying of spontaneous perforation of a stomal ulcer should be allowed to survive longer before sacrifice. It is not unlikely that employment of additional modes of attack may help to separate out more definitely the component important parts in the predisposition of stomal ulcer presented by the long afferent duodenojejunal loop. Three such methods are now being applied to the problem in this laboratory: (1) assaying the secretin potency of intestinal mucosa from varying levels of the bowel in both dog and man; (2) deter-

mination of the loss in titratable alkalinity, if any, of the content of the long afferent duodenojejunal loop as delivered at the afferent gastrojejunal stoma; (3) experiments in which the sensitivity of the mucosa of various segments of the intestine is examined by allowing hydrochloric acid to drip upon isolated surfaces.

It is difficult to separate out with finality the role of the various factors contributing to the development of stomal ulcer attending employment of a long afferent loop in the operation of complete intragastric drainage of the content of the duodenal loop. The "secretin" factor cannot be divorced completely from the considerations of the "distance" factor. Experiment No. 12 (Fig. 4) suggests rather definitely that the "sensitivity" factor is not as important as the other two factors.

The evidence garnered in this study lends strong confirmation to the deductions arrived at in the two studies listed under A and B, indicating that a long afferent duodenojejunal loop invites stomal ulcer in any gastric operation carried out on the Billroth II plan of procedure.

*D. The clinical aspects of the problem of the length of the afferent loop in gastric resection for ulcer.* The experimental data described above under captions A, B, and C suggest definitely that the antecolic anastomosis with a long proximal duodenojejunal loop, even when accompanied by an extensive gastric resection, is not a satisfactory operation for ulcer in man. Man's small intestine is approximately twice the length of the small intestine in the dog. The length of the duodenum in man is stated by anatomists to vary between 25 and 30 cm. It has been common practice for some gastric surgeons to make the anastomosis 30 cm. (Balfour, 1935) or more (Lahey, 1939) beyond the suspensory duodenojejunal ligament of Treitz. Kiefer (1942) has reported a series of 173 extensive gastric resections for duodenal ulcer in which the incidence of gastrojejunal ulcer was 11.4 per cent, posited on recurrence verified at operation, roentgen demonstration of a crater, or the occurrence of bleeding. In that series the antecolic long proximal duodenojejunal loop was employed in anastomosis.

In this clinic a series of patients comprising now more than 400 consecutive gastric resections, all carefully followed, has been operated upon for ulcer, employing the criteria of a satisfactory operation for ulcer described here. In this group only one stomal ulcer has developed thus far. In that patient, Mr. L. B., aged 50, an antecedent gastrojejunostomy had been done elsewhere for a duodenal ulcer. At the operation performed by me on May 5, 1944, for a gastrojejunal ulcer, only 155 gm. of tissue were removed including 6 cm. of jejunum. In the usual three-quarter (75 per cent) resection for ulcer, the removal of 185 gm. or more is usual. In the re-operation done on May 2, 1945, 86 additional grams of stomach were removed, suggesting that at the first operation the site of the resection was inadequate. A 75 per cent gastric resection, employing a short afferent duodenojejunal loop with a retrocolic anastomosis made at or just proximal to the suspensory duodenojejunal ligament of Treitz, has been standard practice in operating upon patients for ulcer in this clinic for several years.



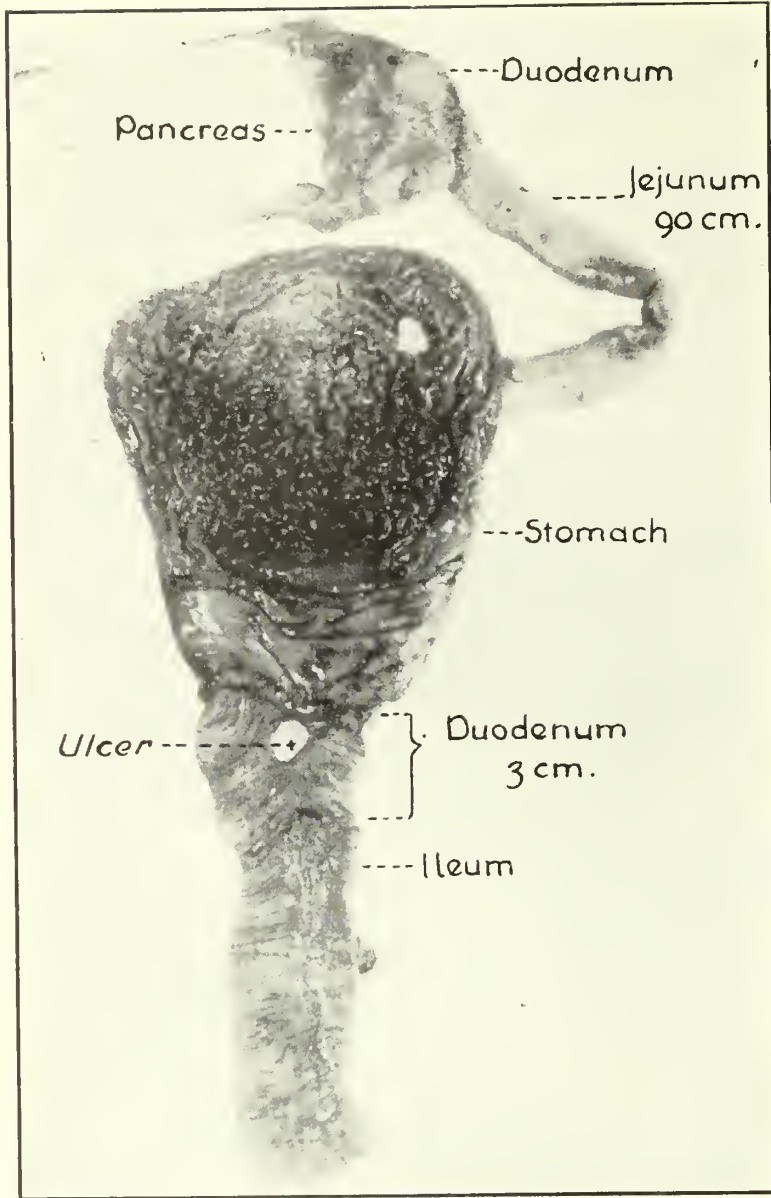


Fig. 5. Spontaneous perforation of stomal ulcer in dog 12 (Experiment 6, Fig. 4). The afferent loop was 90 cm. in length, the stomal ulcer occurred in the duodenal segment. The "distance" as well as the "secretin" factors were both poor in this experiment. The sensitivity factor was good; in other words, one might reasonably have expected the ulcer to skip the 3 cm. duodenal segment and to have occurred in the ileum just beyond, if the ileal mucosa is more sensitive than the duodenal to corrosion by gastric juice.

E. *Would a less extent of excision suffice to protect against the histamine provoked ulcer if gastric resection is carried out on the Billroth I plan of operation?*<sup>2</sup> Inasmuch as the short afferent duodenojejunal loop is so important in a satisfactory operation for ulcer, would it be equally satisfactory to sacrifice less stomach (25 or 50 per cent), but to effect gastrointestinal continuity by end-to-end suture between the stomach and the duodenum by the Billroth I operation? Experiments were carried out on 12 dogs in three series to attempt to answer this question. Each series had a different amount

of stomach resected, but the residual gastric pouch in each dog in all series was anastomosed to the duodenum just beyond the inverted duodenal end by means of an end-to-side gastroduodenostomy. This procedure, known as the Billroth I (Haberer-Finney) plan of operation is technically more feasible in the dog than the straightforward Billroth I operation, which requires an end-to-end gastroduodenostomy. After an interval averaging 46 days, the administration of 30 mg. of the histamine-in-beeswax mixture, prepared after the method of Code and Varco (1940), was injected intramuscularly daily. Unless the dogs succumbed from the complications of ulcer invoked by the histamine implantation, the injections were carried out for 45 days.

*Results, Series 1.* Four dogs were used. A 25 per cent gastric resection and gastroduodenostomy was performed at the inverted duodenal end. After a sufficient period of recovery from the operation, the daily administration of the histamine-in-beeswax mixture was begun. Three of the four dogs (75 per cent) developed a stomal ulcer.

*Series 2.* The identical procedure was used on four dogs in this series with one difference: a 50 per cent gastric resection was carried out, followed after a suitable interval by the administration of histamine. Stomal ulcer occurred in three of the four dogs (75 per cent).

*Series 3.* In this series a three-quarter gastric resection (75 per cent) was done, followed by administration of histamine. Stomal ulcer did not occur.

These experiments would suggest that a 75 per cent resection carried out on the Billroth II plan of operation, employing a short afferent duodenojejunal loop, the anastomosis being made at the suspensory duodenal

ligament of Treitz, is just as satisfactory an operation for ulcer as the Billroth I operation.

F. *Intractable or incurable recurrent ulcer a myth.* The success with which the three-quarter (75 per cent) resection has been carried out in the surgical management of ulcer suggests that a satisfactory operation has been found. It is to be admitted freely, however, that excision of 75 per cent of the stomach is not an ideal therapeutic measure. It is to be hoped that some day the same objective may be achieved by less drastic means. The mortality of the procedure in the experience of this



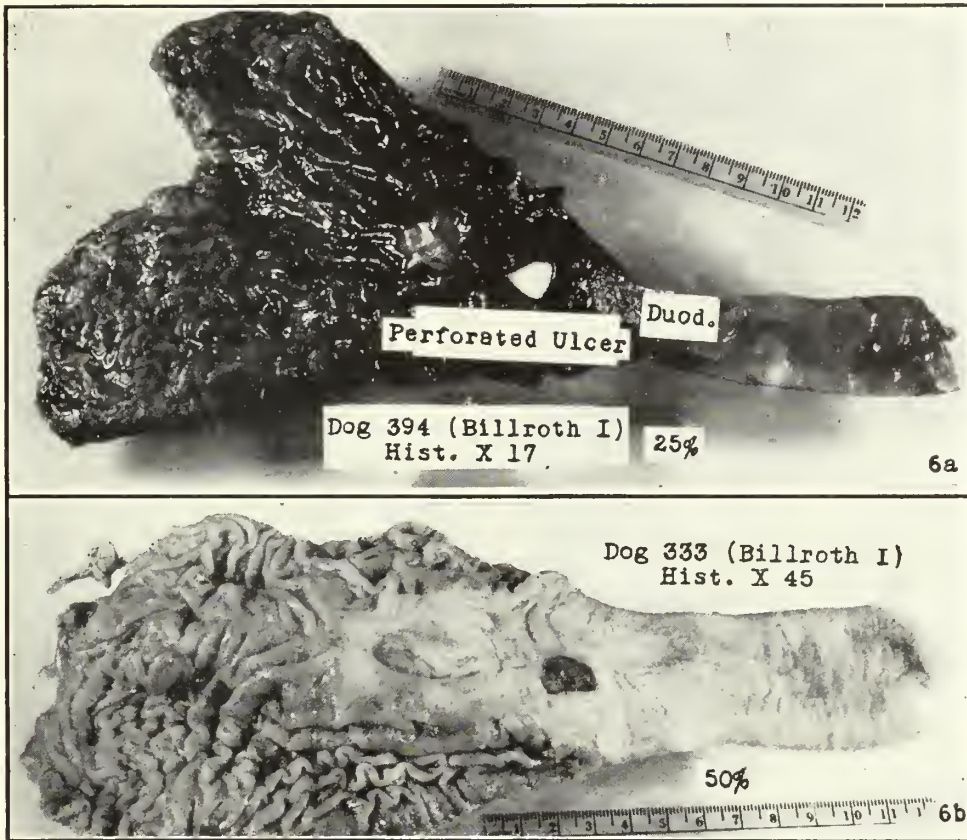


Fig. 6a. Perforated stomal ulcer in a dog after a 25 per cent gastric resection on the Billroth I operation. The dog died 17 days after the daily administration of 30 mg. of histamine-in-beeswax was commenced. Fig. 6b. Large perforating stomal ulcer in a dog in which a 50 per cent Billroth I resection was done. The dog was sacrificed 45 days after the administration of histamine was started.

clinic is approximately 2 per cent in gastric resections of election. The surgical mortality of all procedures for ulcer, including perforation and hemorrhage, has been 5 per cent. Over a period of more than four years, during which we have been assaying the capacity of various operations to protect against the histamine provoked ulcer in the laboratory, we have found the Group III operation (75 per cent resection), here described, uniformly resistant to ulcer ordinarily provoked by histamine. In the single instance in which stomal ulcer has been observed to follow such a resection in a patient, an inadequate operation was done. Whereas caffeine and alcohol are anathema to the patient with an ulcer, we have observed no need to enjoin dietary strictures upon patients who have undergone the type of procedure described.

Rienhoff (1945), in a recent paper replete with beautiful illustrations, advocates return to a "conservative" gastric resection for duodenal ulcer, carrying the excision proximally to include the incisura angularis of the stomach. Rienhoff appends several tables in which he analyzes his data carefully. His Table III is particularly instructive. Of 260 patients operated upon by Rienhoff, he has found it necessary to subject 29 of the 255 that survived operation to re-operation, an incidence of 11.3 per cent. If hemorrhage is counted as synonymous with recurrent ulcer, 21.1 per cent of the survivors have gas-

trojejunal ulcer. In addition, 16.3 per cent of the survivors complain of pain. Obviously Rienhoff's own analysis of the results of his operation may be employed to suggest that the conservative resection is an inadequate operation for ulcer. Our own observations suggest that it is not necessary to excise the ulcer itself in difficult duodenal ulcers to prevent ulcer recurrence.

Perhaps it is not out of place to point out that the Billroth II plan of operation abets the ulcer diathesis.<sup>67</sup> Spontaneous ulcer in dogs is virtually unknown, or at any rate is a great rarity. However, when gastrojejunostomy is established in dogs an incidence of gastrojejunal ulcer is observed in 6.6 per cent (Montgomery, 1923). If, in addition, pyloric exclusion is performed, gastrojejunal ulcer occurs in dogs in approximately 50 per cent of instances (McMaster, 1934; De Bakey, 1937), indicating definitely that the Billroth II plan of operation abets the ulcer diathesis. As a matter of fact, Eiselsberg (1895) who devised the procedure of combining gastrojejunostomy with pyloric exclusion, did it on the basis of affording complete rest to a duodenal ulcer. Within a very few years thereafter, however, he observed that the high incidence of gastrojejunal ulcer following this procedure (37.5 per cent) warranted its discontinuance. Wherein lies the explanation of the increased susceptibility to gastrojejunal ulcer following performance of



Fig. 6c. Perforating stomal ulcer in a dog after Billroth II resection (30 per cent); the dog was moribund from hemorrhage 35 days after administration of histamine was started.

We have been unable to produce stomal ulcer in the dog with histamine after a three-quarter resection (75 per cent), whether carried out on the Billroth I or II plan of operation.

gastrojejunostomy combined with pyloric exclusion? I am inclined to believe it resides in this: that the exclusion of acid gastric juice from the duodenum prevents normal operation of the hormonal secretin mechanism described by Bayliss and Starling (1902). In other words, the small gastric resection is no better and probably inferior to gastrojejunostomy, which also is a poor operation with which to combat the ulcer diathesis.

G. *Implantation of a pedicled jejunal patch onto the gastric wall.* Andrus and his associates (1943) contend that a jejunal graft transposed to the gastric wall will depress gastric secretion; they have employed this procedure in the therapy of ulcer in man. Grossman and his associates (1945) from Ivy's laboratory and Kolouch and associates (1945) from our laboratory failed to obtain confirmation of Andrus's contention.

H. *Supradiaphragmatic vagotomy.* Dragstedt and Schaefer (1945) report having performed supradiaphragmatic section of both vagi nerves in 14 patients with ulcer with striking improvement. Many of the patients have been relieved completely of their symptoms. In three, however, a subsequent gastrojejunostomy became necessary for the relief of persistent obstruction. We are now trying to determine whether vagotomy carried out in this manner in dogs will protect against the histamine provoked ulcer.\* It is to be remembered that whereas vagotomy ablates the cephalic phase of gastric secretion, vagotomy has been employed to produce ulcer experimentally. In his Balfour lecture at Toronto, Cushing (1932) considered the neurogenic factor and its relation to the ulcer problem at length.

#### CONCLUSIONS

The clinical observations and experiments reported herein appear to justify the following conclusions:

1. The ease of production of perforating gastric and/or duodenal ulcer in most laboratory animals by the implantation of histamine-in-beeswax emphasizes the great importance of the acid-peptic digestive activity of the gastric juice in ulcer genesis.

2. It is obvious that fat embolism may occur following fracture of long bones and plug the end-vessels of the gastric mucosa and produce erosions and/or ulcer, which, in turn, in the presence of active gastric secretion may result in bleeding, hematemesis, and/or melena. This occurrence has been observed clinically and its counterpart has been produced experimentally.

3. The production of severe bleeding from erosions and/or ulcer, attending the administration of vasospastic agents such as epinephrine or pitressin accompanied by histamine-in-beeswax, definitely suggests the important role of the ischemia resulting from an overactive vasomotor influence in ulcer genesis, when attended by active gastric secretion.

4. Partial obstruction to the venous outflow from the stomach increases the weight of the stomach, traceable to resultant edema of the gastric wall, especially of the submucosa. Such venous obstruction abets the ulcer diathesis. Bleeding gastric and/or duodenal erosions and/or ulcers, as well as erosions of the lower end of the esophagus, may be produced by such obstructions.

It is suggested that the threatening bleeding of portal vein obstruction may be corrected by an operation (90 per cent gastric resection) which reduces materially the capacity of the stomach to secrete. Case records of four patients in which this procedure has been carried out are cited. Moreover, it is suggested that occult hemorrhage from the alimentary canal frequently has its origin in the stomach and that gastric resection is indicated as a therapeutic measure in many such instances. The case records of four patients in which this procedure was carried out successfully for profound occult anemia are cited.

5. The histamine-in-beeswax technique has proved a useful instrument in appraising the characterization of a satisfactory operation for ulcer. It would appear that a three-quarter resection (75 per cent) carried out on the Billroth II plan of operation, employing a short afferent duodenal loop in which the antral mucosa and the lesser curvature of the stomach are excised, meets the requirements of a satisfactory operation for ulcer. Our experience with this procedure in patients as well as in dogs receiving histamine would suggest that the intractable ulcer may be a myth.

\*Experiments completed since this presentation indicate definitely that in the dog, and even in the rabbit, vagotomy affords no protection against the histamine provoked ulcer.

#### REFERENCES

1. Andrus, W. DeW., Lord, J. W., Jr., and Stefko, P. L.: Effects of pedicle grafts of jejunum in wall of stomach on gastric secretion. *Trans. Am. Surg. Ass.*, 61:499, 1943.
- 1a. Babkin, B. P.: *Secretory Mechanism of the Digestive Glands*. New York: Hoeber Co., 1944.
2. Baronofsky, I., Lannin, B. G., Sanchez-Palomera, E., and Wangenstein, O. H.: Billroth I, gastric resection: extent necessary to protect against the histamine provoked ulcer. *Proc. Soc. Exp. Biol. & Med.*, 59:229, 1945.
3. Baronofsky, I., and Wangenstein, O. H.: The experimental production of erosion or ulcer (gastric and/or duodenal) by the intravenous injection of small amounts of fat in animals. *Bull. Am. Coll. Surg.*, 30:58, 1945.
4. Idem: Erosion or ulcer (gastric and/or duodenal) experimentally produced through the agency of chronic arterial spasm.



- invoked by the intramuscular implantation of epinephrine or pitressin in beeswax. *Bull. Am. Coll. Surg.*, 30:59, 1945.
4. Baronofsky, I., Merendino, K. A., Bratrud, T. E., and Wangenstein, O. H.: Fate of intravenously injected fat: Its role in the production of ulcer. *Proc. Soc. Exp. Biol. & Med.*, 59:231, 1945.
5. Baronofsky, I., and Wangenstein, O. H.: Obstruction of splenic vein increases weight of stomach and predisposes to erosion or ulcer. *Proc. Soc. Exp. Biol. & Med.*, 59:234, 1945.
- 5a. Bayliss, W. M., and Starling, E. H.: Mechanism of pancreatic secretion. *J. Phys.*, 28:325, 1902.
6. Bissell, W. W.: The amount of fat in the blood stream of persons with broken bones; a preliminary report. *J.A.M.A.*, 67:1926, 1939.
7. Boles, R. S., Riggs, H. E., and Griffiths, J. O.: The role of the circulation in the production of peptic ulcer. *Am. J. Dig. Dis.*, 6:632, 1939.
8. Brooks, H.: A preliminary study of visceral arteriosclerosis. *Am. J. Med. Sc.*, 131:778, 1906.
9. Buday, K.: Über die Sklerose der Magen Arterien, *Ziegler Beiträge*, 44:327, 1908.
10. Byrom, F. B.: Morbid effects of vasopressin on the organs and vessels of rats. *J. Path. & Bact.*, 45: Pt. I, 1, 1937.
11. Code, C. F., and Varco, R. L.: Chronic histamine action. *Proc. Soc. Exp. Biol. & Med.*, 44:475, 1940.
- 11a. Cushing, H.: Peptic ulcers and the interbrain. *Surg., Gyn. & Obst.*, 55:1, 1932.
12. De Bakey, M. E.: The physiology of peptic ulcer. *Surg.*, 2:653, 1937.
13. Disse: Über die Blutgefäße der menschlichen magenschleimhaut besonders über die arterien derselben. *Arch. f. Mikr. Anat.*, 63:519, 1904.
14. Dodds, E. C., Noble, R. L., and Smith, E. R.: A gastric lesion produced by an extract of the pituitary gland. *The Lancet*, 2:918, 1934.
15. Dow, D. R.: Incidence of arteriosclerosis in the arteries of the body. *Brit. M. J.*, 2:162, 1925.
16. Dragstedt, L. R., and Schafer, P. W.: Removal of the vagus innervation of the stomach in gastroduodenal ulcer. *Surg.*, 17:742, 1945.
17. v. Eiselberg, A.: Zur Ausschaltung inoperablen Pylorusstenosen. *Arch. f. klin. Chir.*, 50:919, 1895.
18. Idem: Über Magen und Duodenalblutungen nach Operationen. *Arch. f. klin. Chir.*, 59:837, 1899.
19. Enderlen, E., Hotz, G., and Magnus-Alsleben, E.: Die Pathologie und Therapie des Pfortaderverschlusses. *Zeitschr. f. d. Exp. Med.*, 3:223, 1914.
20. Eppinger, H.: Die Leberkrankheiten, Allgemeine und Spezielle Pathologie und Therapie der Leber. Julius Springer, 1937.
21. Eusterman, G. B., and Balfour, D. C.: The Stomach and Duodenum. Philadelphia: W. B. Saunders Co., 1935.
22. Fetterman, J. H.: Vascular lesions in surgically excised stomachs. *Arch. Path.*, 20:189, 1935.
23. Florer, R., and Ochsner, A.: Traumatic chylothorax: report of a fatal case complicated by a ruptured duodenal ulcer. *Surg.*, 17:622, 1945.
24. Gallard: *Gaz. d. Hôpitaux*, Nr. 25, 1884. Quoted by Lewin.
25. Graham, R. R.: Treatment of perforated duodenal ulcers. *Surg., Gyn. & Obst.*, 64:235, 1937.
26. Graves, A. M.: Combined and separate effects of bile, pancreatic secretion, and trauma in experimental peptic ulcer. *Arch. Surg.*, 30:833, 1935.
27. Grossman, M. I., Dutton, D. F., and Ivy, A. C.: An attempt to confirm the alleged inhibitory effect on gastric secretion of jejunal pedicle grafts in the wall of the stomach. *Surg.*, 17:685, 1945.
28. Hahn, M., Maaszen, O., Nencki, M., and Pavlov, J.: Quoted by Enderlen, Hotz, and Magnus-Alsleben.
29. Hay, L. J., Varco, R. L., Code, C. F., and Wangenstein, O. H.: The experimental production of gastric and duodenal ulcers in laboratory animals by the intramuscular injection of histamine in beeswax. *Surg., Gyn. & Obst.*, 75:170, 1942.
30. Ivy, A. C., and Faulcy, G. B.: Factors concerned in determining chronicity of ulcers in stomach and upper intestine; susceptibility of jejunum to ulcer formation; effect of diet on healing of acute gastric ulcer. *Am. J. Surg.*, 11:531, 1931.
31. Kesavalu, A., and Mann, F. C.: Influence of duodenal contents on intragastric acidity; experimental study. *Surg.*, 14:578, 1943.
32. Kiefer, E. D.: Jejunal ulcers and recurrent hemorrhages after partial and subtotal gastrectomy for peptic ulcer. *J.A.M.A.*, 120:819, 1942.
33. Kolouch, F., Jr.: A direct visual technique for studying chemical injury to exposed mucosal surfaces. *Surg.*, 17:641, 1945.
34. Kolouch, F., Jr., Castellanos-Moreno, M., Dubus, A. T. S., Baronofsky, I., and Wangenstein, O. H.: III. Mechanism of stomal ulcer is related to length of afferent duodeno-jejunal loop. *Proc. Soc. Exp. Biol. & Med.*, 58:275, 1945.
35. Kolouch, F., Jr., Dubus, A. T. S., and Wangenstein, O. H.: The pedicled jejunal transplant on to the gastric wall. *Surg.*, 17:667, 1945.
36. Lahey, F. H., and Marshall, S. F.: Technique of subtotal gastrectomy for ulcer. *Surg., Gyn. & Obst.*, 69:498, 1939 (in legend of Fig. 14).
37. Lannin, B. G.: Experimental evaluation of a satisfactory operation for ulcer. *Surg.*, 17:712, 1945.
38. Lannin, B. G., Hay, L. J., Judd, E. S., and Wangenstein, O. H.: Evaluation of a satisfactory operation for ulcer. *Proc. Soc. Exp. Biol. & Med.*, 56:231, 1944.
39. LsCount, E. R., and Gauss, H.: A study of fat embolism associated with fracture. *Trans. Chicago Path. Soc.*, 9:251, 1915.
40. Lewin, A. M.: Zur Lehre der arteriosklerose des Magens. *Arch. f. Verdauung*, 14:114, 1908.
41. Maier, H. C., and Grossman, A.: Relation of duodenal regurgitation to the development of jejunal ulcers. *Surg.*, 2:265, 1937.
42. Mann, F. C., and Williamson, C. S.: The experimental production of peptic ulcer. *Ann. Surg.*, 77:409, 1923.
43. Matthews, W. B., and Dragstedt, L. R.: The etiology of gastric and duodenal ulcer. *Surg., Gyn. & Obst.*, 55:269, 1932.
44. McCann, J. C.: Experimental peptic ulcer. *Arch. Surg.*, 19:600, 1929.
45. McKittrick, L. S., Moore, F. D., and Warren, R.: Complications and mortality in subtotal gastrectomy for duodenal ulcer. Report on a two-stage procedure. *Trans. Am. Surg. Ass.*, 62:531, 1944.
46. McMaster, P. E.: Effect of diverting the gastric contents to the lower intestinal levels. *Arch. Surg.*, 28:825, 1934.
47. Merendino, K. A., Varco, R. L., Litow, S. S., Kolouch, F., Jr., Baronofsky, I., and Wangenstein, O. H.: I. Stomal ulcer attending complete intragastric regurgitation as influenced by length of afferent duodenal-jejunal loop. *Proc. Soc. Exp. Biol. & Med.*, 58:22, 1945.
48. Merendino, K. A., Lannin, B. G., Kolouch, F., Jr., Baronofsky, I., Litow, S. S., and Wangenstein, O. H.: II. Length of afferent duodenojejunal loop in gastric resection, a factor in stomal ulcer. *Proc. Soc. Exp. Biol. & Med.*, 58:226, 1945.
49. Merendino, K. A., Litow, S. S., Armstrong, W. D., and Wangenstein, O. H.: The experimental production of erosions or ulcers (gastric and/or duodenal) in animals by fracture of curettement of bone marrow. *Bull. Am. Coll. Surg.*, 50:58, 1945.
50. Merendino, K. A., Litow, S. S., and Wangenstein, O. H.: Failure of fracture or curettement of the marrow of long bones in dogs or fracture in man to cause stimulation of gastric secretion. *Bull. Am. Coll. Surg.*, 30:58, 1945.
51. Montgomery, A. H.: Gastrojejunal ulcer; an experimental study. *Arch. Surg.*, 6:136, 1923.
52. Nedzel, A. J.: Experimental gastric ulcer (pitressin episodes). *Arch. Path.*, 26:988, 1938.
53. Ogilvie, W. H.: Approach to gastric surgery: ulcer of the stomach. *The Lancet*, 2:295, 1938.
54. Ophuls, W.: The relation of gastric and duodenal ulcer to vascular lesions. *Arch. Int. Med.*, 11:469, 1913.
55. Orndorff, J., Bergh, G. S., and Ivy, A. C.: "Peptic" ulcer and "anxiety complex"; failure of pharmacologically sustained hypersecretion and hypermotility of stomach to produce chronic gastric ulcer in dogs. *Surg., Gyn. & Obst.*, 61:162, 1935.
56. Payr, E.: Experiment über Magenveränderungen als Folge von Thrombose und Embolie in Pfortadergebete. *Arch. f. klin. Chir.*, 84:798, 1907.
57. Idem: Beiträge zur pathogenese, Pathologischen Anatomie und radicalen operation Therapie des runden Magengeschwürs. *Ibid.*: 93:436, 1910.
58. Pearce, H. E.: Experimental studies on the gradual occlusion of large arteries. *Trans. Am. Surg. Ass.*, 58: 443, 1940.
59. Rienhoff, W. F.: An analysis of the results of the surgical treatment of 200 consecutive cases of chronic peptic ulcer of the duodenum. *Ann. Surg.*, 121:583, 1945.
60. Schmilinsky, H.: Die Einleitung der gesamten Duodenal-säfte in den Magen (inner Apotheke). *Centralbl. f. Chir.*, 45:416, 1918.
61. Schmorl: Discussion of Sternberg's paper, p. 236.
62. Schridde: Discussion of Sternberg's paper, p. 234.
63. Schwyzer, F.: Eructation in heart patients. *New York Med. J.*, 85:625, 1907.
64. Sternberg, C.: Experimentell erzeugte Magen geschwüre bei Meerschweinchen. *Verhandl. d. deutsch Path. Gesellsch.*, 11:232, 1907.
65. Wangenstein, O. H.: Discussion on mediastinitis. *Trans. Am. Surg. Assn.*, 56:129, 1938.
66. Idem: The controlled administration of fluid to surgical patients; including description of gravimetric methods of determining status of hydration and blood loss during operation. *Minnesota Med.*, 25:783, 1942.
67. Idem: The surgical management of ulcer (a chemical problem, including description of how the secretin factor influences the success of anastomotic procedures). *Med. Record & Ann.*, 37:575, 1943.
68. Wangenstein, O. H., and Lannin, B. G.: Criteria of an acceptable operation for ulcer; the importance of the acid factor. *Arch. Surg.*, 44:489, 1942.
69. Wangenstein, O. H., Merendino, K. A., and Litow, S. S.: Hematemesis from erosion or ulcer (gastric and/or duodenal); an occasional complication of fracture. *Bull. Am. Coll. Surg.*, 30:58, 1945.
70. Wangenstein, O. H., Varco, R. L., Hay, L. J., Walpole, S., and Trach, B.: Gastric acidity before and after operative procedure with special reference to the role of the pylorus and antrum; a preliminary report of a clinical and experimental study. *Ann. Surg.*, 112:626, 1940.
71. Weiss, A. S., Graves, A., and Gurriaran, G.: La derivation intragastrique des sucs alcalins duodenaux. *Compt. rend. Soc. de biol.*, 109:916, 1932.
72. Whipple, A. O.: The problem of portal hypertension in relation to hepato-splenopathies, E. Starr Judd Lecture, University of Minnesota, April 10, 1945.
73. Whipple, G. H., Robschneit-Robbins, F. S., and Hawkins, W. B.: Eck fistula liver subnormal in producing hemoglobin and plasma proteins on diets rich in liver and iron. *J. Exper. Med.*, 81:171, 1945.
74. Wilkie, D. P. D.: Retrograde venous embolism as a cause of acute gastric and duodenal ulcer. *Edinburgh Med. J.*, 6:391, 1911.

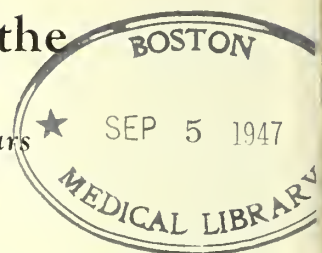


# A High Fluid Intake Regime in the Management of Edema

A Review with Some Comments after Four Years

F. R. Schemm, M.D., F.A.C.P.

Great Falls, Montana



**A**BOUT four years ago a formal report<sup>1</sup> of observations on a regime in which large amounts of water were given to patients suffering from dropsy was published. Within a year after publication of the 1942 report a few workers who had carefully followed the details of the regime had confirmed the observations made.<sup>2</sup>

These observations were as follows. With the proper regulation of sodium ingestion large amounts of water can be given to patients with dropsy, not only with impunity but to their benefit. The theoretical objections to such a regime in "brine-logged" patients do not, in fact, hold up against bedside observations. The immediate and later results of the high fluid intake regime are superior to those obtainable with the accepted restricted fluid regimes.

In this paper the details of the regime are again reviewed, together with the reasons for its failure to clear edema in some cases, and some rather common misconceptions regarding the regime are discussed, for, as Sir George Baker put it many years ago, "I much wish to see an indulgence of this kind extended to poor thirsty dropsical patients."

## REVIEW OF THE DETAILS OF THE REGIME

This regime, in brief, adds to a diet and certain important precautions, designed to avoid the ingestion of any excess of basic ash, the advantages of acid drugs used for over two hundred years, the liberal amounts of water often given up to a hundred years ago, and the salt restriction in vogue during the past fifty years.

The regime provides enough water for all the needs of the body, while properly regulating or manipulating sodium ingestion. It is based on a correlation of water balance, renal function, body fluid, and acid-base equilibrium studies. Figure 1 brings together a few facts that help to define what is meant by "enough water" and shows under what conditions enough water may reach the kidneys to permit them to eliminate sodium. Sodium salts actually presented even to badly damaged kidneys are readily excreted if enough water reaches the kidneys at the same time. A diversion of water from the kidneys, for normal and abnormal needs of the body, is thought to be chiefly responsible for a suppression of urine.

In Figure 1 the black lines to the left (with Roman numerals), show what may be the fate of ingested water before any can reach the kidneys. Thus (line I) for temperature regulation alone the vaporization of water from the lungs and skin may take from 800 to 5000 cc. There may be (line II) a pre-existing true dehydration, or plain water deficit. This condition is frequently pres-

ent in seriously ill edematous patients. Such patients are so often thirsty, and are not "water-logged," but actually brine-logged. The correction of this water deficit may require water amounting to as much as 6 to 10 per cent of the body weight, or as much as 6000 cc. Some non-edematous patients (line III) must be given much water with salt before any water is available to the kidneys. When an excess of sodium salts is being retained (line IV), or, in other words, when edema is forming, one liter of water is diverted as solvent for every 9 grams of the alkaline salt mixture. These first four lines indicate roughly why it is essential to give enough (or, when in doubt, more than enough) water to provide for vapor loss and pre-existing dehydration, and why it is important to regulate sodium ingestion to avoid the diversion of water to edema formation. Finally (line V), enough extra water must get through to the kidneys to permit them to do their work. Renal function studies show that to excrete solids presented to them, badly damaged kidneys may require four to five times as much water as normal kidneys. Therefore, at times it is essential to provide for around 2000 cc. of urine water over and above the prior demands of the body. In health a normal water balance may be maintained with as little as 1500 cc. of water daily, but in a badly dehydrated edematous patient, with fever or sweating and badly impaired kidneys, the water requirement may amount to 6 to 8 liters for a day or two and from 4 to 5 liters daily thereafter. An average of 2 to 3 liters daily is enough, and safe, only for the average mild case. A faulty regulation of sodium ingestion while forcing fluids will, as shown in line IV, divert what otherwise might be enough water into the marshland of the interstitial space.

The large amounts of water given in this regime can be given effectively and safely only if sodium ingestion is properly regulated. This regulation is achieved by the use of so-called neutral diets and by taking some very necessary precautions to avoid any extradietary ingestion of salt, sodium, or basic-ash excess, which would defeat the effect of the diet. Acid-base equilibrium studies indicate that a slight excess of basic ash is essential to the accumulation of the sodium salts of the edema fluid and that the mobilization and elimination of these salts are accomplished physiologically by the metabolic acids. These acids use up the bicarbonate fraction of the accumulated sodium salts and, by threatening mild acidosis, incite the kidneys to eliminate the neutral or slightly acid sodium salts passing through them.

The diet and precautions of the regime are designed to prevent any interference with this physiological process and to augment its action. Table 1 gives skeleton outlines of the diets commonly used. Each feeding or meal

<sup>1</sup>From the Medical Department of the Great Falls Clinic, Great Falls, Montana.

<sup>2</sup>Read at the meeting of the Wyandotte County Medical Society, Kansas City, October 19, 1945.

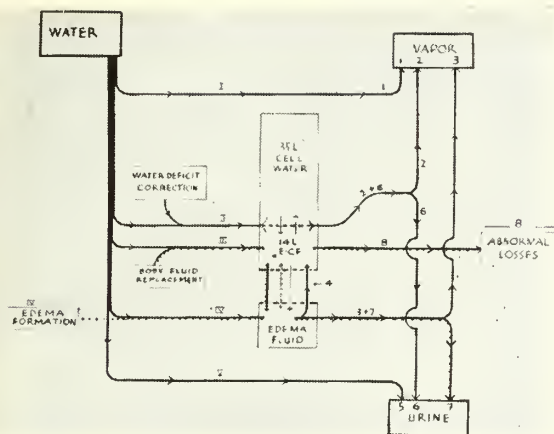


Fig. 1. Showing conditions under which enough water reaches kidneys to permit them to eliminate sodium.

is so balanced as to yield a neutral ash or a slight excess of acid ash. Construction of the diets depends on our knowledge that milk and saps of all vegetables and of all fruits, except prunes, plums, and cranberries, yield an excess of basic ash. The full neutral diet shown in Table 1 can be used indefinitely. Diabetic, ulcer, and reduction diets can be constructed around it. The middle of the table shows the six small feedings of the initial neutral diet—soft type of diet, quite like the old Karrel diet at the point where cereal, toast, and eggs were started, except that salt is restricted. The diet can be as simple as the old bread and milk diet, and it is suggested by these outlines that the commonly used dry or high protein diets probably achieve an excess of acid ash by the proportionately greater amounts of cereals or proteins used.

The four precautions listed at the bottom of Table 1 are only a few of the more obvious ones that experience has compelled us to formulate. "Fancy" foods refer to salt-cured meats and cheeses, relishes, salted nuts, etc. "Vegetable" salts, such as EKA salt, are all sodium salts of some vegetable acid, and quite as undesirable as sodium chloride. Ammonium chloride or potassium chloride is prescribed as a salt substitute. Similarly, such commercial alkalies as "Tums," and bicarbonate of soda for indigestion are specifically forbidden and calcium carbonate or aluminum hydroxide is prescribed. The fourth precaution emphasizes the fact that such extra fluids as citrus fruit juices, milk, or salty bouillon, given so frequently, have a disastrous effect. Small amounts of plum, prune, or cranberry juice are added to flavor the water; synthetic flavorings such as "Koolade" are used to avoid the natural basic-ash laden saps of the other fruits; or unsalted broths are given; or, in the case of children, the extra milk is given partly neutralized with 10 to 15 drops of diluted hydrochloric acid. If avitaminosis is feared, vitamin concentrates can be given.

The precaution against salt in the cooking is relaxed in milder cases and in patients who are anorexic, because, within limits, the total amount of salt is of less importance than the net diet reaction.

A fifth precaution is so obvious that it is often overlooked. It is necessitated by the fact that the patient may habitually select and actually eat only the basic-ash elements of a perfectly prepared neutral diet. So the patient is instructed to eat all of each feeding, or, if an acid-ash item is not eaten, to deduct from the tray an equivalent amount of basic ash.

These precautions are aimed at the inadvertent addition of salt, sodium, and basic-ash liquids or foods. They emphasize that this diet is not simply a low-salt or a low-sodium or an acid-ash diet, but is, if effective, a combination of all three. Thus others have used, and found wanting, diets with only one fourth the amount of sodium chloride but without an excess of acid ash, and some have used strongly acid-ash diets without a proper restriction of sodium or salt and found them ineffective.

Each precaution added to the regime in the course of our experience has its story. As an example let me cite the case of a man whose ascites had required frequent paracenteses and who became free of edema and ascites on the regime. His wife, an intelligent and intense university graduate, was so enthusiastic that she mastered the diet, bought the acid-base food tables, improved on our diet, and carried the patient edema free for a year and a half. He returned then with a massive reaccumulation of his edema and ascites six weeks after adding, to the strictly followed high fluid regime, half a watermelon daily, which his alert wife had read was a cure for hypertension. The basic-ash excess of its sap had overpowered the effect of the regime. When the watermelon therapy was discontinued the regime was again entirely effective.

Earlier, a young man whose resistant nephrotic edema had responded to the regime in a most gratifying manner, and whose wife had mastered the regime, returned in two weeks with a recurrence of 20 pounds of edema because he had not been forbidden to use soda for indigestion. Calcium carbonate was substituted for the sodium bicarbonate and without further change he again became edema free.

Other observations emphasize the necessity of taking steps to provide enough water to permit the kidneys to rid the body of the excess sodium presented to them. Thus on numerous occasions, particularly in patients with impaired renal function, edema has not cleared, even with the most perfect regulation of sodium, until an intake of from 2 to 3 liters daily was increased to 4 to 5 liters daily in order to provide a very large amount of urine water.

Table 2 gives an example of hospital orders intended to institute the regime in a moderately severe to severe case. The nursing and dietetic staffs are assumed to be reasonably familiar with the regime and its precautions, and it is assumed that suitable orders have already been given to cover the primary disease, such as orders for oxygen, digitalis, and sedation when indicated. The initial neutral diet, with its six small feedings, is a suitable soft cardiac diet. The desirable fluid intake was thought to be 4000 cc. daily in this case. Small amounts of diluted hydrochloric acid and ammonium chloride were ordered to augment the effect of the acid-ash excess



TABLE 1  
OUTLINES FOR NEUTRAL DIETS

| FULL NEUTRAL    |                                      |                                |                                 |
|-----------------|--------------------------------------|--------------------------------|---------------------------------|
|                 |                                      | LIMITED BASE vs. ACID NO LIMIT | 24-HOUR MINIMUM                 |
| 1 pint          | Milk                                 | Eggs                           | 2                               |
| 2 servings      | Vegetables                           | Meat, fish, fowl               | 1 serving                       |
| 2 servings      | Fruits except prune, plum, cranberry | Bread or cereals               | 5 slices or servings as desired |
| INITIAL NEUTRAL |                                      |                                |                                 |
| 6 CUPS          |                                      | 6 SMALL FEEDINGS               | MINIMUM: ONE ITEM PER CUP       |
| 6 servings      | Milk or                              | Egg or                         | 1                               |
|                 | Milk and                             | Bread or                       | 2 slices                        |
|                 | cream <sup>1, 2</sup>                | Cereal prepared or cooked      | 1 cup                           |

1. No salt or soda in or on food.

2. No "fancy" foods put up with salt.

3. No "vegetable" salt; no soda for "gas".

4. No salt broth, or extra juices, or milk.

of the diet. The diluted hydrochloric acid can be given when a patient can take only liquids orally. When given every hour in 5-drop doses, as here ordered, it helps to bring up the oral intake. Note that the amount of ammonium chloride, 3 grams daily, is less than the 6 to 9 grams recommended on restricted fluid regimes. The first four orders shown in Table 2 are usually adequate to cover the average case, when the patient is not too sick to eat the diet or to take the prescribed amount of water orally.

The intravenous supplements are given only when it is necessary to augment the oral intake. Five per cent dextrose is used in distilled water (not in normal saline with its 9 grams of salt per liter) in the amounts indicated in Table 2.

In the more severely ill patients mercupurin is used to speed the elimination of sodium. In our experience its diuretic action is greatly enhanced by the high fluid regime, with smaller and fewer doses necessary, and post-diuretic dehydration and shock are rare.

#### FAILURE OF THE REGIME TO CLEAR EDEMA

In the last few years we have studied rather closely the reasons for the failure of the regime to clear edema in any given case.

Of course there are cases, as Landis suggested in a personal communication, that do not benefit simply because the regime is stopped when the initial rehydration weight gain, with a perceptible edema increase, is seen in the first day or two. Such a reaction may be frightening in the case of the more seriously ill, "brine-logged" patients with large plain water deficits. As shown in Figure 2, the correction of true dehydration follows the same pattern in nonedematous and edematous patients. All show the initial discrepancy between intake and output. The edematous show a perceptible increase in edema, but at the same time, as their thirsty cells are satisfied they usually show an encouraging clinical improvement (as indicated by the arrows), which often occurs well before the onset of diuresis and the clearing of edema. Diuresis and disappearance of edema are the usual re-

ward for persisting with the regime, even in some very unpromising cases. Figure 2 also shows that, despite differences in the primary disease, the response of edema to the regime is the same in nephritis, eclampsia, and heart disease.

Analysis of failures experienced elsewhere by others—and some of these cases subsequently responded well in our hands—shows, when sufficient data are available, that the failures fall chiefly into two groups. In the first group some detail of the regime had been overlooked or neglected, even though orders were given to restrict salt, give a neutral diet, and provide an adequate total fluid intake. For instance, intravenous supplements to the intake had been given as 5 per cent dextrose in normal saline solution, rather than in distilled water, or an excess of basic ash had found its way to the patient from extra portions of citrus fruit juice or milk, or from sodium medication, or the patient had actually been eating only the basic-ash foods of his diet.

In the second group failure had occurred when every detail of the regime had been properly enforced, and appeared to be due to inadequate management of the

TABLE 2  
AN EXAMPLE OF HOSPITAL ORDERS

1. Diet "Initial Neutral" (6 small feedings).
2. Fluid Intake to 4000 cc. daily.
3. Diluted HCl  $\frac{1}{3}$  cc. in a glassful of water every hour from 8 A.M. to 7 P.M.
4. Ammonium Chloride 0.5 grams after feedings, or 1.0 grams *t. i. d.*
5. 500-1000 cc. of 5% Dextrose in distilled water by vein (8 A.M., 2 P.M., 6 P.M., when needed to bring total intake to 4000 cc.)
6. Mercupurin 1 cc. in 500-1000 5% Dextrose in distilled water by vein (when needed, but not before one full day on regime).
7. Record 24-hour intake and output, and weigh daily before breakfast.



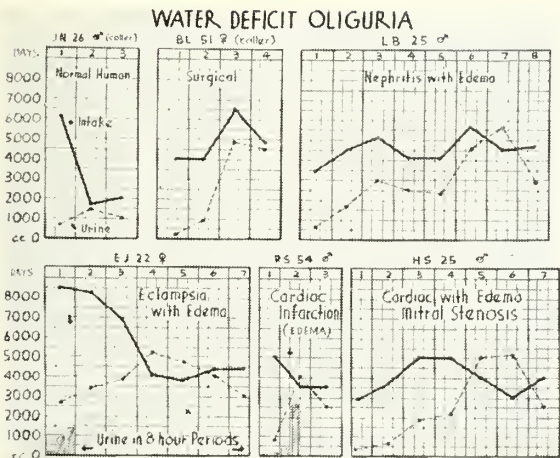


Fig. 2. Showing that the correction of true dehydration follows the same pattern in nonedematous and edematous patients.

primary disease. In these cases, for example, the regime had been relied on to replace adequate digitalization, oxygen therapy, or occasional doses of mercurial diuretics, when these measures were badly needed.

On our own services, where the personnel in nursing and dietetics have had careful training in the details of the regime, the failures seem to be confined to cases with advanced terminal disease. Such patients may have severe cerebral involvement or a semistupor with marked uremia, or, at autopsy, are shown to have multiple pulmonary infarctions.

MISCONCEPTIONS REGARDING THE REGIME

From both direct and indirect correspondence it is evident that misconceptions have arisen about some important points of the regime, which may lead to some unnecessary failures. They may be attributed chiefly to imperfections in the original report<sup>1</sup> of the details and basis of the regime, and perhaps occasionally to a not too close reading of the original article.

Some minor misconceptions are expressed in a favorable critical estimate of the regime under "Minor Notes" in the Journal of the American Medical Association for June 9, 1945, where it is stated that 2 to 3 liters of water daily are sufficient. Such an amount is sufficient in most cases, but it should be emphasized that in the more seriously ill patients, with high water vapor loss or very poor renal function or a large water deficit, there will be no response unless 4 to 6 liters daily are given, sometimes for many days. Sir George Baker emphasized this fact in 1772, when he said: "Indulge the patient to the utmost. A limited permission may be pernicious." The review states that considerable amounts, from 3 to 9 grams daily, of ammonium chloride, are given. Actually, in our series the usual dosage of ammonium chloride was 1½ to 4 grams daily, with a rare maximum of 6 grams daily. On the basis of renal function studies it is desirable to decrease the total solids to be eliminated; hence these smaller amounts of ammonium chloride are preferable. For the same reason the use of diluted hydrochloric acid is desirable. The article goes on to suggest that the hydrochloric acid is not necessary or effective,

yet we have found it indispensable in the very sick, who at first do not tolerate solid food or the solid salt of ammonium chloride. Finally, the article states that it is the production of acidosis that leads to the diuresis, and hence there is a limitation in the usefulness of the regime where renal insufficiency exists. On the contrary, the small dosage of acid drugs actually used to supplement the action of normal metabolic acids and the large amounts of water provided at the same time help badly damaged kidneys to regulate body-fluid composition and to respond more quickly to the mere threat of acidosis, while large doses of acid drugs with restricted intake may induce a very severe acidosis. Actually, the regime was developed from one used in nephritic edema.

One objection raised to the regime by others has been the difficulty of getting the patient to eat a diet so low in salt. In two recent publications it has been stated erroneously that we use a diet yielding only half a gram of salt daily. Such a diet was used by Schroeder, but the strictest of our diets uses four times as much salt, or a little over 2 grams. It is not impracticable to construct a diet with this amount of salt, and if salt substitutes do not relieve harmful anorexia we permit a little more salt, which does no harm if the diet reaction is acid. There are always patients who will not abide by any diet, whether it be an obesity, an ulcer, a diabetic, or a neutral diet, just as there are diabetics who refuse insulin, ulcer patients who smoke, and pernicious anemia patients who neglect their liver extract. Our own congestive heart failure veterans seem to prefer this regime, in spite of its flat diet.

One commentator remarks that the regime depends simply on the large intake of water "washing out" sodium. Another says that the water will not wash out sodium, that forcing fluids is therefore not beneficial, and that simple salt restriction will result in diuresis and clearing of edema and is all that is necessary. Our data<sup>2</sup> show clearly that the water does not "wash out" sodium; the water appears only to remove that sodium which is mobilized by acidification and is presented to the kidneys. On the other hand, acidification without adequate water gives only acidosis and dehydration. Simple salt restriction, though useful, is, of course, as inadequate alone as it has been for fifty years.

One hundred and fifty years ago large amounts of water were given without salt restriction, and for the last fifty years salt has been restricted without an adequate supply of water. Heavy doses of acid diuretics were used in both eras. What we have shown is that the dropsical patient can indulge in large amounts of water, safely and beneficially, if salt is reasonably restricted and if the gentle physiological effect of metabolic acids in mobilizing sodium is not retarded by an excess of basic ash or is augmented by a "neutral" diet and small amounts of acid drugs.

Other communications suggest that cases with congestive heart failure and cases with nephritis could not respond in the same manner to the regime because of differences in renal blood flow and filtration rates. So far as therapy is concerned this is a misconception, due, probably, to narrow fields of interest. Before this study

was begun in 1933 we were discouraged by some of our teachers who thought that what worked for nephritic edema, as shown by Newburgh, could not possibly work for cardiac edema, because of the theoretical differences in their mechanisms of edema formation. Yet now some who have found this regime to work in cardiac dropsy are of the opinion, on hypothetical grounds, that it could not work in nephrosis or nephritis with edema. In our hands the regime has, in fact, been effective in cardiac and renal disease and in eclampsia, as shown in Figure 2, and has been useful in cirrhosis and in any condition where edema, oliguria, or dehydration was encountered.<sup>2</sup>

One of our most prized letters, from an Army hospital in France, states that the regime was proving most useful in "avoiding or relieving a suppression of urine in battle casualties with severe injuries or serious infections." It would appear that water balance principles, which surgeons have used so well and which we in internal medicine have been so slow to exploit, can be made more

effective by the addition of principles derived from sodium and acid-base balance studies from medicine, pediatrics, and obstetrics. Certainly the derivations of this high fluid regime, and we believe its usefulness, are not limited to one branch of medicine or to one division of internal medicine.

#### SUMMARY

1. Some details of a regime which enforces a high fluid intake and regulates sodium ingestion in the management of edema are briefly reviewed.
2. Some reasons for failure of the regime and some misconceptions regarding it which have arisen in the four years since the original reports are discussed.

#### REFERENCES

1. Schemm, F. R.: A High Fluid Intake in the Management of Edema, Especially Cardiac Edema. I. The Details and Basis of the Regime. *Ann. Int. Med.*, 17, 952-69, 1942.
2. *Ibid.*: II. Clinical Observations and Data. *Ann. Int. Med.*, 21, 937-76, 1944.

---

## BIOLOGICAL ASPECTS OF MORPHINE ADDICTION

A recent number of Public Health Reports\* describes a longitudinal study of the problem of drug addiction. The subjects were two "post-addicts" serving sentences for violations of the Harrison Narcotic Act, and chosen because their sentences were sufficiently long to permit prolonged investigation and adequate time for recovery, because they had long histories of addiction, and because they showed promise of active and continued cooperation in the experiment.

Over a period of two years a study was made of the cycle of addiction, including preliminary tests to establish norms for the two subjects, administration of morphine in increasing doses, rapid withdrawal of morphine, and recovery. The recovery period was divided into five parts to show progressive changes.

The aspects studied included the intake of carbohydrates, fat, protein, and water, and an analysis of urine and feces during the corresponding periods. Clinical observations included temperature, blood pressure, pulse, and respiration. Nocturnal activity was determined by recording the number and magnitude of movements the patient made in bed. Basal metabolism determinations were made, blood was analyzed, and body hydration was determined.

The results indicate that morphine addiction is accompanied by: increases in body water, water content of blood, blood sedimentation, carbohydrate intake, and nocturnal activity; and by decreases in body weight, hemoglobin, packed cell volume, pulse rate, basal metabolism, and diastolic blood pressure.

A study of the acute effects of morphine showed that the minute volume of respired air, respiratory quotient, and insensible water loss were usually decreased after morphine, especially after large doses; that the basal metabolic rate was decreased after large doses, and the blood was slightly more concentrated after morphine. There was no indication that addiction alters the action of the drug.

\*Vol. 61, No. 1, January 4, 1946.



# Chronic Unstable Colon

Dalton M. Welty, Captain, M.C.A.U.S.

Hot Springs, South Dakota

I HAVE chosen to talk about the unstable colon, not so much because of its intrinsic interest as because of its everyday importance in the practice of medicine.

The unstable colon has had a great many other names—spastic colon, irritable colon, chronic colitis, and spastic colitis—but I believe the term “unstable colon” describes the condition most accurately. The unstable colon is not always or uniformly spastic. The term “colitis” connotes infection to the doctor, and frequently to the patient as well. Irritability is a characteristic of all living tissue.

The patient with an unstable colon nearly always complains of dull, aching abdominal pain. He has had it a long time—65 per cent longer than five years, 38 per cent longer than fifteen years. Often the pain shifts from week to week, but most often it is localized in the right lower or right upper quadrant of the abdomen. Sometimes it is mainly in the left abdomen. It may be associated with constipation, diarrhea, or regularity. Sometimes constipation alternates with diarrhea. The patient will state that his pain is considerably helped or entirely relieved by the passage of gas or a good bowel movement. Some superimposed, crampy pain may be present just before the passage of gas or stool. The color of the stool is normal, but it may be small in caliber, with chopped off ends, or of the “sheep dung” type. At any event the patient usually says the stools are unsatisfactory for one reason or another. Sometimes a little mucus, which the patient may confuse with worms, is present. The patient may have slight nausea with belching. Vomiting is uncommon. Physical examination of the abdomen reveals little. There may be tenderness along the course of the colon, especially the descending colon. It may be felt as a firm cord—the “garden hose” type of colon. Gurgling on deep pressure over the cecum is common. Sometimes the rectal sphincter is spastic.

We can write our findings in two lines. The history will take a page. Laboratory examinations are usually negative. But here a red herring may appear, such as slight hyperchlorhydria or hypochlorhydria or a diverticulum somewhere. Possibly the gallbladder may empty a bit sluggishly. The complaints are indeed out of proportion to the physical findings. We are dealing with disturbed physiology without demonstrable anatomical or pathological component. Our attention is directed to neuromuscular mechanism of the large bowel in an effort to understand the nature of this malady.

The smooth musculature of the large bowel has a dual innervation through both sympathetic and parasympathetic nerves. The sympathetic fibers, with cells of origin in the thoracolumbar cord, course through the thoracolumbar sympathetic chain to synapse with cells in the superior mesenteric plexus. From this plexus axones extend to reach the ascending and approximately

half the transverse colon. The remainder of the distal colon receives its sympathetic innervation from the second and third lumbar segments of the cord, via the lumbar splanchnics, to form the inferior mesenteric and then the presacral nerve. Stimulation of the sympathetic nerves to the colon causes relaxation of tone and contraction of the internal anal sphincter. Section of this innervation increases tone and causes relaxation of the internal anal sphincter. In other words, the sympathetic nerve supply exerts a constant inhibitory action on the colon.

The parasympathetic fibers course through the vagus nerve to innervate the proximal colon and through the second, third, and fourth sacral nerves to innervate the distal colon. Stimulation of the parasympathetic supply causes an increase in tone of the colon and relaxation of the internal anal sphincter. In general, sympathetic stimulation causes constipation and parasympathetic stimulation favors evacuation.

Gradually a better understanding of colon motility is being gained. Atkinson, Adler, and Ivy of the Department of Physiology and Pharmacology of Northwestern University have contributed a great deal by means of their careful work in studying colon motility in dogs and human beings with colostomies, by means of tandem balloons. They have found motor activity of some kind occurring in the colon 50 per cent of the time. Only 10 per cent of this activity is propulsive. The remainder is local, segmental, and nonpropulsive. Nonpropulsive contractions, responsible for maintenance of tone, occur normally three to eight times per minute. Contractions of larger amplitude occur irregularly, and propulsion occurs when these larger contractions become coordinated with similar contractions in a distal segment. Coordination of many segments occurs two or three times daily, usually after meals—the so-called gastrocolic reflex. Each segment of the colon for contraction purposes is about 5 cm. long. Pain will occur when a strong propulsive wave meets a distal segment manifesting marked nonpropulsive activity (increased tone). Thus functional obstruction may occur. It is possible for liquid bowel contents to pass such a zone of increased nonpropulsive activity. Material of more solid consistency will act as a plug.

Much effort has been expended to find a satisfactory drug that will abolish excessive nonpropulsive activity, but no completely satisfactory one has been found. Atropine will lessen nonpropulsive contraction and completely abolish propulsive activity for about two hours. Trasentin (diphenyl diethylaminoethanol hydrochloride) inhibits tone almost as well as atropine, probably as a direct action on smooth muscle. Under trasentin influence the activity of the various segments is more uniform and coordination between segments is improved. Given orally, it produces a decrease of about 35 per cent in



total motility. Spasmalgin (a combination of papaverine, pantopon, and an atropine ester) produces increased tone but abolishes propulsive activity. Benzedrine, octin (methyloctenylamine hydrochloride), and syntropan produce little discernible effect experimentally, according to Ivy and his associates. Morphine definitely increases tone, and then no oral antispasmodic is effective. Trasentin and morphine are incompatible. Together they invariably produce nausea and malaise.

The best available antispasmodic drugs are atropine and trasentin. Atropine is slightly more potent in lessening nonpropulsive activity, but trasentin improves the functional gradient more effectively. However, neither counteracts hypertonus to the extent desired.

The best propulsive stimulants are solution of posterior pituitary, prostigmine, and ergotamine. Solution of posterior pituitary acts in two minutes, prostigmine in twenty minutes, ergotamine acts only to potentiate the prostigmine. A combination of the three causes an abrupt action which persists for six to eight hours.

|                              |          |
|------------------------------|----------|
| Solution posterior pituitary | 1¼ units |
| Prostigmine                  | 0.25 mg. |
| Ergotamine tartrate          | 0.25 mg. |

The great majority of these patients with unstable colon have a hypertonic bowel—a bowel in which there is increased nonpropulsive activity. A few have a hypotonic bowel and complain of constipation without much other distress. Senility, organic disease of the central nervous system, and obesity are the most common factors underlying the hypotonic bowel. Vitamin B deficiency and lack of calcium or potassium are occasional factors.

Patients with hypertonic colon need our sympathetic attention. They are not helpless psychopaths or inveterate neurotics in most cases. To verify this belief I looked over the records of a hundred such patients who have been under my care in the past year. Of this group only 20 per cent had a definite formal psychoneurosis. Another 20 per cent had a reactive depression (simple situational reaction) to some difficult life situation. This finding compares favorably with those of others. Another 40 per cent were afflicted with what one might call faulty ways of living. In this group we have, among others, the hurry-worry wart; the overly ambitious, emotionally immature; those lacking in vigor who try to do too much; the immoderate smoker, drinker, and eater; and the perfectionistic fussbudget.

These people can be helped. They are not helped by a brush-off. Surgery is not the way. In the group surveyed I found that 42 per cent had had an appendectomy, and of this group 68 per cent had the operation for "chronic" appendicitis. Now, chronic appendicitis

is a rare disease; most pathologists say it does not exist. Most gastroenterologists rarely feel justified in making this diagnosis. Were these patients helped by surgery? Each one was given a chance to answer. It happened that all but one operated for chronic appendicitis claimed he was made worse or was no better following the operation. Twenty-three per cent claimed postoperative adhesions. Several of these patients had had multiple abdominal operations, including operations for the release of adhesions. Still they were no better.

No, I am afraid the surgical approach to this problem leaves much to be desired. This is not to say that operation should not be done where the history definitely indicates chronically recurring acute appendicitis. Certainly we should consider very deeply before operating with the unsatisfactory diagnosis of "chronic" appendicitis.

I have found it helpful to consider treatment under four headings when advising these patients.

1. *General Measures.* This is the most important part. It includes reassurance through careful history, physical, and requisite laboratory examination. Our findings must be adequately explained to the patient. A brief explanation of how pain can develop without organic disease is imperative. Their "motor" is out of tune. They may be racing their motor. They have to watch their personal speedometer every hour of the day and not exceed the limit. Faulty habits and attitudes should be discussed if possible. Eliminate the hurry-worry habit. Regularity of living, eating, sleeping, and working, with time off for a little recreation, is stressed. A 20-minute rest period after lunch and again after the evening meal should be arranged if possible. Tell the patient it took time to get sick and it will take time to get well. Coffee, tea, and alcohol are permitted only in moderation.

2. *Diet.* I recommend a bland diet. It is important to emphasize the essentials of nutrition so that deficiency disease will not develop.

3. *Bowels.* Desensitization against the fear of the evils of constipation, emphasizing proper habit formation, is essential. If a little added help is needed I prefer mineral oil at bedtime, or 1 to 2 glasses of normal saline before breakfast each morning. Later a bulk former may be needed as the bowel relaxes.

4. *Medication.* For the first month trasentin or belladonna and/or mild sedation may be necessary. Since our antispasmodics are not so potent as we should like, remember not to send a boy to do a man's job. In atonic constipation I have used prostigmine bromide gr. ⅓ to ¼ at breakfast. In a few cases I have used ergotamine tartrate gr. 1/60 to potentiate the prostigmine effect.

# The JOURNAL LANCET

Serves the *Medical Profession of*  
MINNESOTA, NORTH DAKOTA, SOUTH DAKOTA AND MONTANA

Official Journal of the American Student Health Assn., Great Northern Railway Surgeons' Assn., Minneapolis Academy of Medicine, Montana State Medical Assn., North Dakota Society of Obstetrics and Gynecology, North Dakota State Medical Assn., Northwestern Pediatric Society, Sioux Valley Medical Assn., South Dakota Public Health Assn., South Dakota State Medical Assn.

## ADVISORY COUNCIL

### *North Dakota State Medical Assn.*

Dr. James F. Hanna, *Pres.*  
Dr. A. E. Spear, *Pres.-Elect*  
Dr. L. W. Larson, *Secy.*  
Dr. W. W. Wood, *Treas.*

### *North Dakota Society of Obstetrics and Gynecology*

Dr. E. H. Boerth, *Pres.*  
Dr. Paul Freise, *Vice Pres.*  
Dr. G. Wilson Hunter, *Secy.-Treas.*

### *Minneapolis Academy of Medicine*

Dr. Ernest R. Anderson, *Pres.*  
Dr. Jay C. Davis, *Vice Pres.*  
Dr. Cyrus O. Hansen, *Secy.*  
Dr. Thomas J. Kinsella, *Treas.*

### *South Dakota State Medical Assn.*

Dr. William Duncan, *Pres.*  
Dr. F. W. Howe, *Pres.-Elect*  
Dr. H. R. Brown, *Vice Pres.*  
Dr. Roland G. Mayer, *Secy.-Treas.*

### *South Dakota Public Health Assn.*

Dr. J. M. Butler, *Pres.*  
Dr. C. E. Sherwood, *Vice Pres.*  
Dr. Gilbert Cottam, *Secy.-Treas.*

### *Sioux Valley Medical Assn.*

Dr. D. S. Baughman, *Pres.*  
Dr. Will Donahoe, *Vice Pres.*  
Dr. R. H. McBride, *Secy.*  
Dr. Frank Winkler, *Treas.*

### *Montana State Medical Assn.*

Dr. S. A. Cooney, *Pres.*  
Dr. M. A. Shillington, *Pres.-Elect*  
Dr. R. F. Peterson, *Secy.-Treas.*

### *Northwestern Pediatric Society*

Dr. G. B. Logan, *Pres.*  
Dr. Geo. Kimmel, *Vice Pres.*  
Dr. Northrop Beach, *Secy.-Treas.*

### *Great Northern Railway Surgeons' Assn.*

Dr. W. W. Taylor, *Pres.*  
Dr. R. C. Webb, *Secy.-Treas.*

### *American Student Health Assn.*

Dr. Ralph I. Canuteson, *Pres.*  
Dr. Glenadine Snow, *Vice Pres.*  
Dr. G. T. Blydenburgh, *Secy.-Treas.*

## BOARD OF EDITORS

DR. J. A. MYERS, *Chairman*

Dr. J. O. Arnsion  
Dr. D. S. Baughman  
Dr. Ruth E. Boynton  
Dr. Gilbert Cottam  
Dr. H. S. Diehl  
Dr. L. G. Dunlap  
Dr. Ralph V. Ellis  
Dr. W. A. Fansler  
Dr. A. R. Foss

Dr. James M. Hayes  
Dr. A. E. Hedback  
Dr. E. D. Hitchcock  
Dr. R. E. Jernstrom  
Dr. A. Karsted  
Dr. L. W. Larson  
Dr. W. H. Long  
Dr. O. I. Mabee  
Dr. J. C. McKinley

Dr. Irvine McQuarrie  
Dr. Henry E. Michelson  
Dr. C. H. Nelson  
Dr. N. J. Nessa  
Dr. Martin Nordland  
Dr. J. C. Ohlmacher  
Dr. K. A. Phelps  
Dr. C. E. Sherwood  
Dr. M. A. Shillington

Dr. J. C. Shirley  
Dr. E. Lee Shrader  
Dr. E. J. Simons  
Dr. J. H. Simons  
Dr. S. A. Slater  
Dr. W. P. Smith  
Dr. C. A. Stewart  
Dr. S. E. Sweitzer

Dr. W. H. Thompson  
Dr. E. L. Tuohy  
Dr. M. B. Visscher  
Dr. O. H. Wangenstein  
Dr. S. Marx White  
Dr. H. M. N. Wynne  
Dr. Thomas Ziskin,  
*Secretary*

LANCET PUBLISHING CO., *Publishers*, 84 South Tenth Street, Minneapolis 2, Minnesota

MINNEAPOLIS, MINNESOTA, FEBRUARY, 1946

## PHYSICIANS TOO MANY OR TOO FEW

Not long ago—not so very long ago at least—this ever complaining world contended that there was an overabundance of physicians, and it was thought urgently necessary to do something about it.

Faculty members, influenced by statistics, found the most natural remedy in such a dilemma to be that of raising the curriculum standard—a laudable thing to do under the circumstances. But the motive did not long remain in concealment. When this procedure failed to accomplish the purpose of reducing the number of medical students, someone in alarm suggested the desirability of reducing the number of newly graduated physicians who might be licensed to practice each year. However, the cruelty of a system that encouraged a student to toil for years to qualify for a profession, only to be denied its practice on purely numerical grounds, became evident. Much better, then, that a faculty member, under the guise of a vocational guidance adviser, should

change the student's course in early years. How much of this was done we cannot say, but everyone knows that a cataclysm supervened in this lofty program, and fate ordered an about-face to provide medical personnel for a great war. In turn, acceleration became the order of the day.

And so we have the rhythmic pulsations that are inescapable in every progressive movement, and now according to natural law we should look for deceleration. But we shall see. Political philanthropy sees an opportunity at this phase of the curve to continue its ascent to the point where there shall be a doctor at every crossroad. It seems a little incongruous that the government should be expected to furnish every musher in the wilds of Alaska with a physician at hailing distance and not require a grocer to locate at a like proximity to his igloo. Heaven knows man doth not live by medicine alone; food is an even more necessary commodity.

A. E. H.

## THE NATION'S BIRTH AND MATERNAL RECORD IMPROVES

Both babies and mothers now have a better chance of survival, according to findings of a recent study made by the U. S. Children's Bureau. The record for the decade 1933 to 1943—the first period for which comparative statistics making such a study possible were available—shows that the birth rate rose 30 per cent from its all-time low in 1933, the number of live births rose from two million to almost three million, and the infant mortality rate was reduced almost one third and the maternal mortality rate more than one half.

The major credit for this remarkable record, according to the Children's Bureau, belongs to the doctors, for the work they have done in the care of women during pregnancy and the improved care they are able to give the mothers at childbirth and after delivery and to the child in the dangerous early days and months of life. Improvements in the economic status of many families, allowing a better diet during pregnancy and enabling more women to have hospital care during childbirth, and improvements in hospital care are also important factors.

For the states representing the JOURNAL LANCET region the comparative infant mortality rates per thousand live births are as follows:

|              | 1943 | 1933 | Per Cent<br>Change |
|--------------|------|------|--------------------|
| Minnesota    | 30.9 | 47.6 | -35.1              |
| Montana      | 38.7 | 51.5 | -24.9              |
| North Dakota | 34.9 | 60.0 | -41.8              |
| South Dakota | 35.7 | 54.8 | -34.9              |

The maternal mortality rates, per 10,000 live births, are as follows:

|              | 1943 | 1933 | Per Cent<br>Change |
|--------------|------|------|--------------------|
| Minnesota    | 14.4 | 43.6 | -67.0              |
| Montana      | 17.5 | 57.0 | -69.3              |
| North Dakota | 29.1 | 49.3 | -41.0              |
| South Dakota | 15.6 | 48.2 | -67.6              |

That the record is still not what it should be or could be is evident. The Children's Bureau points out that "if the care we know so well how to give were available to all groups of the population in all parts of the country . . . we could cut still further the present tragic loss of life." To save the lives of more mothers and babies we need more physicians, public health and hospital nurses, and more hospitals and health centers.

## MEDICINE AND CHANGE

To improve national health doctors and the public must work together. Unless the public back up and carry forward what doctors ask them to do, medical progress will be slow.

Medical care grows better through two well-recognized channels: through the channel of improving education and through the channel of research. To keep these channels wide and deep in a changing world is one of the problems facing medicine today.—REGINALD FITZ, M.D., in *The March of Medicine*, New York Academy of Medicine Lectures to the Laity, 1944.

## ANNOUNCEMENTS

The Washington Institute of Medicine announces publication of the *Quarterly Review of Pediatrics*, the first issue to appear in February. The new review, devoted to abstracts from journals in this country and abroad, has an editorial board of fifteen, with Dr. Irving J. Wolman of Philadelphia as editor-in-chief. Two pediatricians from the Central Northwest, Dr. Henry F. Helmholtz of the Mayo Clinic and Dr. Irvine McQuarrie of the University of Minnesota Medical School, are members of the editorial board.

### National Gastroenterological Association 1946 Award Contest

The National Gastroenterological Association announces the establishment of an annual cash prize award of \$100 and a certificate of merit for the best unpublished contribution on gastroenterology or allied subjects. Certificates will also be awarded those physicians whose contributions are deemed worthy. Contestants residing in the United States must be members of the American Medical Association and those residing in foreign countries must be members of a similar organization in their own country. The winning contribution will be selected by a board of impartial judges, and the award will be made at the annual convention banquet of the Association, to be held at the Hotel Pennsylvania, New York City, June 20, 1946.

Entries, to be limited to 5000 words, in English, typewritten and submitted in five copies with an entry letter, must be received by May 1, 1946. They should be addressed to the National Gastroenterological Association, 1819 Broadway, New York, N. Y.

### Sectional Meetings, American College of Surgeons

The American College of Surgeons announces resumption of its sectional meetings, which were replaced by one-day sessions during the war. Ten two-day meetings have been announced, as follows. Minneapolis, Radisson Hotel, January 28-29; St. Louis, Hotel Jefferson, January 31-February 1; Birmingham, Tutwiler Hotel, February 8-9; Pittsburgh, William Penn Hotel, March 11-12; Boston, Statler Hotel, March 18-19; Montreal, Mt. Royal Hotel, March 22-23; Detroit, Statler Hotel, March 26-27; Salt Lake City, Utah Hotel, April 8-9; Portland, Oregon, Multnomah Hotel, April 12-13; Los Angeles, Biltmore Hotel, April 17-18.

The medical profession at large, medical students, and hospital executives are invited to join with the Fellows of the College in these meetings.

Among the subjects scheduled for discussion at meetings for the medical profession are: treatment of infection by chemotherapy and the antibiotics; injuries to the bile ducts; preoperative and postoperative supportive treatment; treatment of open wounds; treatment of osteomyelitis; management of advanced cancer; care of the veteran; and the reconversion period in the practice of medicine. The hospital conferences will be devoted to discussion of high standards for postwar hospitals, approached from the point of view of administration, professional services, and care of different types of patients.



## MEET OUR CONTRIBUTORS

DR. OWEN HARDING WANGENSTEEN, Chief of the Department of Surgery of the University of Minnesota Medical School and Surgeon-in-Chief, University of Minnesota Hospitals, had his medical training and internship at Minnesota, and was then resident in surgery at the Mayo Clinic (1925) and assistant in the Surgical Clinic of Professor F. de Quervain in Berne, Switzerland (1927-28). A Diplomate of the American Board of Surgeons and a Fellow of the American College of Surgeons, he is a member of many professional societies, including the American Society of Experimental Pathology, the American Surgery Association, the Society of Experimental Biology and Medicine, and the Société Internationale de Chirurgie.

Dr. Wangenstein received the John Scott Award and medal in 1941. Author of *The Therapeutic Problem in Bowel Obstructions* (1937), he is known for a suction syphonage treatment of acute intestinal obstruction. "Wangensteen bottles" are featured in "Sometimes You Break Even," by Victor Ullman, a story appearing in the February 1946 *Atlantic Monthly*.

DR. FERDINAND RIPLEY SCHEMM of the Great Falls (Montana) Clinic is a graduate of the University of Michigan Medical School, with the degrees of B.S. (Med.) and M.D., and had his postgraduate work there as well. Following some years as instructor in Internal Medicine at the University Hospital, Ann Arbor, he went to Great Falls, where he has practised since 1933. He is a Diplomate of the American Board of Internal Medicine (1937), a Fellow of the American College of Physicians, and a member of several professional societies.

DR. DALTON M. WELTY, who has been an internist with the U. S. Army on detached duty with the Veterans Administration at Hot Springs, South Dakota, for three years, is a graduate of the Johns Hopkins School of Medicine (1939), with postgraduate work at Johns Hopkins Hospital, Baltimore, and Henry Ford Hospital, Detroit. He is a member of the Black Hills District Medical Society.

## Book Reviews

**Facial Prosthesis**, By ARTHUR H. BULBULIAN, M.S., D.D.S., Director, Museum of Hygiene and Medicine, The Mayo Foundation. Philadelphia: W. B. Saunders Co., 1945. Pp. 241, 202 illustrations. \$5.00.

This excellent handbook on facial restoration fills a long-standing need. World War I stimulated interest in prosthetic reconstruction of missing parts, and the experience gained during the conflict has since proved its value in correcting deformities due to malignant diseases of the face and jaw. Never has there been more interest in the subject than at present. Yet, although prosthetic restoration of the extremities is well standardized in orthopedics, the highly specialized subject of facial prosthesis is nearly unknown to surgery. The literature is almost entirely confined to dental periodicals and books, and even in the dental profession few are qualified to solve the problems of facial and maxillary repair.

Although these problems are clearly the province of the surgeon, many factors may contraindicate surgical treatment. In such cases the missing parts may be artificially restored, either temporarily or permanently. For the person interested in this subject, the author provides a concise introduction to prosthetic theory and technic. He limits himself to artificial restoration of the face, particularly the ear, nose, and orbit, omitting the maxillary restorations which are frequently involved. In stressing latex he has somewhat slighted the importance of acrylics and other suitable materials.

The subject matter in the fourteen chapters is well classified, and the diagrams and illustrations are carefully planned to supplement descriptions of procedures. This small volume satisfactorily demonstrates the function of prosthesis in repairing deformities of the face.—C. W. WALDRON.

**The Arthropathies: A Handbook of Roentgen Diagnosis**, by ALFRED A. DE LORIMIER, Colonel, Medical Corps, U. S. Army. Chicago: The Year Book Publishers, 1943. Pp. 319, illustrated.

The Year Book Publishers have put out a series of books on X-ray diagnosis, of which this is one. The material is divided into two parts: peripheral joints and joints of the spine. Each part considers developmental anomalies, diseases associated with mechanical stress, the arthritides, neoplasms, and, finally, miscellaneous disorders. Illustrations are profuse and carefully marked with arrows and letters demonstrating the pathological processes. Within the limits imposed by the Year Book format, not too well suited to a pictorial subject, de Lorimier has produced an excellent treatise on joint disorders.

**Men Without Guns**. Text by DE WITT MACKENZIE; descriptive captions by MAJOR CLARENCE WORDEN; foreword by MAJOR GENERAL NORMAN T. KIRK. 177 paintings and sketches by contemporary artists, with 118 plates in full color. Philadelphia: The Blakiston Company, 1945. 152 pages. \$5.00.

Here is the story of the part played in the war by the indefatigable doctors, nurses, and corpsmen of the Army Medical Department, told most vividly in the plates that make up the major part of the book.

The Abbott Collection of Paintings, now the property of the United States Government, from which the illustrations are taken, is the result of the cooperative thought and work of a considerable group of men, including Lt. Col. Howard F. Baer, whose idea it was; the Abbott Laboratories, who sponsored the project; the War Department; the Associated American Artists; and, by no means least, the twelve artists, some of whom imperiled their lives and suffered many hardships in gathering the material for their work.

These twelve artists are: Howard Baer (not related to Lt. Col. Baer), who was assigned to the Burma-China-India front and made by far the largest number of paintings and sketches, namely, 55; Robert Benney, Western Pacific, 31; Peter Blume, Halloran General Hospital, 1; Franklin Boggs, Southwest Pacific, 18; Francis Criss, Army Medical Center, Washington, 7; John Steuart Curry, Army Medical Department training school, Camp Berkeley, Texas, 12; Ernest Fiene, plants of medical industry on the home front, 10; Marion Greenwood, England General Hospital, Atlantic City, 24; Joseph Hirsch, Mediterranean Theatre, 22; Fred Shane, Army Medical Department training school at Carlisle Barracks, Pennsylvania, 14; Lawrence Beall Smith, European Theatre, 18; Manual Tolegian, Army Nurse Corps training school, Camp White, Oregon, 10.

Memorable stories of the artists' experiences while getting their material are included in the text. The descriptive captions are vivid and telling.

Doctors who took part in the magnificent work of the Army Medical Department will want to own this book. So will many others for whom, to use the Aristotelian phrase, the pity and terror of the tragedy depicted in these pictures will serve to reinforce the determination that it shall not happen again.

**Prescribing Occupational Therapy**, by WILLIAM RUSH DUNTON, JR., M.D. 2d ed., revised. Springfield, Illinois: Charles C Thomas, 1945. Pp. 156. \$2.50.

This book, reprinted in response to many requests, has been completely revised, with a chapter on rehabilitation and up-to-date references added.

Dr. Dunton, a pioneer who has contributed much to the wholesome later development of occupational therapy, is a keen observer. As he states in the preface to the first edition, occupational therapy has not been included in the curriculum of the medical school until recently, and few medical teachers have given the subject more than passing mention. The physician who senses that occupational therapy could be of help to patients met in his private practice therefore has little information upon which to proceed. One objective of Dr. Dunton's book is to give the busy physician this needed insight. To do so he

has drawn on the entire related occupational therapy literature, much of which is accessible largely through the author's efforts as editor of the *Maryland Psychiatric Journal* and the journal of the American Occupational Therapy Association, *Occupational Therapy and Rehabilitation*. Dr. Dunton's rich personal experience in the field is felt throughout the book.

While the author has aimed at brevity, the scope of the book is broad. Part 1 presents chapters on significance, prescription, and fatigue. In accepting the definition that occupational therapy is "any activity, mental or physical, definitely prescribed and guided for the distinct purpose of contributing to, and hastening of recovery," the field of activity is recognized to be as broad as the needs of sick humanity. The over-all aim of occupational therapy in aiding recovery is clarified by presenting specific objectives indicated by the form of illness. The chapter on prescription is well summed up in the following items to be considered before writing a prescription: first, the object to be obtained; second, the type of occupation; third, the contraindications which may influence choice of occupation; fourth, a necessary precaution, "the better understanding of the patient given the therapist, the more intelligent the application of treatment."

Part 2 presents the special application of the general principles of occupational therapy to mental disorders, general medicine, surgical cases, orthopedic cases, cardiac cases, tuberculosis cases, children, and bed patients.

In the last chapter rehabilitation, or "the return of the physical or mental invalid to his former usefulness as a member of society," is briefly considered. Occupational therapy, having aided and hastened recovery, can do much to prepare the individual for and assist him in making a satisfactory return to normal.

The therapist has available interesting crafts and other techniques which may be so adapted to meet special needs that satisfactory performance can be guaranteed. The fear of being different can be best eliminated by thus transferring the focus of attention to actual performance. When the psychological readjustment has become an accomplished fact, rehabilitation can be undertaken with the assurance of the patient's complete cooperation.

The patient's cooperation and reaction to a treatment program can be largely conditioned by the degree of insight of those interested in him. This book, therefore, should be most helpful not only to the physician, occupational therapist, and nurse, but also to the friends and relatives of patients.

**Structure and Function of the Human Body**, by RALPH N. BAILLIF, Ph.D., and DONALD L. KIMMEL, Ph.D. Philadelphia: J. B. Lippincott Company, 1945. Pp. 328, illustrated, \$3.00.

A basic biological principle, the relationship of structure and function, is recognized in this new textbook for beginning science students by Professors Baillif and Kimmel. The authors have attempted to fill what they believe to be a need for an efficiently concise description of the anatomy and physiology of the human body. Students will welcome the shortness of this book (328 pages), as well as its careful introduction to scientific terms and its numerous clear, useful diagrams.

The authors begin with a consideration of the building units of the body: protoplasm, cell and tissue structure, membrane function, and the organ systems of the body. The structure-function relationship is emphasized in this introductory survey. The bulk of the book is devoted to a more detailed description of the systems, which are divided into related groups. In spite of the authors' expressed desire to eliminate the less essential facts, they have included a great many anatomical details which seem unnecessary for the beginning student. As a result, there is decidedly more emphasis upon structure than upon function.

In Grandfather's time the doctor's most potent weapons were his personality and his art. He knew his patients intimately, he had time to reflect upon the mysteries of man's psychic make-up, and he was a father confessor as well as a healer.—(KATTWINKEL, in *New England J. Med.*)

## Necrology

DR. JOHN FRANCIS CURTIN, 57, of Minneapolis, died December 25, 1945, after a long illness. He was president of the medical staff of Abbott Hospital and was also on the medical staff of Asbury, Northwestern, and St. Mary's hospitals.

DR. EDWIN L. GARDNER, 59, of Minneapolis, specialist in internal medicine and professor at the University of Minnesota for 30 years, died January 30, 1946.

DR. WILLIAM L. GORDON, 72, of Washburn, North Dakota, died December 9, 1945, in Bismarck. Dr. Gordon, an obstetrician, was born and educated in Kentucky. He had practised in North Dakota since 1901 and for 32 years in Washburn.

DR. PAUL LINCOLN GREENE, 60, physician and surgeon of Livingston, Montana, since 1912, died at Missoula January 5, 1946, after a long illness. Dr. Greene had served in the Army Medical Corps in both world wars. At the time of his death he was chief surgeon for the Northern Pacific Railway in Livingston.

DR. DONALD WELSH GUDAKUNST, 51, medical director of the National Foundation for Infantile Paralysis, died of a heart attack in Chicago on January 20, 1946. Dr. Gudakunst, who had his B.S. and M.D. from the University of Michigan and also spent his internship there, had a long record in medicine and public health and was one of the country's leading authorities on poliomyelitis. His home was in Westport, Connecticut.

DR. ERNEST WESLEY RIMER, 63, practising physician and surgeon of Breckenridge, Minnesota, for more than 30 years, died December 22, 1945, after a brief illness.

DR. ARTHUR WILLIAM SHALEEN, 68, of Hallock, Minnesota, died January 8, 1946.

DR. FRANK DALE SMITH, 64, of Rochester, Minnesota, died December 5, 1945. He had practised at Kasson for 22 years before going to Rochester in 1937.

DR. GUSTAVE WINDESHEIM, 91, dean of physicians of Kenosha, Wisconsin, died January 19, 1946. Dr. Windesheim, born in Alsace Lorraine in 1854, practised in Chicago for many years before going to Kenosha. He retired in 1938.

### Army Psychiatric Experiences of Value to Civilian Institutions

Industrial, educational, and criminal institutions and society in general can derive benefit from the psychiatric experience of the Army Medical Department in World War II, according to Brigadier General William C. Menninger. Two major innovations in Army treatment of neuropsychiatric cases are psychotherapy under sedation and group psychotherapy. Through psychotherapy under sedation the patient is given "free and adequate drainage" for his emotional tension, an important factor in recovery. In group psychotherapy a group of patients with similar problems meet an hour a day for ten to thirty discussions, under the leadership of a psychiatrist.



## News Items

A plan to expand the staff and improve the medical care at the Minneapolis Veterans Hospital, making it one of the leading veterans' medical centers in the country, has been announced by Dr. Harold S. Diehl, dean of medical sciences at the University of Minnesota, Carl D. Hibbard, manager of the Minneapolis Veterans Administration, and Dr. Harry E. Bank, chief medical officer of the hospital.

The plan provides for placing the hospital on University Medical School standards through supervision of all appointments of physicians by the dean; introduction of specialists drawn from all parts of the country under supervision of a Dean's Committee; setting up a fellowship system under which 68 doctors, graduates of the University Medical School, will work in the hospital on a full-time basis while obtaining specialists' ratings; and constituting ability, rather than civil service status, the primary basis for appointment of physicians, with veterans given voluntary preference wherever possible.

The program will add 35 men with rank of senior consultant, 43 consultants, and 68 resident physicians or fellows.

Dr. James Blake, pioneer physician in the Lake Minnetonka region, is still in active practice at 73, after 43 years of service. Dr. Blake estimates that he delivered 125 to 150 babies annually during his first 25 years of practice. In World War I he examined drafted men at 10 cents each, and in World War II he examined many more free of charge. He was a "horse and buggy doctor" till 1910, and since then has worn out some twenty-five cars. Dr. Blake has three doctor sons, two of whom, Capt. Allen J. Blake and Capt. Paul S. Blake, are still in service. Dr. James A. Blake, recently released from service, is in practice with him.

Dr. W. C. Ehmke, physician at Willow River, Minnesota, for forty years, was honored on January 20, his 65th birthday, by a surprise gathering of hundreds of friends and neighbors of northern Pine County.

Dr. Edward B. Kinports, former major in the Army Medical Corps, reviewed his experiences as a surgeon at clearing stations and hospitals in the Pacific Theater at a luncheon meeting January 21 at International Falls, Minnesota, and described some of the improvements in medical technics that saved the lives of thousands of wounded American soldiers.

Dr. L. H. Clerf, Philadelphia, Dr. A. W. Proetz, St. Louis, and Dr. F. T. Hill, Waterville, Maine, were the principal speakers at the biennial continuation course for ear, nose, and throat specialists at the University of Minnesota in January. Specialists attending the course also attended a one-day meeting of the middle section of their professional society at the Curtis Hotel, with Dr. A. C. Furstenberg of Ann Arbor presiding.

The Minneapolis Academy of Medicine paid tribute in January at its annual senior meeting to seven hon-

orary members: Dr. E. T. Bell, Dr. Harold S. Diehl, Dr. Benjamin J. Clawson, Dr. George D. Head, Dr. Henry L. Ulrich, and Dr. Richard E. Scammon, all of the University of Minnesota, and Dr. Adolph M. Hansson of Faribault. Forty senior members of the academy were also honored.

According to Dr. E. L. Tuohy of Duluth, the disadvantageous health and medical conditions of rural America recently outlined by the U. S. Department of Agriculture do not obtain in rural Minnesota. Speaking especially of conditions in St. Louis County, Dr. Tuohy pointed out that excellent roads and transportation permit easy access to almost every point in the county's rural area from nearby towns; that doctors are attracted even to small towns in the county, especially on the iron range, where adequate support and facilities are assured; that medical examinations of all school children are required; and that nursing service is provided for schools and rural communities.

As president of the Minnesota State Medical Society, Dr. Tuohy announced that Minnesota is considering a medical plan for veterans similar to that now in effect in Michigan, which, through a cooperative arrangement with the Veterans Administration, provides that war veterans with service-connected disabilities may receive treatment at government expense from doctors of their choice in their home communities.

Dr. E. S. Mariette, superintendent of Glen Lake Sanatorium in Minneapolis since its opening, was honored by the staff in January in a celebration of the thirtieth anniversary of the sanatorium.

Dr. Ernest R. Anderson has been re-elected president of Asbury Hospital medical staff in Minneapolis for 1946.

Dr. G. W. Clifford and Dr. E. R. Sather, both of Alexandria, Minnesota, have been elected respectively president for 1946 and 1947 of the Park Region Medical Society, comprising physicians of Douglas, Grant, and Otter Tail counties.

Dr. Jean Verbrugge of Antwerp, Belgium, chairman of the Belgian Society of Orthopedic Surgery, said in Minneapolis recently that observations he made on a tour throughout the United States prove that this country leads the world in orthopedic surgery. He attributes this leadership to the American organization of post-graduate teaching, to which many surgeons devote themselves beyond the sphere of their own practices.

The annual George Chase Christian lecture will be given at the University of Minnesota by Dr. Leonell C. Strong of Yale University School of Medicine on Thursday, February 7, at 8 P.M., in the auditorium of the Museum of Natural History. His subject will be "Mice, Men, and Malignancy." Dr. Strong will speak also at 4:30 P.M. on February 6 in 214 Millard Hall on "Experimental Gastric Carcinoma in Mice."



Dr. Eugene Hildebrand, formerly of Northwestern University Medical School, is now pathologist and director of laboratories of the Great Falls (Montana) Clinic.

Dr. James MacGregor of the North Montana Clinic, Great Falls, has been re-elected vice president of the United States chapter of the International College of Surgeons.

Dr. James E. Garvey has resigned as city physician of Butte, Montana, on the return of Dr. Neil O'Keefe to that post from service overseas.

Dr. Richard R. Brady, formerly of Livingston, Montana, has been appointed executive officer of Dibble General Hospital at Menlo Park, California.

The Hawkins-Lindstrom Clinic was opened in Helena, Montana, in December 1945, with Dr. Thomas L. Hawkins, Dr. Everett H. Lindstrom, and Dr. O. M. Moore as members of the staff.

The Shyenne Valley Medical Society met January 9 at Valley City, North Dakota. The newly elected officers are Dr. Paul T. Cook, President; Dr. J. P. Merrett, Vice President; Dr. C. J. Meredith, Secretary and Treasurer. Dr. A. C. Macdonald, Dr. J. P. Merrett, and Dr. L. Almklov were elected to the Board of Censors, Dr. Paul T. Cook as delegate and Dr. A. C. Macdonald as alternate. Dr. W. H. Gilsdorf and Dr. H. Christianson are new members of the society.

Surgeon General Thomas Parran has announced that appointments to fill vacancies in the Reserve Corps of the U. S. Public Health Service are being made and that examinations for appointments to the Regular Corps will be held in April and May. Physicians, dentists, and nurses are needed at once for duty in hospitals, in the tuberculosis and venereal disease control programs, and other activities.

National Negro Health Week is announced for March 31 to April 7, 1946, by the U. S. Public Health Service. The 1946 week represents the 32d observance of this occasion.

A nation-wide program to expand and accelerate its fight against crippling diseases affecting children will be set into action at once by the Shriners of North America. The five-point program comprises the granting of scholarships in orthopedic surgery to outstanding qualified medical students, with three scholarships of \$2,500 each to be made in 1946 for training in three universities, soon to be named; an annual appropriation of \$3,750 for scholarships in orthopedic nursing; the establishment of a research project to investigate the sources, methods of treatment, and prevention of crippling diseases attacking children; the expansion of present facilities and equipment of the fifteen Shriners' hospitals now in operation (one of which is located in the Twin Cities), and the establishment of new hospitals; and the establishment of convalescent homes in connection with all Shriners' hospitals. Dr. J. Albert Key, president of the American Orthopedic Association, bespeaks the association's endorsement of the expanded program.

The 1946 Albert and Mary Lasker Foundation awards for the most significant contribution to research in human fertility and for meritorious public health service have been presented to Dr. Robert Latou Dickinson and Dr. Irl Cephas Riggan. Dr. Dickinson, distinguished gynecologist and obstetrician, notes among the improved procedures he has sponsored one in "the only operation done on every human being—amputation of the umbilical cord at birth," application of the methods of modern surgery, in that, to avoid sloughing of tied stumps, he cut, then ligated and sutured with a single strand, securing primary union. Dr. Riggan is the progressive State Health Commissioner of Virginia, seventh state to make planned parenthood services available as part of the state's public health program of maternal care.

Dr. Albert L. Raymond, formerly director of research, has been made vice president in charge of research of G. D. Searle & Co., Chicago.

The Office of the Surgeon General announces that fourteen more Army General Hospitals will be closed by March 31. Out of a wartime peak of 65 General Hospitals operated by the Army Medical Department, 20 have already been closed, and of the peak of 13 Army Service Forces Convalescent Hospitals, three have been closed.

The Surgeon General calls attention also to the provisions of Public Law 281, providing for the procurement of additional officers for the Army Medical Department, and the postwar plans of the department, providing for opportunities for professional advancement. Every effort will be made to provide professional, rather than administrative, assignments, for officers who desire them. Applications for appointments in the Medical Corps may be submitted to reach the Adjutant General's Office, Washington 25, D. C., not later than March 1, 1946. Application must be made on the appropriate form, available from any Army unit or installation headquarters.

The Mayo Professorship in Public Health, recently created, is the first permanently endowed professorship of the University of Minnesota. Appointment to the new professorship, endowed by the Mayo Properties Association, is expected to be made before July 1. Dr. Harold S. Diehl, Dean of Medical Sciences, says of the new chair: "For the Medical School it provides an ultimate and effective bond with the graduate work and public health interests of the Mayo Foundation. It represents also a permanent tribute to and reminder of the broad and humanitarian interests of the Doctors Mayo."

Dr. J. R. Ohlmacher has been named pathologist of St. Patrick's Hospital, Missoula, following his return from five years with the Army Medical Corps. Newly elected officers of the hospital staff are Dr. C. H. Frederickson, president; Dr. W. E. Harris, vice president; Dr. Ohlmacher, secretary; and Dr. E. C. Murphy, Dr. H. M. Blegen, and Dr. C. F. Honeycutt, members of the executive board.

The Flathead County (Montana) Medical Society has elected the following officers for 1946: Dr. L. G. Griffis, president; Dr. Tom B. Moore, vice president; Dr. R. L. Towne, treasurer; and Dr. H. D. Huggins, secretary.

The Yellowstone Valley (Montana) Medical Society has elected the following officers: Dr. Harry O. Drew, president; Dr. John C. Powers, president-elect for 1947; Dr. Harold E. McIntyre, secretary; and Dr. John J. Hammerel, treasurer.

The Silver Bow County (Montana) Medical Society elected the following officers at its annual meeting held in Butte in January: Dr. Peter T. Spurck, president; Dr. D. A. Atkins, vice president; Dr. S. V. Wilking, secretary; and Dr. C. R. Canty, treasurer.

The Montana Physicians' Service has been organized on a nonprofit basis to provide the people of Montana with medical care on a budget basis, with Dr. M. A. Shillington of Glendive as president. The service will work in cooperation with the Montana Blue Cross hospitalization organization. The service was set up with the assistance of Dr. C. L. Cooley, president of the San Francisco County Medical Society and board secretary of the California Physicians' Service. The new group will cooperate with the California service in the veterans medical care program.

Montana physicians and surgeons representing twenty county medical societies met at Butte January 18-19 for a special delegate meeting of the Montana State Medical Association.

Dr. O. J. Hagen, still in active practice in Fargo and Moorhead at the age of 73, after nearly forty years, was honored at a testimonial dinner at the Moorhead Country Club in January.

Dr. L. W. Larson, Bismarck, has been appointed to the public health advisory board as successor to Dr. John H. Moore, Grand Forks.

According to a national survey three North Dakota Counties, namely, Billings, Oliver, and Slope, have no resident physicians within their borders, and one of the largest of the fifty other counties has only one physician.

North Dakota's blood plasma program, described in an article by Melvin E. Koons in the January JOURNAL LANCET, has been studied by Dr. Charles Hunter of the Kansas State Board of Health and Dr. R. D. Dixon of Topeka, Kansas, who will direct the organization of a similar program in their home state.

Ten doctors were licensed to practice medicine in North Dakota at Grand Forks on January 5. They are John E. Ruud, Charles M. Graham, and Neal C. Perkins, all of Grand Forks; Clair L. Ingalls and H. Paul Johnson, Minot; Russell O. Saxvik, Bismarck; Edward

J. Hagen and Alan K. Johnson, Williston; Margaret Hatfield, Jamestown; and H. G. Cleary, Sharon.

Dr. Kenneth E. Fritzell, formerly of Minneapolis, is now associated with the Grand Forks Clinic.

A survey of North Dakota hospitals and maternity homes is being conducted by the hospital subcommittee of the state health planning committee, preliminary to applying for the state's share in proposed federal hospital construction funds.

Dr. A. L. Cameron of the Northwest Clinic, Minot, announces that Dr. H. P. Johnson, ophthalmologist, formerly of the Mayo Clinic, Dr. Clair L. Ingalls, surgeon, formerly with the Army Medical Corps, and Dr. Arnold B. Coombs, ear, nose, and throat specialist, formerly of the University of Michigan Medical School and the U. S. Navy, have joined the clinic staff.

Doctors beginning or resuming practice in North Dakota following military service include: Dr. Malcolm McCannel, Dr. J. L. Devine, and Dr. V. J. Fischer, Minot; Dr. Charles A. Arneson and Dr. Ralph Montague, Bismarck; Dr. A. R. Gilsdorf, Dickinson; Dr. Earl M. Haugrud, and Dr. Arthur C. Burt, Fargo; and Dr. Charles M. Graham, Grand Forks.

Dr. I. H. Mauss has left Rapid City, South Dakota, where he was county and city health officer, for Memphis, Tennessee, where he has been assigned to the U. S. Marine Hospital.

The Watertown (South Dakota) District Medical Society has elected the following officers for 1946: Dr. Abner Willen, president; Dr. A. B. Scheib, vice president; Dr. G. Robert Bartron, secretary-treasurer; Dr. Stanley J. Walters, delegate, and Dr. R. H. Maxwell, alternate, to state convention; and Dr. George H. Richards, censor.

The South Dakota Public Health Association has elected the following officers for 1946: Dr. Clarence E. Sherwood, Madison, president; Dr. H. Russell Brown, Watertown, vice president; Dr. Gilbert Cottam, Pierre, re-elected secretary-treasurer. Dr. F. T. Younker, Sisseton, was named member of the board of trustees, succeeding the late Dr. E. M. Young.

The Seventh District Medical Society, meeting at Sioux Falls, elected Dr. Rezin Reagan, president; Dr. J. A. Nelson, vice president; Dr. C. J. McDonald, secretary-treasurer; and Dr. L. G. Leraan, board of directors.

Twenty-four South Dakota physicians, selected from among those in general practice in each medical district of the state, will attend a refresher course on cancer at the University of Minnesota in the spring of 1946. All expenses will be paid by the American Cancer Society.



**FOLLOW-UP NOTES TO "THE ULCER PROBLEM,"  
BY DR. OWEN H. WANGENSTEEN, PAGES 31-49**

The following notes, representing recent findings, were sent by Dr. Wangensteen too late to be included in the text.

*Cases 1-4, p. 38.* More recent observations indicate that all four patients continued well without any further suggestion of recurrent hemorrhage.

*Case 1, p. 39.* Mr. F. K. died of ascites and recurrent hemorrhage in December 1945. At autopsy a complete thrombosis of the portal vein was found. As will be indicated later, it is to be noted that a 90 per cent resection will not protect consistently against the histamine provoked ulcer in dogs in which portal hypertension has been established.

*Cases 2 and 4 (p. 40)* continue well without recurrent hemorrhage.

*Section D, p. 45.* Recently evidence of a gastrojejunal ulcer has occurred in a second patient, Mr. W. P., operated upon by me three years previously for a gastrojejunal ulcer following a gastrojejunostomy. Because the patient was obese only a 65 per cent gastric resection was done. Experience indicates that in such obese hypersthenic patients at least a 75 per cent resection is mandatory. In other words, the cause of recurrent stomal ulcer here was an inadequate gastric resection. The patient appears to be getting on satisfactorily with conservative medical management.

## Advertisers' Announcements

### SPARKLING, EFFERVESCENT FORM OF CALCIUM GLUCONATE

Because calcium generally must be administered over a prolonged period of time—throughout pregnancy and lactation, during infancy and childhood, in convalescence, etc.—acceptability of the dosage form is an important factor.

In Calcium Gluconate Effervescent (Flint) the physician has a means of supplying full therapeutic value in a sparkling, pleasant-tasting form. When added to water, Calcium Gluconate Effervescent (Flint) forms an effervescent, palatable drink which even the taste-conscious patient finds acceptable.

Each gram of Calcium Gluconate Effervescent (Flint) contains calcium gluconate U.S.P. 0.5 Gm., citric acid 0.25 Gm., sodium bicarbonate 0.25 Gm. Council accepted.

Average dose: 1 to 1½ teaspoonfuls. Contains 48 to 52 per cent calcium gluconate.

### WHITE LABORATORIES' MOL-IRON

White Laboratories, Inc., has an important product for the treatment of iron-deficiency anemias, White's Mol-Iron. Supplied in tablet form, White's Mol-Iron is described as a specially processed, co-precipitated complex of molybdenum oxide (3 mg.) and ferrous sulfate (195 mg.)

Based on available clinical evidence, it is stated that the use of Mol-Iron effects approximately 100% greater therapeutic utilization of iron, and 100% more rapid regeneration of hemoglobin than does ferrous sulfate. In addition, it is said that gastro-intestinal reactions are notably absent, even among patients exhibiting such symptoms in response to other commonly used iron preparations. Mol-Iron is available in bottles of 100 and 1000. It is promoted solely for prescription by the medical profession and is currently available in most prescription pharmacies.

### NEWS FROM WINTHROP CHEMICAL

Pure synthetic Vitamin D<sub>2</sub> (calciferol) has been made available in this country by Winthrop Chemical Company, Inc., according to a recent announcement by Dr. Theodore G. Klumpp, president.

Free from lumisterol, toxisterol, suprasterol and other by-

products of irradiation, the product is said never to vary in antirachitic potency. It will be marketed by the special markets division of Winthrop to the pharmaceutical industry, the evaporated milk industry and others. The crystalline form of calciferol will be available in ampules of 1, 5, and 10 grams, with 40 million U.S.P. units per gram and also a solution in corn oil.

### NEW SCHERING REPRESENTATIVE IN MINNESOTA

Schering Corporation, with plants in Bloomfield and Union, New Jersey, manufacturers of endocrine and pharmaceutical products for the medical profession, has appointed Earl L. Heidick as professional service representative in Minnesota, with headquarters at Minneapolis.

Mr. Heidick, a former employee of Schering Corporation, is a graduate of the University of Miami with a major in the field of chemistry. He was recently released from the U. S. Army Air Forces, in which he attained the rank of Captain and Squadron Commander. He has a record of forty missions in the Pacific Theater.

### WYETH'S CONESTRON

An oral product for the menopausal patient is the Conestron tablet of natural conjugated estrogens to provide completely effective oral therapy which method of administration has already demonstrated its superiority over the time-consuming injection therapy. Not only has it wide acceptance by the medical profession but it bids fair to become the preferred therapy.

Highly potent, usually requiring only one tablet daily, Conestron is essentially safe and assures the patient's sense of well-being with a minimum of side effects. This addition to the Wyeth line of prescription items is packaged in two sizes—bottles of 100 and 1,000, each containing 0.625 mg. Estrone Sulfate.

### PHYSICIAN-ARTISTS' PRIZE CONTEST

The American Physicians Art Association, with the cooperation of Mead Johnson & Company, is offering an important series of War (Savings) Bonds as prizes to physicians in the armed services and also physicians in civilian practice for their best artistic works depicting the medical profession's "skill and courage and devotion beyond the call of duty."

For full details, write to the Association's Secretary, Dr. F. H. Redewill, Flood Bldg., San Francisco, Calif., or Mead Johnson & Co., Evansville 21, Ind. Also pass this information on to your physician-artist friends, both civilian and military.

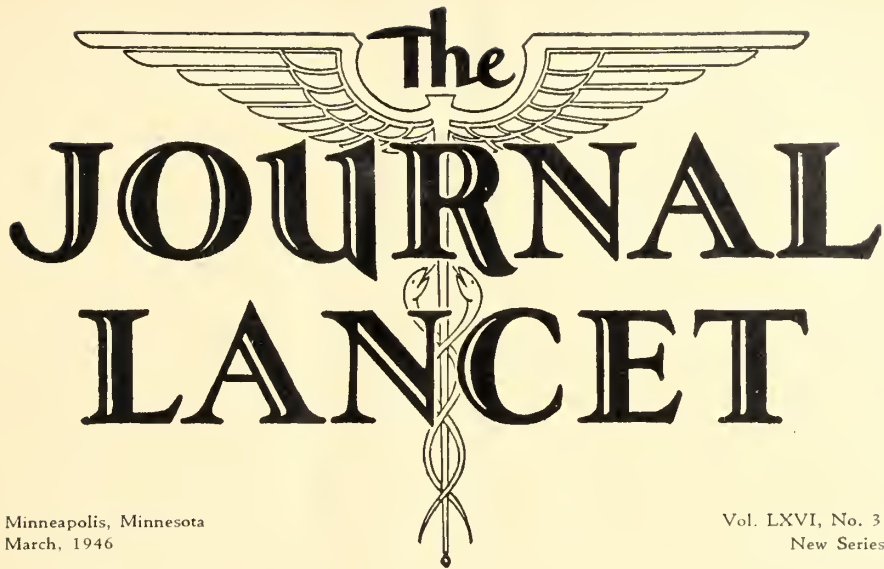
### NEW TABLETS FOR B-COMPLEX THERAPY

Hoffman-La Roche, Inc., of Nutley, N. J., this fall announced to the medical profession the introduction of Berocca Compound tablets. These exceptionally small, well-tolerated tablets are particularly useful for the prevention and treatment of vitamin B-complex deficiencies, for they supply generous amounts of vitamins B<sub>1</sub>, B<sub>2</sub>, B<sub>6</sub>, niacinamide and calcium pantothenate in a form readily acceptable to the most fastidious patient. The tiny, smooth tablets are so easy to swallow that even finicky children will raise no objections to taking them. In spite of their high potency and pharmaceutical elegance, Berocca Compound tablets are so low in cost that they can be prescribed for practically every patient without imposing an economic burden. Berocca Compound tablets may be administered with complete confidence in all disorders in which B-complex therapy is indicated. Clinical samples and literature will be furnished upon request.

### BURROUGHS WELLCOME INTRODUCES LUBAFAX SURGICAL LUBRICANT

Burroughs Wellcome & Company is introducing a new and improved surgical lubricant under the brand name of Lubafax. Lubafax is readily soluble in hot or cold water, will not injure metal or rubber instruments, is nonirritating and bacteriostatic, possesses excellent adhesive and cohesive properties, is transparent and odorless, and will not stain instruments or clothing. Lubafax is available in tubes of 2 oz. at \$.25 and 5 oz. at \$.35 (list prices).





The  
JOURNAL  
LANCET

Minneapolis, Minnesota  
March, 1946

Vol. LXVI, No. 3  
New Series

## A Comparison of the Response of Gonorrhea to Sulfathiazole and Penicillin (Analysis of 144 cases)

I. H. Mauss, M.D.

Rapid City, South Dakota

**T**HE purpose of this paper is to survey and compare the results obtained in treating gonorrhea with sulfathiazole and with penicillin in the routine operation of a venereal disease clinic.

The patients were treated in the Venereal Disease Clinic of the Pennington County (South Dakota) Health Department. Three patients sent to the U. S. Public Health Service Medical Center, Hot Springs, Arkansas, received penicillin treatment there before it was available locally, but were kept under observation by us after treatment. Most of those who received sulfathiazole were patients at the Black Hills Rapid Treatment Center,\* which was operated under the supervision of the director of the Pennington County Health Department.

### METHODS

#### LABORATORY PROCEDURE

1. The laboratory work was done at the Black Hills Branch of the Division of Laboratories of the South Dakota State Board of Health, in Rapid City. The smear and culture technics employed were essentially those described by Carpenter.<sup>1</sup>

#### OBTAINING THE SPECIMEN

*Females.* Specimens for smear and culture were obtained from the cervix as described by Carpenter.<sup>1</sup> Urethral specimens were not taken unless there was urethral

discharge or the urethral meatus appeared abnormal on inspection.

*Males.* Specimens obtained from urethral discharge were used to make smears and cultures. After treatment, when the discharge was usually absent, the first 10 cc. of urine immediately after prostatic massage was collected in a sterile centrifuge tube. The urine was centrifuged and the sediment cultured. It has been our experience, and that of others,<sup>2</sup> that in this way gonococci can be found in cases which would otherwise have been considered cured.

#### TREATMENT

*Choice of Drug.* From January 11, 1943, to April 22, 1944, sulfathiazole was used for the initial treatment, and a second course was given after an interval of one week if laboratory tests were still positive. If laboratory tests remained positive after the second course, sulfadiazine was given one week later. Complications were practically nonexistent. In one case with a history of previous renal disease there was mild hematuria, and in one case there was moderately severe urticaria which could not be definitely attributed to the drug. Otherwise, a small percentage of patients experienced mild nausea.

Beginning May 11, 1944, penicillin was used routinely. The variation in penicillin dosage reflects the changes instituted as we learned more about the drug. No complications were noted.

*Plan of Administration.* Sulfathiazole: A total of 22 grams was given over a five-day period. The first

From the Pennington County (South Dakota) Health Department. Approved by the South Dakota State Health Officer and the Office of the Surgeon General, U. S. Public Health Service.  
\*Lanham Act project terminated June 30, 1945.

two doses were two grams each, given two hours apart. Thereafter, one gram was given every four hours during the day until 22 grams had been administered.

Penicillin: (1) Three patients sent by us to the U. S. Public Health Service Medical Center at Hot Springs, Arkansas, received a total of 60,000 units in 10,000-unit doses. (2) Sixty-one patients received 150,000 units. Of these, 32 received 20,000 units every three hours for seven doses, the last dose 30,000 units; 21 received 50,000 units every two hours for three doses; and 8 received a single injection of 150,000 to 200,000 units of penicillin in peanut oil and beeswax. (3) Three patients received 200,000 units in four equally divided doses at two-hour intervals. (4) Two patients received 100,000 units of penicillin containing 15 to 25 per cent of X-substance (Lederle) in three equally divided doses at two-hour intervals. Failures were retreated with 300,000 units of penicillin.

#### POST-TREATMENT OBSERVATION

*Sulfathiazole.* Before a patient was discharged as cured, observation was required for a three-month period after treatment. During this time six smears and cultures were taken, the first four at weekly intervals, and the fifth and sixth at monthly intervals (in females, preferably just after cessation of menstruation). If smears and cultures of all these examinations were negative the patient was considered cured, provided, of course, physical examination was negative. The logic and necessity of these prerequisites for cure are attested to by the work of Koch *et al.*<sup>3</sup>

Our records show the difficulty of holding patients for a three-month period. Because of lack of facilities and desire for economy on the part of the city and county governments, a compromise had to be reached. Therefore, when patients had to be confined it was decided that a minimum of four consecutive negative cultures at weekly intervals would be required before they were released. Those who remained in this vicinity were kept under observation for the rest of the three-month period. However, many of our patients were transients and left this area immediately upon release. No patient was ever discharged as cured unless the six negative cultures over a three-month period were obtained. Those who left before they had been observed for the desired period were warned that they could not be certain of cure and were advised to seek further tests until three months had elapsed.

*Penicillin.* The favorable results which had been reported,<sup>4,5,6,7</sup> with this drug by the time we instituted routine penicillin treatment (May 11, 1944) caused us to modify the post-treatment quarantine requirement. Since well over 90 per cent of cases were reported cured after treatment with 150,000 units of penicillin, it was felt that involuntary confinement for four weeks after this type of treatment constituted an unjustifiable expense to the authorities, as well as an unwarranted infringement upon the freedom of an overwhelming majority of the patients. Therefore, those patients who had to be confined were released if six negative smears and cultures, taken every other day after treatment, were negative. However, except for those who left town,

additional smears and cultures were taken at weekly intervals until one month after treatment and repeated at monthly intervals, whenever possible, until three months had elapsed from the time treatment was received.

#### ANALYSIS OF RESULTS SULFATHIAZOLE

Fifty-nine (79 per cent) of this group of 75 cases (66 females, 9 males) were rendered negative while under our observation. Fifty-one (68 per cent) were negative after a single five-day course of therapy. Eight required two or more courses. Sixteen cases (13 females, 3 males) remained positive in spite of repeated treatment (as many as six courses in some cases). Most of these patients were confined in the Black Hills Rapid Treatment Center. The others had opportunities for re-exposure, which they all denied. Reinfection was considered and in each case was decided to be very unlikely, although it could not be definitely ruled out.

Despite our aim to observe all patients for three months after treatment, we were unable to follow the majority of cases for that length of time, owing to circumstances beyond our control. The duration of observation for the 59 patients considered cured is shown in Table 1.

TABLE 1  
DURATION OF OBSERVATION OF 59 PATIENTS  
TREATED WITH SULFATHIAZOLE

| DURATION OF OBSERVATION | NUMBER OF NEGATIVE SMEARS AND CULTURES | NUMBER OF PATIENTS |
|-------------------------|----------------------------------------|--------------------|
| 3 months                | 6                                      | 16                 |
| 2 months                | 5                                      | 13                 |
| 1 month                 | 4                                      | 26                 |
| 3 weeks                 | 3                                      | 3                  |
| 2 weeks                 | 2                                      | 1                  |

The 16 patients who were treatment failures and the eight patients who required more than one course of therapy before being rendered negative received a total of 74 courses of treatment. If we exclude the last course in each of the eight patients who finally became negative, we have 66 courses of treatment, which were followed by positive bacteriological findings. Table 2 shows the various times at which these positive findings were first discovered during the post-treatment period.

TABLE 2  
TIME OF FIRST POSITIVE FINDINGS AFTER TREATMENT

| TIME OF TEST AFTER TREATMENT | 1    | 2     | 3     | 4     | 2      | 3      |
|------------------------------|------|-------|-------|-------|--------|--------|
|                              | WEEK | WEEKS | WEEKS | WEEKS | MONTHS | MONTHS |
| Test                         | 1    | 2     | 3     | 4     | 5      | 6      |
| No. of times positives found | 43   | +     |       |       |        |        |
|                              | 14   | 0     | +     |       |        |        |
|                              | 5    | 0     | 0     | +     |        |        |
|                              | 1    | 0     | 0     | 0     | +      |        |
|                              | 2    | 0     | 0     | 0     | 0      | +      |
|                              | 1    | 0     | 0     | 0     | 0      | 0      |

#### PENICILLIN

All 69 patients (55 females, 14 males) in this group were rendered negative while under our observation. Sixty-six (96 per cent) were rendered negative after initial treatment and were observed as shown in Table 3.

TABLE 3  
DURATION OF OBSERVATION OF 69 PATIENTS  
TREATED WITH PENICILLIN

| DURATION IN WEEKS | AVERAGE NUMBER OF NEGATIVE SMEARS AND CULTURES | NUMBER OF PATIENTS |
|-------------------|------------------------------------------------|--------------------|
| 12 or more        | 7                                              | 13                 |
| 11                | 6                                              | 2                  |
| 10                | 7                                              | 4                  |
| 9                 | 7                                              | 4                  |
| 8                 | 7                                              | 4                  |
| 7                 | 6                                              | 1                  |
| 6                 | 8                                              | 2                  |
| 5                 | 8                                              | 2                  |
| 4                 | 5                                              | 7                  |
| 3                 | 5                                              | 7                  |
| 2                 | 5                                              | 11                 |
| 1                 | 2                                              | 5                  |
| Less than 1       | 2                                              | 4                  |

Seven patients were found to be positive after the first course of treatment, but four of these were considered to be reinfected, since three admitted re-exposure and the fourth, whose denial of re-exposure was doubted, had been negative for 69 days after treatment. Table 4 gives the data concerning these four patients.

The three patients who were considered as failures after the first course of treatment were rendered negative after retreatment with 300,000 units of penicillin. The data are given in Table 3.

TABLE 4  
DATA ON PATIENTS CONSIDERED REINFECTED

| AGE | SEX | INITIAL TREATMENT | TIME NEGATIVE (WEEKS)        | NO. OF TESTS | RE-EXPOSURE | RE-TREATED WITH | FURTHER OBSERVATION TIME | NO. OF TESTS |
|-----|-----|-------------------|------------------------------|--------------|-------------|-----------------|--------------------------|--------------|
| 1   | 37  | M                 | 150,000 units in 3 doses q2h | 10           | 7           | denied          | 300,000 units in oil     | 1 week 4     |
| 2   | 24  | F                 | "                            | 7            | 6           | admitted        | "                        | 8 weeks 8    |
| 3   | 23  | F                 | "                            | 2            | 7           | "               | "                        | 4 days 2     |
| 4   | 20  | F                 | "                            | 2            | 7           | "               | 150,000 units in oil     | 2 weeks 6    |

Thus 66 (96 per cent) of the 69 patients were rendered negative after initial treatment, and 100 per cent were negative after retreatment of the three initial failures.

It should be noted that 33 of the 69 patients in this group had been resistant to sulfatherapy, and that every one of the 33 was rendered negative after a single course of penicillin.

COMMENT AND SUMMARY

Comparison of the efficacy of sulfathiazole and penicillin in the treatment of 144 cases of gonorrhoea reveals that:

1. Sixty-eight per cent of 75 patients were cured with a single course of sulfatherapy, and on retreatment (2-6 courses) 77 per cent of the total were cured.

In a study of the treatment of experimental rabbit syphilis, it was found that small fractions of the curative doses of penicillin and mapharsen administered together were not only curative but were therapeutically more effective together than might be expected from the additive effect of the quantity of the drugs administered. It was concluded, therefore, that penicillin and mapharsen act synergistically.—EAGLE, MAGNUSON, and FLEISCHMAN, "The Synergistic Action of Penicillin and Mapharsen (Oxophenarsine Hydrochloride) in the Treatment of Experimental Syphilis," *J. Ven. Dis. Inform.*, 27: 3-9 (January), 1946.

TABLE 5  
DATA ON PATIENTS CONSIDERED FAILURES AFTER FIRST TREATMENT

| AGE | SEX | INITIAL TREATMENT | TIME NEGATIVE (WEEKS)        | NO. OF TESTS | RE-EXPOSURE | RE-TREATED WITH | FURTHER OBSERVATION TIME | NO. OF TESTS |
|-----|-----|-------------------|------------------------------|--------------|-------------|-----------------|--------------------------|--------------|
| 1   | 20  | F                 | 150,000 units in 3 doses q2h | 2            | 2           | denied          | 300,000 units in oil     | 10 days 5    |
| 2   | 35  | M                 | 200,000 units in 4 doses q2h | 5            | 3           | denied          | "                        | 4 weeks 5    |
| 3   | 1½  | F                 | 150,000 units in oil         | 3 days       | 1           | denied          | "                        | 5 weeks 9    |

2. Ninety-six per cent of 69 patients were cured with a single course of penicillin, and on retreatment (with 300,000 units) 100 per cent were cured. Thirty-three of these patients had been sulfa-resistant, and all were cured after a single course of penicillin.

3. Sulfa-treated patients should be observed for a minimum of three months before being considered cured. Table 2 shows how many failures in this series would have been missed if observations had been terminated earlier.

4. The number of initial penicillin failures in this series was too small to afford us any valid idea as to how long post-treatment observation should be continued routinely before patients are considered cured. These patients should, of course, be kept under observation for a minimum of three months to rule out the possibility of masked signs and delayed incubation period of concomitant syphilis.<sup>8</sup>

REFERENCES

1. Carpenter, Charles M.: Laboratory procedures in the diagnosis of gonorrhoeal infection. *Ven. Dis. Inform.*, 24:133-43, 1943.
2. Sewell, George, Salchow, P. T., and Nelson, E. A.: Comparison of results obtained with culture of urine and urethral secretion in the detection of gonorrhoea. *Ven. Dis. Inform.*, 24:218-21, 1943.
3. Koch, R. A., Mathis, E. N., Geiger, J. C.: Criteria of cure in gonorrhoea. *Ven. Dis. Inform.*, 25:25-41, 1944.
4. Mahoney, V. F., Ferguson, Charles, Buchholtz, M., and Van Slyke, C. V.: The use of penicillin sodium in the treatment of sulfonamide-resistant gonorrhoea in men. *Am. J. Syph., Gon., and Ven. Dis.*, 27:525-28, (Sept.) 1943.
5. Turner, T. B., and Sternberg, T. H.: Management of venereal diseases in the army. *J.A.M.A.*, 124:133-37, (January 15) 1944.
6. Cohn, Alfred, Studdiford, William E., and Grunstein, Isaak: Penicillin treatment of sulfonamide-resistant gonococcal infections. *J.A.M.A.*, 124:1124-25, (April 15) 1944.
7. Ferguson, Charles, and Buchholtz, Maurice: Penicillin therapy of gonorrhoea in men. *J.A.M.A.*, 125:22-23, (May 6) 1944.
8. Walker, A. E., and Barton, R. L.: The treatment of gonorrhoea with penicillin during the incubation period or early phase of syphilis. *Ven. Dis. Inform.*, 26:241-44, 1945.

The author acknowledges with gratitude the valuable assistance of Ellen B. Donovan, Supervisor of Nurses, Pennington County Health Department.



# Electroshock Convulsion Therapy

W. E. Olson, M.D.

Fort Meade, South Dakota

**E**VEN coroners' juries realize that suicide is a risk of mental disorder. What is less frequently realized is that mental patients do not commit suicide because of some mysterious law of nature, but quite simply because they are so miserable that they would rather be dead. There are few patients suffering from organic diseases, even from an incurable cancer, who ever feel as badly as that. Yet the relief of such conditions is sometimes not thought worth even the risk of a pain in the back. In a true perspective mental disorders would be seen for what they are—as potentially destructive of human life as a malignant growth, and far more terrible in the suffering they may cause. Their treatment is worth risks, even when it is a matter of cutting short the duration of an illness when the patient can eventually be expected to recover naturally.

Among such types of treatment convulsion therapy occupies a principal place. As long ago as 1798 Weichardt recommended the giving of camphor to the point of producing vertigo and epileptic fits, and other physicians have followed his example. The treatment was revived by von Meduna, who in 1933 recommended the intramuscular injection of a 25 per cent solution of camphor in oil to schizophrenic patients. Camphor was later replaced by more efficient drugs which could be given intravenously, or which would for other reasons produce a fit more rapidly. These drugs included cardiazol, triazol, and picrotoxin. Finally, Cerletti and Binni in 1937 produced therapeutic fits by passing an electrical current through two electrodes placed on the forehead, and a comparatively safe, convenient, and painless method of convulsion therapy was made available.

## INDICATIONS FOR SUCH TREATMENT

*Schizophrenia.* This treatment, which was first used for schizophrenia, has found its most useful application in depressive states. The early satisfactory results in schizophrenia, some of them brilliant, have not been maintained. The chief effect of convulsion therapy in schizophrenia is symptomatic. For instance, even a single therapeutic convulsion may relieve catatonic stupor, but the patient, though no longer stuporous, may be left deluded and hallucinated or switched into a catatonic excitement; or the stupor itself may return after a short time. Symptoms of anergia and depression are frequently susceptible to benefits from convulsion therapy. As these symptoms are often prominent in schizophrenia and do not always disappear when the underlying process has been halted by insulin therapy, the role of convulsion therapy in schizophrenia is a definite, if not a large, one.

Confusional episodes that may occur in schizophrenia may also react to convulsion therapy, but they are virtually always a sign that the schizophrenic process is in

an active stage and in need of a more radical therapy. In general, the schizophrenic symptoms that benefit from convulsion are affective ones, and when a patient is retarded, apathetic, listless, and lacking in interest because of an existing, even if unrecognized, state of depression, the treatment may produce useful results.

Such conditions are, however, even more often due to a blunting or washing away of normal affectivity, and then no benefit will be obtained. For this reason the common hebephrenic type of schizophrenia has proved entirely refractory to convulsion therapy. In general it is of little service to hammer away at the patient with repeated convulsions if worth-while benefits are not obtained from the first few fits. Long series of convulsions may produce an even greater degree of deterioration than already exists.

The useful indication of what may be obtainable with convulsion therapy is given in schizophrenia, as in other states, by an intravenous injection of sodium amytal. This drug temporarily abolishes higher cortical inhibitions, and the potential and more permanent state of affairs may then be revealed.

Despite its limitations convulsion therapy remains a useful agent. An improvement that results in removing a catatonic schizophrenic from a seclusion room and putting him to work on the farm is well worth achieving.

*Involuntional Depression.* From their use in schizophrenia convulsions came to be tried in depressive states, and here the results were even more brilliant and have stood the test of time. Of all depressive syndromes those of later life react best. These states, which are of obscure etiology, are probably a clinical entity distinct from the true manic-depressive psychoses. The underlying bodily and mental constitution is different. Whereas in the manic depressive one finds most typically a pyknic habitus and a cyclothymic temperament, in the involuntional depressive one finds more commonly an asthenic habitus and a rigid, obsessional type of personality. In the manic-depressive syndrome the depression may come on rapidly, even abruptly. In involuntional melancholia symptoms appear and progress very gradually and insidiously. The picture at first presented is one that used very frequently to be called neurasthenia, in which the patient is chiefly conscious of a failure of interest, inability to concentrate, and a gradually increasing incapacity for all the ordinary affairs of life. These symptoms, with an intractable insomnia and progressively deepening depression, lead to the full-blown picture of mixed agitation and retardation with hypochondriacal preoccupation, ideas of guilt, and delusions.

Convulsion therapy has proved our most powerful weapon in the treatment of such states, and recoveries of 70 to 90 per cent are constantly being reported. This recovery rate represents a great achievement, for these states were previously very refractory to treatment.

Although there was a natural tendency for the illness to remit, it seldom ended spontaneously in less than six months, and often lasted one or two years, or even drifted on into a chronic melancholia. In addition, the risk of death from exhaustion, intercurrent disease, and, in the acute phase, suicide, was far from negligible.

Such states, once recognized, should be attacked early. In the early stages these patients can be readily treated in a psychiatric ward in a general hospital if they are promptly brought under treatment and if the risk of suicide is not too great. As the illness advances, the physical state of the patient deteriorates and he becomes less well able to stand the strain of treatment. The longer the patient is away from work the more difficult it will be to get him back to it, and, finally, the sooner one begins treatment the more months of misery the patient will be spared. Of course, not every middle-aged patient complaining of worry, insomnia, and similar symptoms should be operated on with convulsion therapy at the first interview, but after the case has been fully explored and its endogenous nature has become clear, and when symptomatic treatment has proved of little avail, further time should not be wasted.

*Manic-Depressive Syndromes.* In depressions of earlier life, particularly before the age of 40, one should be rather more cautious. The phasic changes of the manic depressive may be very troublesome to treat. It is a more frequent event in this type of illness for a depression relieved by convulsion therapy to pass over into a temporary hypomania that may prove even more difficult to manage socially. Or the depression may lift, but only temporarily, and then relapse again whenever treatment is intermitted.

The swings of mood of the manic depressive may be endogenously determined and dependent on biochemical changes that are at present beyond analysis and control. They certainly seem to be more resistant than involuntional depression to a treatment which, though powerful, is still symptomatic. Furthermore, the spontaneous recovery of the true manic depressive may be awaited much more hopefully than that of the involuntional patient.

*Manic States.* The treatment of manic states, that is, the acute manias, by convulsion has produced varied results. Different authors claim different percentages of success, and the treatment is not so efficacious as in depressive states. Many states of acute excitement in young people which clinically closely resemble true mania prove eventually to be schizophrenic, and it is well to be on the lookout for schizophrenic symptoms, so that insulin therapy may not be unnecessarily delayed.

#### RISKS AND CONTRAINDICATIONS TO CONVULSION THERAPY

It can hardly be overemphasized that convulsion therapy is a surgical treatment in psychiatry and that the general rules governing the admissibility of surgical intervention apply. While operation should not be unnecessarily delayed, it should not be undertaken in a light-hearted spirit and should never be employed as a mere placebo.

When convulsion therapy is decided upon the patient should be examined carefully to exclude exceptional dangers. The position should be explained both to him and to his relatives, and the permission of both should be sought. Finally, every method should be used to minimize the risk, which can never be entirely excluded. The risk of death from convulsion therapy is negligible. Actual figures are hard to obtain, but the rate is probably below one in a thousand and is comparable to that of giving a general anesthetic without other operative procedure. Death occurring during a fit is usually due to acute cardiac decompensation. One will therefore beware of giving the treatment when the heart is already overburdened. An electrocardiogram is a very useful aid to decision.

Caution is necessary, but it is possible to be over-cautious. In the American medical literature there are reports of the successful treatment of patients as old as 75. Senile depressions and confusional states may respond well to electroshock therapy if the illness is not accompanied by persistent high blood pressure. Patients with angina, recovered coronary thrombosis, and even existing heart failure have been treated, but in such cases the therapist is taking his patient's life in his hands, and the risk is such as few would care to take unless the patient's mental condition is desperate and the prospect of relief by other methods is negligible. Where existing myocardial disease is found one cannot expect the treatment to be of any benefit to the heart.

The most frequent risk to be faced with convulsion therapy is that of fracture, particularly compression fractures of the vertebral bodies. At first such vertebral fractures were judged to be a serious complication and a definite contraindication to the treatment, but they are no longer considered so. These fractures are usually symptomless, and even when they do cause some disability it is usually limited to slight pain in the back, which passes off after a few months.

The usual sign of such fractures, apart from routine X-ray, is a pain in the back, which may also be referred to the chest. A few patients will say it is really severe, but it lessens in a few days, and gradually in succeeding months it may diminish to an occasional twinge when heavy work has to be undertaken. Unfortunately, those patients who are most disabled by its occurrence are most liable to it; that is, muscularly well-developed manual laborers and athletes. Other fractures that may occur during treatment are of the upper part of the humerus and femur. Dislocation of the jaw or shoulder may also occur, especially in people who have had such accidents before.

Memory disturbances are very common, especially in elderly people with hypertension. Sometimes they will take on an acute aspect and be of fairly severe degree, when the patient will be precipitated into a temporary confusional episode. A vexatious complication of convulsive therapy is translation of the depression into mania or hypomania. This complication is most frequently seen in the manic-depressive syndrome; it rarely occurs in involuntional melancholia. When it occurs no harm is done, but the social aspects of treatment are



altered and admission to a mental hospital may become imperative.

#### TIME TO BEGIN AND LENGTH OF TREATMENT

Different rules apply to the beginning of treatment in manic-depressive and involuntional depressions. In the manic-depressive group one is usually well advised to put off treatment for a time, as spontaneous recovery, when it occurs, is more likely to be lasting than improvement brought about by convulsions. In the meantime the patient is carefully watched for any degree of deepening of the depression, the appearance of suicidal risk, and indications that it will be difficult to look after him at home.

While the patient holds his own it is as well to postpone convulsion therapy. If, however, he begins to go downhill, one should step in before future need for admission to a mental hospital has become probable. In the involuntional depressions the earlier treatment is begun, as a rule, the better. Although, as has been said, spontaneous recovery does occur, it often arrives late—too late to salvage the wreck of the patient's life.

When the patient first comes for diagnosis he has probably been ill for months and has struggled in vain against his mounting difficulties. These patients, by reason of their rigid and obsessional personalities, usually do not give in at all until they are far gone in the illness. Further waiting for spontaneous remission is needlessly painful and is contraindicated by the probable deterioration of the physical condition. The chances of rapid improvement are much better when the patient's physique is still fairly well preserved than when he has become thin and feeble.

The social aspects of illness can never be forgotten in psychiatry. Such considerations as the available amount of sick leave, the imminence of compulsory pensioning or dismissal on medical grounds, and the capital available have all to be taken into account.

A good clinician will govern his treatment by his increasing knowledge of how the patient reacts. The aim will be to give as few and infrequent treatments as are sufficient to produce a progressive change for the better. A patient will report that for three days after a treatment he feels much better, but then it all comes back. In such cases treatments twice weekly may well be required to get maximum benefit. Other patients will react more slowly and will report that for a day or so after the treatment they feel muddled and unable to concentrate, that they then begin to feel better, and a week later find themselves still improving. With such patients a much slower tempo will very likely prove best. As has been emphasized, signs of any gross or continuing memory disturbance or confusion should lead to an intermission for a time.

#### TECHNIQUE OF TREATMENT

The patient receives no breakfast on the morning of the treatment. He is brought to the treatment room in pajamas. Before entering the treatment room the patient must empty his bladder and remove false teeth or other objects from the mouth. If the patient is apprehensive and premedication is necessary, one of the most satisfactory ways is to give a small dose, 2 to 3½ grains, of

sodium amytal intravenously just before treatment is started. This sedative produces sufficient relaxation without necessitating any great increase in the voltage required to produce a fit.

The treatment is given on a hard but padded couch or table. The patient lies on his back on the table with a firm pad or sandbag beneath the dorsal vertebrae and a small, low pillow for the head. The aim is to provide support for the spinal column and the head and a considerable, but not excessive, degree of hyperextension of the back.

Control of the patient's movements during the convulsion is essential if fractures are to be avoided. The patient can be held down by a trained staff of attendants. One holds the feet in close abduction; one applies weight to the pelvis, pressing it firmly to the table; two more stand on each side of the shoulders, and, with their weight transmitted through their forearms, keep the shoulders pressed to the table. The patient's arms are kept close to the side of the body and the forearms are crossed across the chest and maintained in that position during the convulsion.

The electrodes are applied to the forehead. A contact jelly is used to reduce surface resistance. A rubber mouth gag is used to prevent injury to the lips or tongue. The nurse at the patient's head holds the mouth gag in place. The patient's chin is held firmly up on the gag so that the jaw cannot open far enough in the initial stage of the fit to risk a dislocation. The resistance is measured. The voltage, electrical current, and time of application are all accurately set. The doctor glances around to see that all are in position, gives the word of warning, and then presses over the switch.

An insufficient voltage will produce only a subshock; that is, momentary loss of consciousness but no convulsion. Several of these subshocks given at one session will sometimes produce cardiac irregularities, and the patient may appear to stop breathing and collapse. Breathing may be re-established by pressure to the thorax, and the patient will generally rally in a minute. Nevertheless, too many of these subshocks at once are to be avoided.

With the electroshock therapy equipment used at Fort Meade, the usual beginning voltage is either 120 or 130 volts. The usual starting time is two tenths of a second. The current is 1000 milliamperes. If this dosage fails to produce a convulsion the voltage can be raised to 130 or the time to three tenths of a second. During the course of treatment the voltage may have to be raised to as high as 170 or 180 volts, the time to four tenths or five tenths of a second, and the current up to 1250 or 1500 milliamperes. Evidently the margin between the shock dose and the lethal or dangerous dose is very wide.

All the time the fit is going on the movements are controlled. The most important part of this control is taking the strain of the initial jerk on the back and preventing flexion of the back. If breathing does not commence soon after the convulsion a few rhythmic compressions of the chest will cause it to start. After the patient has taken several deep breaths he is put on the surgical cart and taken to the recovery room, where he is placed



in bed. In some cases there is a struggling and restless phase during which the patient requires manual restraint for a few minutes.

When possible the physician should try to observe the patient during the postconvulsive stage, for his behavior at that time is often illuminating and may clear up a doubtful diagnosis. The true depressive generally remains quiet and pleasant as he comes round; the unsuspected schizophrenic may exhibit suspicious and aggressive behavior and typical mannerisms.

After half an hour to an hour the patient is usually able to get up. However, there may be some memory loss for several hours, and it is desirable that he should be kept under some supervision for the rest of the day. Not infrequently there is a good deal of headache.

#### COMPLICATIONS AND SPECIAL MEASURES

When insomnia is being treated sedatives such as barbitals may be prescribed the night before, but sedation may necessitate a slight increase in the voltage required for a convulsion. Bromide should not be given.

One risk of electroshock therapy is that of fracture of one or more bodies of spinal vertebrae. This risk is very much lessened when the patient is carefully placed and restrained during the convulsion. At the Fort Meade Veterans Hospital intocostrin has been used in certain cases for the purpose of preventing spinal fractures or other fractures or dislocations. Intocostrin is a physiologically assayed preparation of curare, adjusted in strength to conform to the equivalent of 20 mg. per cc. of a standard drug. When used to soften convulsions in electroshock therapy the dosage of 0.5 mg. of intocostrin per pound of body weight is an average dose. Nevertheless, as a precaution, a dose of 20 mg. less than this should be employed initially. Intocostrin should be administered as a uniformly sustained intravenous injection over a period of one to two minutes, preferably two minutes. Rapid injection is dangerous. After the intocostrin injection has been given one should wait at least two minutes, until the patient can barely lift his head, before giving the shock. The dosage recommended is sufficient for persons with weak musculature. If the estimated dose fails to produce paralysis, another full paralyzing dose cannot be given within 24 hours.

One to two minutes after the injection of intocostrin the physiological curarization effect begins. The patient first complains of haziness or fuzziness of vision. Next, bilateral ptosis appears, with slight nystagmoid movements, relaxation of the face, and heaviness with relaxa-

tion of the jaws. At this point the patient complains of tightness of the throat and huskiness of the voice. Last to appear is shallowness of respiration, from weakness of the intercostal and diaphragm muscles. Shock is instituted at the peak of curarization. The curare effect slowly recedes and seems to disappear in 15 to 20 minutes.

By the time the patient regains consciousness from shock therapy the effect of curare has disappeared. If, after the shock treatment, the physician is at all concerned about the ptosis, the tongue, or the ability to recover from the paralysis, 1 cc. of prostigmine, 1:2000, can be given intravenously. If respiratory failure occurs artificial respiration should be instituted. Since the excretion of the drug is rapid, patients under artificial respiration spontaneously regain breathing power within a short time. There is no increased tolerance to repeated doses of intocostrin.

Electroshock therapy has been used rather extensively at Fort Meade Hospital. The first treatment was given on June 26, 1945, and since then 38 patients have been treated or are under treatment. A total of 739 treatments have been given, with 649 grand mal and 90 petit mal reactions. A total of 256 intocostrin injections have been given to these patients.

Thus far five patients have recovered sufficiently to be discharged from the hospital. Several others have improved sufficiently to consider their discharge from the hospital, and probably will be discharged in the near future. Most patients who receive the treatment are able to make a much better hospital adjustment as a result of the treatment, even when they do not improve sufficiently to leave the hospital. For instance, they are more pleasant in their attitude, take a more normal interest in their surroundings, and usually feel better physically, eat better, and tend to gain in weight.

Schizophrenic patients tend to relapse when the treatments are stopped and present a problem in management. Quite a few such patients are carried on maintenance doses, that is, they receive one or two treatments a week, or possibly a treatment every ten days. We have found that hebephrenia is resistant to treatment, and that patients with marked paranoid delusions, suspiciousness, and so forth, react rather poorly to treatment.

In summary, from our experience with electroshock therapy at Fort Meade we are definitely of the opinion that it is a valuable aid in the treatment of psychiatric cases. In a number of cases the result has been very gratifying.

---

By 1940 another advance in the so-called shock therapies, the electroshock of Cerletti and Bini, was coming into general use. By means of electricity convulsive seizures similar to those of metrazol but somewhat milder were induced. These proved equally effective and had the advantages of causing less apprehension in the patient and of avoiding the necessity of repeated intravenous injections. Whereas in the beginning we had hesitated to treat patients over 40 with convulsive therapy, the age limit was gradually raised until we were treating patients in the seventies and even eighties, using curare where indicated in the aged or debilitated.—C. W. OSGOOD, M.D., in *Wisconsin Medical Journal*, May 1944.

# AMERICAN STUDENT HEALTH ASSOCIATION NEWS LETTER

ANNUAL MEETING, AMERICAN STUDENT HEALTH ASSOCIATION, HOTEL NICOLLET, MINNEAPOLIS, MAY 8-9, 1946. HOST: UNIVERSITY OF MINNESOTA

*Dr. George T. Blydenburgh, Secretary-Treasurer of the American Student Health Association, directs attention to the following articles on the tuberculin test and the chronic cough, by Dr. Sydney Jacobs of Tulane University, as providing useful summaries of information on these problems.*

## THE TUBERCULIN TEST\*

By Sydney Jacobs, M.D.

**P**RIOR to the isolation of tuberculin by Robert Koch in 1890 it was seldom possible to detect tuberculous infection before the body was hopelessly involved by the disease. With this agent, an exquisitely sensitive means of determining the presence of tubercle bacilli was at hand.

The word "tuberculin" originally designated the fluid medium in which tubercle bacilli had grown while liberating tuberculo-protein, but at the present time it is applied to any material—other than living tubercle bacilli—that contains tuberculo-protein. There are accordingly many different types of "tuberculin", but only two are in common use. These are O.T. (Koch's Old Tuberculin), the fluid medium from which tubercle bacilli have been removed by filtration, and P.P.D., a standardized purified protein derivative of tuberculo-protein. P.P.D. is prepared as a weaker "First Strength" tablet and a stronger "Second Strength." O.T. is available as a liquid, 1 cc. being the equivalent of a gram.

Although there have been many different technics for performing the tuberculin test, the intradermal administration is by far the most common. Where it is not possible to retest individuals many times, the proper practice is to begin with either 0.01 mg. O.T. or first strength P.P.D., and to retest all those negative to that dose with 1.0 mg. O.T. or second strength P.P.D. A very small percentage of persons will react to the intradermal injection of not less than 10 mg. O.T. For all practical purposes, we may disregard this small percentage and utilize only the two doses, regarding all persons as being insensitive to tuberculin when failing to react to either 1.0 mg. O.T. or second strength P.P.D.

If the individual has already developed hypersensitivity to the tubercle bacillus, within forty-eight to seventy-two hours after the intradermal injection, the test will be positive; i.e., a zone of well-defined inflammation will appear at the site of injection. The inflammation does not start at once (in contrast to the type of reaction following intradermal injection of pollens or other allergens) but some hours later. It increases during the first twenty-four hours and is quite evident at the end of forty-eight to seventy-two hours. Depending on the severity of the reaction, several days or weeks are required for the complete disappearance of the cutaneous inflammation. The lesion is a hyperemic indurated area one or more centimeters in diameter; in rare instances

the inflammation may actually proceed to the point of ulceration and slough formation in highly sensitive persons. As a result of faulty technic (and this is extremely unusual) some tuberculin may escape into the blood stream to give rise to a focal or systemic reaction, but this reaction occurs only in individuals of very high sensitivity and as a rule is not of serious consequence. In New Orleans, where many thousands of tests have been performed, not once has a serious ill-effect been recorded as following the intradermal use of tuberculin.

According to our present concepts, a tuberculin test can be positive only if tubercle bacilli grow in the body and elaborate tuberculo-protein, thereby maintaining a state of hypersensitivity toward the tubercle bacillus. This test tells us whether there are living tubercle bacilli in the body; it does not tell us whether these tubercle bacilli are free in areas of "active" disease or incarcerated in healed lesions or calcified lymph nodes. In post-mortem studies, Robertson found viable acid-fast bacilli in the tracheobronchial nodes of many subjects who died of nontuberculous disease and whose only evidence of tuberculosis was a positive tuberculin test. In a small group of well-studied children, the tuberculin test has become negative after having been positive; this has coincided with an extreme degree of calcification of lymph nodes. This is taken to mean that the tubercle bacilli in these areas have been killed and therefore no longer elaborate tuberculo-protein to sensitize the body, consequently hypersensitivity to tuberculin disappears.

### WHO HAS A POSITIVE TEST?

In 1907, Pirquet and Hamburger tested the children living in the slums of Vienna; 95 per cent of them reacted positively to tuberculin. Since that time, the remarkable public health campaigns of this century have reduced the incidence of tuberculous infection greatly. At the Mayo Clinic in 1932, children of all ages were tested, only 16 per cent reacting positively. Elsewhere, in a similar age group, 75 per cent were positive. Because of this great disparity, Chadwick and Johnston have cautioned against accepting any single figure as indicative of the true state of affairs; they have pointed to the fact that surveys conducted in different portions of any city have indicated a wide range of incidence of positivity. One of the largest surveys of the country (the Framingham, Massachusetts, ten-year plan) included more than 100,000 determinations on children of all ages; 28.5 per cent of these reacted positively. In New Orleans, the average figure for school children was in 1944 between 30 and 33 per cent of those tested.

\*Reprinted from the Bulletin of the Tulane Medical Faculty, Vol. 4, No. 4 (August 1945), with the permission of the author.



### WHO HAS A NEGATIVE TEST?

We may state that all those who do not harbor viable tubercle bacilli in their bodies will react negatively to tuberculin. This applies to that large group who have never been infected and to that very small group with "burn-out" infection. Although it is ordinarily believed that practically all adults react positively and therefore that no adults are tuberculin-negative, this is not so. The number of adults who have never been infected with tubercle bacilli is steadily mounting; we may expect it to increase concurrently with the improvement in living conditions. Recent surveys indicate that some pulmonary parenchymal calcifications (which have always been regarded as evidences of tuberculous infection) may be caused by such nontuberculous factors as histoplasma and ascaris infestations. In the process of differential diagnosis, we are helped considerably when we can demonstrate that the patient is insensitive to tuberculin. One should therefore not assume that every adult reacts positively to tuberculin.

In recent years, much interest has been manifested in an unusual form of pulmonary disease, sarcoidosis, which is believed by some authorities to represent a noncaseating phase of tuberculosis. In most patients with sarcoidosis, the tuberculin test is negative and no tubercle bacilli are found in the sputum. In some instances, the subjects have been observed to change from a state of being tuberculin-negative to one of being tuberculin-positive and coincidentally the pulmonary lesions undergo caseation with the appearance of tubercle bacilli in the sputum.

Considerable emphasis has been placed on the supposed fact that the tuberculin test is negative in far advanced tuberculosis and during the course of intercurrent exanthemata such as scarlet fever and measles. At the Charity Hospital of Louisiana the members of the resident staff administer tuberculin routinely to the several hundred cases of tuberculosis annually admitted. They have never encountered a genuinely negative tuberculin test in the presence of active pulmonary tuberculosis. Some investigators have reported that the tuberculin test is rendered temporarily negative when measles or scarlet fever supervenes, but others have found contrary results. Perhaps some of the disparities may be explained by two factors, one pertaining to the patient, the other to the tuberculin.

Patients sometimes fail to react to tuberculin (just as, at the same time, they fail to react to the intradermal injection of other irritants such as codeine) because of dehydration; following administration of an adequate amount of fluid, the tuberculin test becomes positive. Another frequent source of falsely negative tests is a tuberculin dilution rendered impotent by age or one which is too weak for the degree of hypersensitivity of the individual patient.

### DO ALL POSITIVE REACTORS HAVE ACTIVE TUBERCULOSIS?

The answer to the above question is no. About 60-85 per cent of reactors can be demonstrated to have primary foci of tuberculosis. These foci are usually pulmonary

but in the majority of instances indicate only a casual contact with an infectious patient. Only 1-2 per cent of these reactors ever manifest the disease clinically. Since there is no way of telling whether a given patient has the minute, inactive focus carried by so many urban dwellers or whether he has clinically evident disease, the presence of a positive tuberculin test is sufficient indication for a general physical examination including roentgenogram of the chest. It is to be expected that, as the incidence of tuberculosis falls, the chance of a casual contact resulting in tuberculous infection will correspondingly lessen. There will then be fewer adults hypersensitive to tuberculo-protein and the value of the test will be enhanced. Under such circumstances a positive tuberculin test will indicate rather prolonged and intimate exposure to an infectious patient.

### IS THE TEST SAFE?

It may be unequivocally stated that the intradermal introduction of tuberculin cannot reactivate an old tuberculous focus or cause exacerbation of an active lesion. The human body cannot be sensitized to tuberculin if no tubercle bacilli dwell in it; therefore repeated tests are equally harmless to an uninfected person. Occasionally in an extremely sensitive person, a small amount of tuberculo-protein may enter the circulation and cause systemic febrile symptoms which usually subside within forty-eight to seventy-two hours. This represents an error in the technic of administration and usually has no lasting effect.

### IS IT BETTER TO HAVE A POSITIVE TEST OR A NEGATIVE TEST?

It is frequently stated that the individual who has hypersensitivity to tuberculo-protein and therefore is sensitive to tuberculin is "immunized" to tuberculosis and is less apt to develop clinical tuberculosis than the individual who is tuberculin-negative. Although much work has been done on this problem, it has never been clarified. We cannot afford to be dogmatic about this but we know that hypersensitivity to tuberculo-protein as indicated by a positive skin test does not protect one against having clinical tuberculosis. If we believe a positive tuberculin test to be caused by living tubercle bacilli in the body, then we must regard this a hazard, even if a small one. A negative test (with the infrequent exceptions enumerated) indicates that there are no tubercle bacilli in the body and therefore there is no tuberculous infection. Despite the impression that a positive tuberculin test indicates some degree of protection against miliary tuberculosis, there is no evidence for this. The available data can be summarized by the statement that it is better to avoid infection with tubercle bacilli as long as this is humanly possible.

### DOES THE EXTENT OF THE REACTION TO THE TUBERCULIN TEST INDICATE THE DEGREE OF TUBERCULOUS INVOLVEMENT?

The answer to this question is no. At one time it was thought that a person who reacts violently to tuberculin has extensive tuberculous lesions, whereas one with a weak reaction has little or no tuberculosis. The degree of inflammation at the site of injection of tuberculin

represents the state of hypersensitivity to tuberculo-protein, a characteristic which fluctuates widely and appears not to be related at all to the degree of involvement.

#### PRACTICAL VALUES OF THE TUBERCULIN TEST

1. It indicates the presence or absence of living tubercle bacilli.
2. It aids in the establishment or elimination of tuberculosis as the etiology of a given lesion.
3. In survey work (where it is not feasible to take roentgenograms of everyone), it "screens out" uninfected persons.
4. It assists in the examination of "contacts" of tuberculous persons.
5. It assists in the collection of epidemiologic data.
6. It indicates when an exposed child becomes infected and points to the source of infection.

### THE CHRONIC COUGH\*

By Sydney Jacobs, M.D.

**C**OUGH is one of the most distressing of those symptoms commonly encountered in medical practice. Meakins<sup>1</sup> investigated 1,000 consecutive cases and found that in 168 the presenting complaint was a chronic cough. If one listens to the radio for only a short while and hears the many advertisements for syrups warranted to "check" coughs, he can realize that much money is spent annually in this country for the relief of this symptom. As in no other instance is the fallacy of self-medication so amply demonstrated: if cough can be caused by such diverse things as tumor of the larynx and hysteria, attempts to use any given medication for all types of cough are absurd.

#### PHYSIOLOGICAL BASIS FOR COUGH

Cough is usually regarded as a manifestation of disease of the tracheobronchial tree, and rightly so. It can be initiated through reflex action,<sup>2</sup> volition, experience or by any combination of these. The reflex may be set up by stimulation of the laryngeal vestibule, the tracheobronchial mucosa, the pleura and the diaphragm. Anything causing irritation or pressure along the course of this pathway may incite a patient to coughing. As a rule, the reflex is started when the secretion of mucus to the ciliated lining is changed from its normal viscosity. Regardless of what causes this change in viscosity, the end result is cough, one of the most protective of all reflex actions.

It ought to be remembered that cough is a co-ordinated action and that it is designed to engage a maximum amount of air within the lungs under high pressure, to release it suddenly and to expel it rapidly. The mechanism of cough may be briefly outlined; the patient takes a deep breath and the glottis closes while the thoracic wall descends and becomes fixed; as soon as the glottis opens, the diaphragm rises in plunger fashion, its tone counteracting the force exerted by the abdominal muscles. It will readily be seen that one of the main functions of the cough reflex is to assist in the regula-

tory self-cleansing action of the tracheobronchial tree. Normally the tracheobronchial tree walls are kept moist by secretion of mucus by the glands; this is impelled upwards by ciliary action. If the mucous membrane lining is dry through reduced secretion of mucus, the cough will be persistent and productive of little or no sputum; while if the secretion be abundant, expectoration will be loose and easy.

In this sense, cough has been aptly termed the "watch dog of the lungs." Squeezing action of the respiratory muscles of the chest wall together with bronchiolar peristalsis brings foreign material to the bronchioles so that it can be swept upward and outward by ciliary action through the trachea and larynx.

The self-cleansing action of the lungs is materially impaired if the cough is rendered ineffective by diminution in respiratory movements of the chest (paralysis of muscles, adhesive pleuritis, inspiratory chest pain, pulmonary fibrosis) which impedes delivery of bronchial content to the bronchi or by increased viscosity of the bronchial mucus, which happens in the catarrhal stage of bronchitis. If these two factors co-exist (notably in collapse of the lung or in diaphragmatic paralysis) there will not be sufficient peripheral driving force to propel the mucus along its proper channel when the patient coughs; as a consequence the mucus is either unpropelled or may actually be driven deeper into the lung, causing additional atelectasis.

A very common error is to regard all coughs as due to inflammation of the trachea or bronchi. It is, of course, true that cough is a frequent manifestation of an acute disease of the lungs, as pneumonia, or a chronic one like tuberculosis; and not infrequently is an evidence of bronchitis, acute or chronic. It is likewise true that a not inconsiderable proportion of those who cough have no demonstrable disease of the trachea or bronchi; in them, cough arises from other mechanisms and a differential diagnosis must be carefully undertaken. Here, as in so many other analogous situations, there is no substitute at all for a carefully taken history and a thorough physical examination. Occasionally one can obtain from the history a few leads which point to the source of the cough. For instance, an early morning cough suggests an overnight collection of mucus from disease of some portion of the accessory nasal sinuses; a cough appearing only on exertion points to myocardial weakness and chronic passive congestion of the lungs; while a cough associated with change in tone of voice may be due to laryngitis.

#### SPECIAL TYPES OF COUGH

Several special varieties of cough call for comment. These are:

1. The cough of allergic disease<sup>2</sup> is often a loud hack which comes in paroxysms and is associated with other phenomena as allergic facies;<sup>4</sup> i.e., flattening of the malar bones because of underdevelopment of the maxillary sinuses.

2. Inflammation in the nose and throat. Maxillary<sup>5</sup> antral sinusitis is a frequent cause of chronic, protracted cough. The history of chronic illness is strikingly simi-

\*Reprinted from the Medical Times (October 1944) with the permission of the author.



lar to that of tuberculosis, and the differential diagnosis can be accomplished at times with difficulty.

3. Occupational exposure to dusts or the inhalation of excessive amounts of tobacco smoke. In this connection, it should be emphasized that far too many times a chronic cough is facetiously diagnosed as a "cigarette cough" when it is actually due to some organic disease of the bronchi or lungs.

4. Pressure on the vocal cords by mediastinal masses or glands or on the recurrent laryngeal nerve may cause a brassy or hollow cough.

5. The presence of a foreign body in the trachea or bronchus is always to be suspected. Because some foreign bodies are not opaque to the X-ray, bronchoscopic examination is essential whenever the cause of a chronic cough cannot be found.

6. Cough as a manifestation of "nervousness"<sup>6</sup> is exceedingly common. This may be seen as an adaptation to a chronic cough of organic origin, in which event it represents an introversion or over-compensation. It may be a form of hysteria superimposed on a specific organic cough—here the patient coughs in order to give a substitute vent to his inner repressions. Hysterical cough is at times a conversion symptom of hysteria. Again, a patient may have a "tic" cough which is merely a nonspecific manifestation of uneasiness akin to the habit of clearing one's throat. Lastly, it should not be forgotten that once a patient starts coughing through "nervousness", he may actually induce a laryngitis and continue to cough because of this "organic" state.

7. A hacking, nonproductive cough may follow a respiratory tract affection, in which instance it is called an "after-cough" and may continue as an annoyance or even a detriment. It is so similar to the cough of a bronchiogenic carcinoma that unless one can be certain about the diagnosis, bronchoscopic and roentgenologic examinations of the chest are imperative.

8. Cough is not infrequently a sign of cardiac disease. In congestive heart failure, there may occur pulmonary engorgement with bronchiolar or bronchial edema and transudate. This explains the paroxysmal cough which at times ushers in the attack of myocardial failure and may be analogous to paroxysmal nocturnal dyspnea. Even in the absence of congestive failure, cardiovascular diseases may be marked by paroxysms of coughing. In mitral stenosis,<sup>7</sup> the left auricle presses on the left recurrent laryngeal nerve and produces spasm or paralysis of the left vocal cord with a hoarse or brassy cough. A similar type of pressure may be caused by aneurysm of the descending portion of the arch of the aorta.

#### TREATMENT OF COUGH

This is never so important as is determination of the cause of the cough. Unless it is evident very shortly that the cough is caused by an acute self-limited disease of brief duration or by a hopelessly incurable malady, it is better to concentrate attention on the diagnosis even at the expense of the finer points of therapy. Once the diagnosis has been established, symptomatic therapy of the cough will depend upon whether it is a "useful"<sup>8</sup> or a "useless" cough. It is astonishing how this simple

classification may be of service in determining what sort of treatment to begin.

A cough is said to be useful when it is needed to clear some part of the tracheobronchial tree of mucus. It may be tight, loose or insufficient. A tight cough must be loosened, and nothing is more effective here than hydrotherapy. Water is to be given by all available routes. A tight cough should never be dried up; to do so is to invite pneumonia. The old-fashioned croup kettle (or its modern electrical equivalent) is good but must be employed constantly, not intermittently. If it is not available, wet sheets can be suspended in the patient's room. To loosen a cough, solvent expectorants are valuable. Ammonium chloride is one of the best of these but should not be used when acidosis is imminent or when sulfonamides are being administered. It should be given every two hours and taken with large amounts of water. As an indirect alkali, sodium citrate in doses of 1-2 grams is excellent. Iodides are also of value where the cough is tight and nonproductive but should not be administered in the acute stages of bronchitis because of their irritating properties but should be reserved for the subacute or chronic stages. If the strain of coughing causes much pain in the chest, immobilization is helpful. Although adhesive strapping is widely recommended, it has many disadvantages, all of which can be obviated by use of a tight chest binder. For a loose cough, it is advised that terpin hydrate be given in capsules of 0.3 gram every four hours.

A cough is said to be useful but insufficient whenever a patient cannot cough up the mucus that forms. This may be due to exhaustion from toxemia or prolonged bouts of coughing, to carbon dioxide intoxication or to the excessive use of narcotics. If this phenomenon persists, it may lead to asphyxia. A simple remedy is to induce pharyngeal irritation with benzoic acid dissolved in syrup of senega. Very often ammonium carbonate in anise water with syrup of acacia is effective. At times, it is essential to increase the depth of respiration by applying alternate hot and cold compresses to the chest or by carbon dioxide-oxygen inhalations. Diminishing the secretion with atropine given parenterally or by the intravenous administration of hypertonic dextrose is indicated. There are times when nothing other than bronchoscopy will suffice to save the patient's life.

A cough is regarded as useless when there is literally no mucus to be coughed up. One encounters the useless cough in patients who have mediastinal pressure, as from aneurysm or mediastinal masses, and in the after-cough of bronchitis which may be becoming a habit. Here some form of suppressive therapy is needed. Not infrequently the patient can be induced to stop cough by judicious psychotherapy. If this fails, pharyngeal sedation is usually helpful. Candy, lozenges, plain syrups, and the like may soothe the throat and stop the cough. This sort of treatment is especially valuable for the type of cough made worse by lying down. If it fails, depression of the medulla by bromides or codeine or opiates may be invoked to stop a patient from coughing. If the patient still coughs, it is almost axiomatic that the diagnosis of "useless cough" is incorrect.

## BIBLIOGRAPHY

1. Meakins, J. O.: *The Practice of Medicine*. St. Louis, C. V. Mosby Company, 1936.
2. Lloyd, M. S.: Cough. *Laryngoscope*, 52:66-74. (Jan.) 1942.
3. Prigal, S. J.: Allergic cough. *Dis. Chest*, 8:115-20, (April) 1942.
4. Marks, M. B.: Cough in the Allergic Child. *Arch. Pediat.*, 59:697-710. (Nov.) 1942.
5. Whiteside, J. D., and Woods, R. R.: An Investigation into the Incidence of Infection of the Maxillary Antra in Patients with Unexplained Chronic Cough. *Irish J. Med. Sc.*, pp. 12-24, (Jan.) 1942.
6. Fenischel, O.: *The Psychopathology of Coughing*. *Psychosom. Med.*, 5:181-184, (April) 1943.
7. Kleiber, E. E.: Long Standing Productive Cough as Chief Clinical Manifestation in Mitral Stenosis. A Case Complicated by Thrombosis of the Left Auricle. *Ann. Int. Med.*, 15:899-210, (Nov.) 1941.
8. Fantus, Bernard: *The Therapy of the Cook County Hospital. The Therapy of Cough*. *J.A.M.A.*, 106:375, (Feb. 1) 1936.

## ASSOCIATION NEWS

Dr. Ralph Canuteson of the University of Kansas Health Service announces two additions to his staff, namely, Dr. Raymond L. Pendleton and Dr. Monti Belot. Dr. Pendleton, a graduate of the University of Kansas School of Medicine in 1939, after serving a rotating internship and a period as resident physician in obstetrics at the Watkins Memorial Hospital, entered the armed services in 1941. On return to civilian status he started his work with the health service on August 1, 1945. He is married and has three children. Dr. Monti Belot graduated from the University of Kansas School of Medicine in 1940. After interning at the University of Kansas Hospital he took a six-month residency at Bethany Hospital and was then medical officer of New York American Aviation until September 1942. Since then he has been in active military service in both Alaska and the European Theatre. Dr. Belot is serving part time in the health service and setting up an outside practice. He is married and has one child.

The University of Chicago announces that Dr. Dudley B. Reed has retired. The position of director of the health service has been filled by Dr. Ruth E. Taylor for the current academic year.

Dr. Joseph E. Raycroft, one of the founders of the American Student Health Association, is making a slow but apparently satisfactory recovery from a coronary thrombosis.

The University of Wyoming reports that Dr. Winifred Ingersoll has become acting director of the student health service.

The Montana State College at Bozeman reports that Dr. Carl Hammer has been appointed physician in charge of their student health service. Before joining the army in 1942 Doctor Hammer had a general practice in Oxford, Michigan.

Capt. Glen E. Galligan is returning to his position as director of student health service at Winona State Teachers College, Winona, Minnesota. Dr. Galligan has been in military service since August 1944, and recently has been serving as Chief of the Reconditioning Service at De Witt General Hospital, located at Auburn, California. This division is made up of four branches: Physical Reconditioning, Occupational Therapy, Information and Education, and Separation Classification and Counseling.

The New Jersey College for Women reports that Dr. Harold W. Potter has been appointed college physician.

Dr. Robert R. Snook, acting director of the department of student health at Kansas State College, reports that the director of that department, Dr. Husband, has been in the Navy since July 1944, and overseas since September 1944.

Dr. E. Herndon Hudson has returned to his position as director of the health service at Ohio University, Athens, after rendering significant service in the Navy. Using his experience with tropical diseases, he taught at Bethesda Hospital in Maryland, and there wrote a concise, accurate, and easily understood pamphlet on tropical diseases.

The University of New Hampshire reports that Dr. Walter Batchelder has been appointed university physician. Dr. Batchelder is a graduate of the University of New Hampshire and Boston University Medical School. Before his appointment he had served overseas as a Major in the Army Medical Corps.

Lehigh University announces that Dr. Carl O. Keck has been appointed director of the student health service, to take the place of Dr. R. C. Bull, recently retired.

Dr. Harold D. Cramer, director of the student health service at the University of Idaho, was wounded in France while serving as battalion surgeon in the Armored Division of the 7th Army. He has been convalescing at the Dibble General Hospital, Menlo Park, California. While there he has been helping on the plastic surgery service.

Dr. Max L. Durfee found that living in the college infirmary was not a satisfying way to solve the housing situation at the University of Oklahoma. He solved his problem by returning to his former position at Iowa State Teachers College, Cedar Falls.

Dr. Dana L. Farnsworth has returned to Williams College to resume his position as director of the department of health. Dr. Farnsworth has been Commander in the Navy Medical Corps. During Dr. Farnsworth's absence Dr. Kenneth McAlpin was in charge of the department.

Dr. Frank P. Mathews, recently released from the Navy after four years' service, has been appointed to the staff of the health service at Yale University. Dr. Mathews is a graduate of Princeton University (1925) and Harvard Medical School (1930). He was certified with the American Board of Internal Medicine in 1943. Before joining the Navy Dr. Mathews was in general practice in Southport, Connecticut.

Dr. Embree R. Rose, formerly of the department of student health at Ohio University, reports that he is enjoying his new position as director of the student health department at the University of Florida.

The president of Pennsylvania State College announces that Dr. Herbert R. Glenn of State College, Pennsylvania, has been appointed to succeed Dr. J. P. Ritenour as director of the health service in that institution, to take effect on or about July 1, 1946.



# The Present Status of Streptomycin Therapy

ALTHOUGH considerable experimental work is being conducted on the clinical use of streptomycin, only a limited amount of the unintegrated information is available at the present time. To date, streptomycin has been tried in human infections resistant to penicillin, the sulfa drugs, and serum therapy. According to Greey<sup>1</sup> of the University of Toronto, in the treatment of chronic infections of the urinary tract streptomycin is effective in destroying such gram-negative bacteria as *Pr. vulgaris*, *A. aerogenes*, *E. coli*, *Ps. aeruginosa*, and *Eberthella* sp. Four hours after commencement of streptomycin therapy (1 Gm. of streptomycin daily in eight divided doses given intramuscularly), urinary cultures were negative for *Pr. vulgaris* and, after eight hours, for coliform organisms. In one case, the urine became negative for *E. coli* two hours after treatment.

Though infections of the normal urinary tract were permanently cleared up, reinfection was likely to occur in damaged tracts, the catheter serving as the portal of entry for the new infection. Similar results have been obtained by the U. S. Army Medical Corps in the successful treatment of heretofore resistant urinary tract infections.

Streptomycin has also proved effective for the treatment of enteric and systemic diseases. In five severe to moderately severe cases of typhoid, studied by Reimann,<sup>2</sup> streptomycin was not administered until late in the development of the disease. Nevertheless, the clinical improvement of three patients coincided with the period of streptomycin therapy. In the two unsuccessful cases, the treatment of one was prematurely discontinued because of the limited quantity of streptomycin available; failure in the other has been postulated as a result of inadequate dosage or the presence in the body of a substance inhibitive to the action of streptomycin. The latter explanation is not very plausible, however, in view of the severity of the particular case, the long delay in parenteral administration, and the fact that no specific streptomycin inhibitor has yet been demonstrated in the human or animal body. Although the different strains of typhoid bacteria varied in their sensitivity to streptomycin, there was no evidence of increased resistance developed *in vivo* during the period of therapy. Although oral administration alone was inadequate to produce appreciable blood levels and urine concentrations essential for typhoid control, it nevertheless rendered the feces free of *E. typhosa*.

In general it has been suggested that for the treatment of bacillary infections of the intestinal and urinary tracts streptomycin be given both orally and parenterally, the former during the disease as well as in the convalescent period to prevent reinfection and the carrier state. Oral administration also has been suggested under certain con-

ditions as a prophylactic measure against intestinal infections.

In systemic infections, streptomycin has been used by Reimann<sup>1</sup> to combat *Brucella* infections. In view of the variable behavior and chronic nature of the disease and the limited number of patients thus far treated, no conclusion concerning the efficacy of streptomycin against *Brucella* infections is justifiable at the present time. The results, though encouraging, are inconclusive.

In *Klebsiella* infections, streptomycin has been found to exert a much more definite action. When treated by Herrell of the Mayo Clinic (quoted by Heilman<sup>1</sup>), two patients with Friedländer infections of the respiratory tract showed prompt disappearance of *Klebsiella* upon the institution of streptomycin therapy. Previously, the pathogen had been persistently present in the sputum.

Flippin<sup>1</sup> of the University of Pennsylvania observed that *Salmonella* as well as *E. coli* infections lend themselves readily to treatment with streptomycin. A patient with a colony count of 23 million *Salmonella* in the stool gave a negative stool after four days' oral therapy with 1 Gm. streptomycin daily; the number of *E. coli* were reduced simultaneously to about 1000; *Strep. faecalis* disappeared and the clostridia were reduced from 75,000 to 8000. Acute brucellosis was successfully treated by intramuscular administration of streptomycin.

According to Foshay<sup>1</sup> of the University of Cincinnati, *P. tularensis* is one of the most sensitive organisms *in vitro* to the bactericidal action of streptomycin. With only a few micrograms per milliliter, the killing effect is complete within a matter of seconds, or of minutes at the most. It is not surprising, therefore, that the parenteral administration of relatively low doses of streptomycin has proved remarkably successful in human tularemia. Although the mortality of this disease is low, its morbidity is high; for over 500 untreated cases, the mean duration was 3.9 months. One patient who began to receive streptomycin on the eighth day of the disease was sent home as cured on the seventeenth day. In another case with perisplenitis and generalized infection of the peritoneal cavity, the peritoneal fluid was non-infective on the sixth day after treatment, whereas such fluid is usually infective for at least nine months. Of seven cases which had received streptomycin all responded promptly.

Hinshaw and Feldman<sup>2</sup> at the Mayo Clinic treated 22 tuberculous patients with streptomycin without any serious toxic effects, even after prolonged administration of large doses. They concluded, however, that any decision as to the therapeutic efficiency of the antibiotic must await further study. Hinshaw<sup>1</sup> later observed in a variety of human infections of *M. tuberculosis* that treatment with streptomycin gave some encouraging results.

Hinshaw and Feldman<sup>3</sup> reported the results of preliminary impressions obtained from the study of 34 patients who had tuberculosis and were treated with streptomycin for a period of nine months. It appeared

A section of "Streptomycin—A Review," by DR. SELMAN A. WAKSMAN and DR. ALBERT I. SCHATZ of Rutgers University, reprinted with the permission of the authors and the editor from the *Journal of the American Pharmaceutical Association* (Practical Pharmacy Edition), VI:11 (November), 1945.

that streptomycin exerted a limited suppressive effect, especially on some of the more unusual types of pulmonary and extrapulmonary tuberculosis. However, although the reproduction of *Mycobacterium tuberculosis* appeared to be temporarily inhibited by the treatment, no convincing evidence was obtained as to a rapidly effective bactericidal action.

It must be emphasized that the information available is much too limited in scope for any evaluation at the present time. The pathological nature of tuberculosis and the clinical characteristics are such that prolonged treatment and studies of many cases are absolutely prerequisites for any serious consideration of the efficacy of streptomycin in the treatment of this disease. To date, sufficient information has not been accumulated.

Limited results have been obtained for meningitis from the treatment of a dozen or so cases. According to Margaret Smith<sup>†</sup> of Sydenham Hospital and Birmingham<sup>‡</sup> of the Johns Hopkins Hospital, some patients recovered from influenzal meningitis following administration of streptomycin alone. When insufficient doses of the drug were used, there was a definite development of drug-fastness of the organism. It was believed that optimal treatment may finally comprise streptomycin coupled with sulfadiazine or with serum therapy, or both.

Sterilization of spinal fluid and blood was accomplished, in a case of a four-year-old boy, in nine hours. The treatment consisted of injections of 200 mg. streptomycin every two hours for five days. It was recommended that intrathecal administration of streptomycin should always accompany intramuscular therapy.

One case of *Salmonella* meningitis was treated successfully with streptomycin, although it was suggested that

the exact role of the antibiotic in this one patient should be considered as inconclusive. No cases of *E. coli* meningitis in newborns have yet been treated with streptomycin. Since such infections, which are not rare, are generally nonresponsive to the sulfonamides and are almost always fatal, streptomycin may prove effective. In the few patients with tuberculous meningitis, the administration of streptomycin did not appear to help very much.

Howes<sup>†</sup> of Columbia University, studying the treatment of wound infections with streptomycin, observed that 100 micrograms per ml. did not affect the growth of tissue culture at all, whereas 200 micrograms were only moderately inhibitory. At least 14 wounds were sutured with a mixture of 200 units of streptomycin and 5 per cent marfanil, without any infections of the wounds and no untoward reactions. The stability of streptomycin solutions, in contrast with those of penicillin, was believed to be of special significance.

Adequate surgery, followed by streptomycin treatment, will undoubtedly prove highly effective, as suggested by Hirshfeld<sup>†</sup> and by other clinicians.

#### REFERENCES

1. Heilman, F. R.: Streptomycin in the Treatment of Experimental Infections with Microorganisms of the Friedländer Group (*Klebsiella*). Proc. Staff Meetings Mayo Clinic, 20, 33-39, 1945.
2. Hinshaw, H. C., and Feldman, W. H.: Observations on Chemotherapy of Clinical and Experimental Tuberculosis. Med. Clin. North America, Mayo Clinic Number, 918-22 (July), 1945.
3. Hinshaw, H. C., and Feldman, W. H.: Streptomycin in Treatment of Clinical Tuberculosis: A Preliminary Report. Proc. Staff Meetings Mayo Clinic, 20, 313-18, 1945.
4. Personal communication.
5. Reiman, H. A., Elias, W. F., and Price, A. H.: Streptomycin for Typhoid. J.A.M.A., 128, 175-80, 1945.

---

In a congressional committee hearing in Washington dealing with wartime health and education, Dr. A. N. Richards, chairman of the committee on medical research, by request listed the following as among the more conspicuous examples of the results wholly or in large part, of research undertaken with government subsidy by his and associated committees: 1) the acquisition in civilian hospitals and laboratories of sufficient knowledge of the therapeutic power of penicillin, by which the medical divisions of the Army and Navy became convinced of its usefulness, and which provided impetus for the production program which has made this remarkable drug available in huge quantities, one of the most important; 2) the work sponsored and financed by Office of Scientific Research and Development in the Department of Agriculture, which taught the producers of penicillin to increase the yield a hundredfold over that which the British discoverers of penicillin had been able to do, within a few months after we knew about it in this country; 3) the improvements in insect repellents and insecticides, important in guarding troops against infections, which could not have been made without the equivalent of the aid which Office of Scientific Research and Development has given; 4) the program for study of human blood plasma constituents which has led to use by the armed services of human serum albumin as a blood substitute, of immune globulins to combat infections, of fibrin foams to stop bleeding, which could not have succeeded without the equivalent of the support given by Office of Scientific Research and Development; 5) the present adopted regimes of atabrine usage against malaria; 6) the determination of the relative usefulness of sulfonamide drugs in the treatment of wounds and burns; 7) the indoctrination programs of our airmen, as well as the devices which enable them to endure the rigors of high altitudes without disastrous loss of fighting capacity.



# The Sprue Syndrome

Louis Pelner, M.D.

Brooklyn, New York

THE sprue syndrome is here considered to be a series of disorders all of which have steatorrhea, and which are characterized by the passage of large, pale, fatty, and frothy stools, distention of the abdomen, diarrhea, soreness of the tongue and mouth, progressive emaciation, defective calcium metabolism, and anemia. All of these symptoms have a tendency to remission and relapse. The most characteristic part of this syndrome is the steatorrhea. This disorder can occur in various forms which are very similar. These types are celiac disease in infants and small children; idiopathic steatorrhea, which occurs at a later date than the childhood disease; nontropical sprue, which consists of the sprue syndrome in persons who have never been in the tropics, and lastly, tropical sprue.

Since steatorrhea or fatty stools is one of the characteristics of sprue, it is worth while to list other diseases in which this symptom is found. Steatorrhea can be caused by the following factors:

1. Defective digestion of fat. In this condition, the bile or pancreatic lipase may not reach the duodenum because of the obstruction of the bile or pancreatic ducts, or of a chronic pancreatitis. Another possibility may be the inactivation of the enzymes because of an improper pH of the duodenal contents. This can be present in a poorly functioning gastrojejunostomy or a gastrojejuno-colic fistula.

2. Poor absorption of the split and emulsified fat. This is characteristic of the sprue syndrome. Bile and pancreatic lipase are present and are found in a suitable pH environment, but the digested fat is not absorbed through the villi of the small intestine. The essential factor causing this lack of absorption is not known, but a theoretical discussion of this will be given later.

3. The fat may be absorbed through the villi, but for some reason cannot pass through the lacteals, if these are blocked by large mesenteric glands. This can happen in tuberculosis of the mesenteric glands, Hodgkin's disease, carcinoma, or amyloid deposits in the glands.

The sprue syndrome, as explained above, is due to inadequate absorption of properly digested fats. The cause of this lack of absorption is not known. This condition may also occur after the operative excision or disease of a large part of the small intestine. Some consider the sprue syndrome to be caused by the lack of a factor, such as one of the B-complex vitamins, which causes a lack of essential substances necessary for the proper activity of the blood and the gastrointestinal tract. This results in the failure to absorb fat, and less so carbohydrates and proteins. Since the absorption of calcium is closely associated with the absorption of fat, its absorption also suffers. Likewise, fat-soluble vitamins are poorly absorbed. Thus the skeletal deformities, edema, tetany, and anemia can be explained.

The symptoms of the sprue syndrome vary somewhat in each of the diseases mentioned as comprising the syndrome. It may be that all are different degrees of the same disease. In celiac disease, the complaint may be merely a difficulty in digesting milk, but later this condition tends to be quite severe, causing muscular weakness and slow mental and bodily development. In the adult condition, recurrent attacks of diarrhea, especially in the morning, a flatulent dyspepsia with distended abdomen, loss of weight, sore tongue and sore mouth, are present. In the early stage, diarrhea, which is the one characteristic of the syndrome, may appear like any other simple diarrhea. Very soon the typical mushy, pale stool with gas bubbles supervenes. The characteristic of this stool is the excess fat and the increased bulk of the stool. This fatty stool differs markedly from that found in pancreatic steatorrhea, in which the oil separates out, and appears to look like butter. A table comparing both stools is given here.

The abdominal wall is markedly distended so that often a diagnosis of tuberculous peritonitis or Hirschsprung's disease has to be entertained.

X-ray examination of a typical case of the sprue syndrome shows a delayed motility of the barium meal. There is an alteration of the mucosal relief of the jejunum. The contour of the bowel wall is smooth. The valvulae conniventes appear all but gone. The small intestine appears like a group of frankfurters hanging together. This analogy illustrates the segmentation, puddling, and obliteration of the mucosal relief. There is also a dilatation of the colon with the loss of the haustral markings. The lack of absorption of fat is considered to be the sole cause of these X-ray findings. However, it is not altogether unlikely that the substance responsible for the lack of absorption causes this picture as well. This factor appears to be found in crude liver extract and the vitamin B-complex group, because these changes can be reversed by use of these substances. Recently similar changes of the small intestine have been found in vitamin B-complex deficiency and, indeed, some authorities use these X-ray findings as a mode of diagnosis of this condition.

Other prominent findings in the sprue syndrome are soreness of the tongue, which is usually clean, devoid of fur, but sometimes red and swollen. The loss of weight is very striking as compared with the large protuberant abdomen. Occasionally a hemorrhagic rash is found which will clear up with vitamin C administration. The anemia of sprue is also one of the characteristic findings. This may be either a hypochromic or hyperchromic anemia. Strangely enough, in a hypochromic anemia the patients have a waxy pallor, whereas with the hyperchromic, megalocytic anemia, these patients have a lemon yellow tint to their skin. Tetany is a frequent occurrence in this condition owing to the loss of calcium in the stool. In addition vitamin D is also lost in the stool because of

its fat solubility. Pains in the bones and joints are frequently found and are due to the lack of absorption of both calcium and vitamin D. This results in a stunting of growth and a deformity of the skeleton.

The diagnosis of sprue is not made sufficiently often in this country, probably because the secondary manifestations that it includes are taken to be the disease proper. In order to prevent incorrect diagnosis, we must review every case of pernicious anemia, idiopathic diarrhea, and every case of severe vitamin deficiency.

#### DIFFERENTIAL DIAGNOSIS

The differential diagnosis of this condition must include pancreatic steatorrhea, which has so many distinguishing factors that it should not entail much difficulty. A table listing the differences in this condition is included in this article. The fat in pancreatic steatorrhea is undigested, oily fat, which separates, producing the so-called "butter stool." Another very important characteristic differentiating this condition from pancreatic disease, is that sprue has a flat glucose-tolerance curve. The test in these cases shows a low fasting blood sugar, and after the ingestion of glucose shows very little rise. Why this should be true is debatable, since this disease is primarily a disturbance of fat metabolism. However, if banana flour is given instead of glucose, the usual rise in the blood sugar occurs. This fact has been made use of in treatment.

As mentioned before, sprue may have a macrocytic, hyperchromic anemia, which resembles in all characteristics the blood smear of pernicious anemia. However, in sprue the patients are emaciated, while in pernicious anemia the patients appear well fed. In pernicious anemia the steatorrhea is not found. In sprue, the presence of indirect van den Bergh reaction is rare, but in pernicious anemia it is quite regularly found. In sprue only 50 per cent of the cases have an absent hydrochloric acid content of the stomach, whereas in pernicious anemia this finding is exceedingly frequent. With adequate therapy in sprue, this condition remits, whereas in true pernicious anemia the achlorhydria is constant.

The defects of calcium metabolism are often considered to be isolated diseases, but sometimes may be a part of the sprue syndrome. The presence of steatorrhea facilitates the diagnosis. In infants and small children the differential diagnosis from Hirschsprung's disease may easily be made by analysis of the stool to exclude steatorrhea.

The treatment of any of the diseases comprising the sprue syndrome is largely dietary. The only recent improvement on this treatment is the use of parenteral liver extract. Many authors have stated that this substance exerts a specific effect on the absorptive power of the small intestine. Two cubic centimeters of the crude extract can be given intramuscularly three times a week. The diet should be high in protein, moderately low in carbohydrates, and extremely low in fat, and should contain adequate amount of vitamins and minerals. An illustrative diet list is included in this article. Careful attention should be given to the type of carbohydrate, which early in the disease should consist only of bananas and strawberries. Many of the symptoms of sprue in the individual case will require individual vitamin therapy; thus glossitis and stomatitis will usually yield to about 300 mil-

#### DIFFERENTIAL DIAGNOSIS BETWEEN PANCREATIC STEATORRHEA AND IDIOPATHIC STEATORRHEA

|                                                           | Pancreatic Steatorrhea                                         | Idiopathic Steatorrhea                |
|-----------------------------------------------------------|----------------------------------------------------------------|---------------------------------------|
| Appearance of stool                                       | Butter stool—oil separates out, especially if cold. Gray color | Light, pale, frothy, voluminous stool |
| Total fat content (dry wt.) (Normal 15 to 25%)            | Approximately 50%                                              | Approximately 50%                     |
| Pct. of fat excreted as normal fat (Normal less than 50%) | More than 50%                                                  | Normal                                |
| Pct. of fat excreted as fatty acid or calcium soaps       | Less than 50%                                                  | More than 50%                         |
| Microscopic—Sudan III                                     | Neutral fat present                                            | Fatty acid present                    |
| Associated creatorrhea                                    | Present                                                        | Absent                                |
| Sugar tolerance curve                                     | Normal. May be diabetic or hypoglycemic                        | Usually flat                          |
| Glycosuria                                                | May be present                                                 | Absent                                |
| Serum phosphatase                                         | Normal                                                         | May be elevated                       |
| Plasma protein                                            | Normal                                                         | Usually low                           |
| Anemia                                                    | None                                                           | Usual                                 |
| Nitrogen content in stool                                 | Increased above 3 grams of dried weight                        | May be decreased or normal            |
| Vitamin deficiency                                        | Occasional                                                     | Usual                                 |
| Basal metabolic rate                                      | Normal                                                         | High                                  |
| Duodenal enzymes                                          | Decreased                                                      | Normal                                |
| Urinary diastase                                          | High                                                           | Normal                                |

(Modified from Bockus's *Gastroenterology*. The figures given are approximations, and differ slightly with each authority.) (Courtesy of W. B. Saunders.)

ligrams of nicotinic acid and 5 milligrams of riboflavin daily. A hemorrhagic rash will require use of about 300 milligrams of vitamin C daily.

When severe weakness is present, suprarenal cortical extract is useful. A potent preparation of this substance can be given in doses of 2 cc. every other day. The suprarenal cortex hormone is said to be involved in the absorption and phosphorylation of fats, and also one of these hormones, corticosterone, exerts an influence on carbohydrate metabolism. The natural hormone is probably better than the synthetic one, because it contains more of the needed factors. The anemia should be treated with adequate doses of liver extract just as in pernicious anemia. In addition, iron in the form of ferrous sulphate should be taken in the form of dicalcium phosphate with viosterol. Vitamin B complex should preferably be given either in the form of brewer's yeast in adequate doses (12 to 18 tablets daily), or the natural vitamin B complex syrup or capsules, since some of the unknown elements of this complex may be an important factor in increasing the absorption of substances from the intestinal tract.

#### SUGGESTED READING

- Hawes, R. B.: Sprue and Allied Disorders, Practitioner 149:157, 1942.  
 Reed, A. C.: Sprue—a Clinical Summary, Am. J. Tropical Medicine 16:499, 1936.  
 Snell, A. M.: Tropical and Non-Tropical Sprue (chronic idiopathic steatorrhea): Their Probable Interrelationship, Ann. Int. Med. 12:1632, 1939.  
 Bockus, H. L.: Gastroenterology; Philadelphia, W. B. Saunders, vol. 2, p. 240, 1944.



# Aids in the Diagnosis of Intestinal Obstruction

Louis Pelner, M.D.  
Brooklyn, New York

**I**NTESTINAL obstruction is one of the most serious abdominal emergencies. The diagnosis is difficult because the practitioner usually has in mind a classical case. The typical history plus the finding of all physical signs will usually mean a moribund patient. It therefore behooves us to make an early clinical diagnosis.

The history is of the utmost importance to the diagnosis of the condition. The general condition of the patient must be adequately and rapidly appraised. For example, one must recognize whether the patient is in shock, is toxic, or shows no signs of illness. Physical signs will confirm the diagnosis. An idea of the importance of the history can be gained from the following classification of intestinal obstruction which is noted in the order of occurrence during the life span.

## CLASSIFICATION OF INTESTINAL OBSTRUCTION

1. Developmental anomalies.
2. Intussusception.
3. Adhesive bands—postoperative.
4. Carcinoma.

Vascular: thrombosis and embolism of mesenteric vessels.

Hernia, which is the most important of the causes of intestinal obstruction, can occur at any age. This classification does not include ileus, which must be differentiated, and which will be discussed later.

Summarizing, therefore, the age of the patient is very important. Meckel's diverticulum and malrotation of the gut are seen in children and young adults. The greater majority of intussusceptions occur before two years of age. Carcinoma of the colon occurs usually after the fortieth year.

It is also important to note whether the patient has been operated on before and for what reasons, and also whether the symptoms came on suddenly or insidiously. However, even in the obstruction due to a slowly growing carcinoma of the colon, the obstruction may suddenly become acute.

Other important parts of the history will be separately discussed.

1. *Abdominal pain.* Every abdominal pain that continues for more than several hours must have a reason, and it is incumbent upon us to find the cause of these pains. Pain originating in the small intestine occurs around the umbilicus. Pain originating in the large intestine occurs in the lower abdomen. The pain in intestinal obstruction has been described as cramplike and griping, and occurs rhythmically with free intervals of several seconds or several minutes. If the obstruction is in the colon, the pain is less frequent, and if strangulation is present, there is a constant pain with exacerbations. The pain in intestinal obstruction tends to be eased by pressure. Later, if the condition is not corrected, the gut loses the power of contraction, so that cramps be-

come less frequent. This occurs after about forty-eight hours of intestinal obstruction.

2. *Vomiting.* Vomiting, which is one of the most characteristic symptoms of intestinal obstruction, may not occur if the obstruction is low in the colon. Nausea only may be present. Vomiting in colonic obstruction is rarely fecal. The vomiting in the small bowel obstruction is copious. The higher the obstruction the more the vomiting, and the sooner the vomiting becomes fecal. In appendicitis or perforated ulcer, the patient may vomit once, while in obstruction the vomiting is repeated. If more than one copious vomiting spell occurs, intestinal obstruction must be thought of seriously.

3. *Passage of feces and gas.* It is very important to be accurate in the details of this symptom. There may be passage of feces and gas after the first enema because of matter retained in the colon. If no fecal matter or gas results from the second enema, it must be considered significant.

4. *Loss of weight and strength.* A recent loss of weight and strength must be carefully evaluated for the possible diagnosis of carcinoma.

## PHYSICAL EXAMINATION

The physical examination is, of course, very important. However, the most important part of this examination is the general appraisal of the condition of the patient; for example, whether or not he is in shock, or whether or not he is toxic. Physical examination will aid us in determining whether strangulation has occurred as a result of the intestinal obstruction. When this condition is reached, signs of peritoneal irritation will be found, such as marked tenderness, distention, and muscle rigidity.

Early in the course of intestinal obstruction, the patient may not look severely ill. A slight elevation of pulse rate and temperature may be present. However, soon, because of the persistent vomiting, signs of dehydration and circulatory collapse will be present due to hypochloremia. Three fairly constant blood chemistry findings occur in this condition. They are hypochloremia, azotemia, and alkalosis. The hypochloremia and the alkalosis are both due to excessive vomiting. The azotemia is probably due in turn to the shock, which causes an insufficient blood pressure for glomerular filtration. As described above, signs of dehydration and circulatory collapse are present. The skin is cold and clammy. The blood chloride level may be below 400 milligrams per 100 cc. of blood, the carbon dioxide combining power may be 65 or over, and the urea nitrogen may be 60 milligrams or more per 100 cc. of blood.

Abdominal distention is one of the cardinal signs of intestinal obstruction. The abdominal distention will be less if the obstruction is in the jejunum, and more if it is in the ileum or the colon. In the thin patient, step-ladder movements of peristaltic waves may be seen. This is usually found in incomplete intestinal obstruction.

Palpation must be done carefully and one must note especially the presence of masses in the abdomen, hernia, and the presence or absence of peritoneal irritation. A hernia is the most important cause of intestinal obstruction at any age. If peritoneal irritation is found, strangulation must be diagnosed. If this is present, tenderness, rebound tenderness and spasm of the overlying muscles will be present.

Auscultation of the abdomen should never be omitted, but it is important to note whether the cramps occur at the same time as the abdominal noises. Of course, one must rule out enteritis as the cause of the cramps. It is also to be remembered that as intestinal obstruction goes on, cramps will become less and less because of decompensation of the bowel. It is also interesting to note that a swallow of water will often start the cramps and borborygmi.

Examination of the rectum and vagina for masses is important. A large percentage of carcinoma of the colon can be felt by rectal digital examination. In intussusception, a mass can often be palpated.

As stated previously, the most important blood chemistry findings are those of an alkalosis, hypochloremia, and azotemia. The red blood count and white blood count will be elevated because of hemoconcentration. The urine may or may not show a slight amount of albumin and a few hyaline casts.

#### X-RAY EXAMINATION

The X-ray examination in this condition is so important as to be almost routine. The gas in the normal gut is intimately mixed with fluid so that a radiograph does not detect it. In a distended loop of gut, the gas rises above the fluid and a so-called "scout" X-ray or plate taken in the erect position shows a fluid level. The presence of a distended loop of small intestine without gas in the colon is significant in the diagnosis of small intestinal obstruction. If the presence of gas is noted in the colon, the finding is significant of colonic obstruction. It is also important to note that a scout X-ray film of a patient with a paralytic ileus will show presence of fluid and gas in both the colon and small intestine.

The diagnosis of acute intestinal obstruction is made by the history of recurrent cramps, vomiting, the presence of borborygmi, and the presence of the more or less typical X-ray findings. Enteritis should be ruled out, but in this condition diarrhea is a feature, whereas in intestinal obstruction obstipation is found. The differential

diagnosis of the different causes of intestinal obstruction covers a tremendous group of diseases. These conditions are separate clinical entities. As given earlier in this paper, the commonest causes are listed again in the order of occurrence during a life span. (1) Developmental anomalies. (2) Intussusception. (3) Adhesions. (4) Cancer of the bowel, and vascular thrombosis. Strangulated hernia, which is the most common cause, occurs throughout the entire life span.

However, it is of practical importance to distinguish between a case of paralytic ileus and one of intestinal obstruction, because in the former operation is contraindicated, and in the latter, it is often necessary. An ileus is usually secondary to an antecedent condition such as appendicitis, either operated upon, treated conservatively, or neglected. The history will help in this regard. Auscultation of the abdomen will reveal absence of sounds in ileus and the presence of borborygmi in intestinal obstruction. A leukocytosis is frequently found in ileus because it is usually secondary to peritonitis. It occurs also in late intestinal obstruction because of the hemoconcentration, but here other elements of the blood count are also increased. An X-ray "scout" film in ileus will show distention in both the small and large intestine, whereas in intestinal obstruction the fluid level will be seen in either the small or large gut, depending upon whether the obstruction is in the large or small intestine.

The modern treatment of this condition usually demands a correction of the blood chemistry findings, especially of the hypochloremia which is so characteristic of this condition. Thus, intravenous saline solution or glucose in saline solution should be given, if possible, before operation. Continuous suction through a Levine tube in the stomach will relieve the vomiting and some of the distention while the infusion is being given. Further improvement during the last few years consists in the passage of a Miller-Abbott tube, which is a long tube with a rubber balloon at the end, to a point up to the obstruction. This will aid in the elimination of local toxic products of the obstruction. By this means, also, local edema is reduced and often an operation may be averted. However, even if this cannot be done, the patient will be in better condition to withstand an operation. The mortality, which has previously been prohibitive, has now been cut down to a reasonable figure.

#### SUGGESTED READING

Paine, J. R.: Diagnosis of Intestinal Obstruction, *American J. Surg.* 56:87 (1942).

#### DIET FOR SPRUE AND IDIOPATHIC STEATORRHEA

##### Breakfast

Melba toast. 1 quarter of a glass of orange juice. 2 ripe bananas. 1 serving of boiled liver. Coffee or tea.

##### Dinner

1 quarter of a glass of orange juice. 2 ripe bananas. Slice of Melba toast lightly buttered. 1 egg. 1 serving of a very lean steak.

##### Supper

Orange juice. 1 quarter of a glass. 2 bananas. Slice of Melba toast lightly buttered. 1 serving of lean broiled steak.

Add the following foods, in the order enumerated, after a period of one or two weeks:

Honey; bland cooked fruit; vegetable puree consisting of spinach, lettuce, celery, eggplant and young string beans; custard, sweetened with glucose; baked potato; cottage cheese without milk or cream; fish and meats, besides those listed above; low residue vegetables (carrots, beets, asparagus tips, squash, string beans, spinach; fresh strawberries, pears, baked apple, strained apple sauce, cooked pears, peaches and apricots.



# The JOURNAL LANCET

Serves the *Medical Profession of*  
MINNESOTA, NORTH DAKOTA, SOUTH DAKOTA AND MONTANA

Official Journal of the American Student Health Assn., Great Northern Railway Surgeons' Assn., Minneapolis Academy of Medicine, Montana State Medical Assn., North Dakota Society of Obstetrics and Gynecology, North Dakota State Medical Assn., Northwestern Pediatric Society, Sioux Valley Medical Assn., South Dakota Public Health Assn., South Dakota State Medical Assn.

## ADVISORY COUNCIL

### North Dakota State Medical Assn.

Dr. James F. Hanna, *Pres.*  
Dr. A. E. Spear, *Pres.-Elect*  
Dr. L. W. Larson, *Secy.*  
Dr. W. W. Wood, *Treas.*

### North Dakota Society of Obstetrics and Gynecology

Dr. E. H. Boerth, *Pres.*  
Dr. Paul Freise, *Vice Pres.*  
Dr. G. Wilson Hunter, *Secy.-Treas.*

### Minneapolis Academy of Medicine

Dr. Karl W. Anderson, *President*  
Dr. Russell W. Morse, *Vice Pres.*  
Dr. J. C. Miller, *Secretary*  
Dr. Ragnvald S. Ylvisaker, *Treasurer*  
Dr. Henry E. Hoffert, *Recorder*

### South Dakota State Medical Assn.

Dr. William Duncan, *Pres.*  
Dr. F. S. Howe, *Pres.-Elect*  
Dr. H. R. Brown, *Vice Pres.*  
Dr. Roland G. Mayer, *Secy.-Treas.*

### South Dakota Public Health Assn.

Dr. J. M. Butler, *Pres.*  
Dr. C. E. Sherwood, *Vice Pres.*  
Dr. Gilbert Cottam, *Secy.-Treas.*

### Sioux Valley Medical Assn.

Dr. D. S. Baughman, *Pres.*  
Dr. Will Donahoe, *Vice Pres.*  
Dr. R. H. McBride, *Secy.*  
Dr. Frank Winkler, *Treas.*

### Montana State Medical Assn.

Dr. S. A. Cooney, *Pres.*  
Dr. M. A. Shillington, *Pres.-Elect*  
Dr. R. F. Peterson, *Secy.-Treas.*

### Northwestern Pediatric Society

Dr. G. B. Logan, *Pres.*  
Dr. Geo. Kimmel, *Vice Pres.*  
Dr. Northrop Beach, *Secy.-Treas.*

### Great Northern Railway Surgeons' Assn.

Dr. W. W. Taylor, *Pres.*  
Dr. R. C. Webb, *Secy.-Treas.*

### American Student Health Assn.

Dr. Ralph I. Canuteson, *Pres.*  
Dr. Glenadine Snow, *Vice Pres.*  
Dr. G. T. Blydenburgh, *Secy.-Treas.*

## BOARD OF EDITORS

DR. J. A. MYERS, *Chairman*

Dr. J. O. Arnsion  
Dr. D. S. Baughman  
Dr. Ruth E. Boynton  
Dr. Gilbert Cottam  
Dr. H. S. Diehl  
Dr. L. G. Dunlap  
Dr. Ralph V. Ellis  
Dr. W. A. Fansler  
Dr. A. R. Foss

Dr. James M. Hayes  
Dr. A. E. Hedback  
Dr. E. D. Hitchcock  
Dr. R. E. Jernstrom  
Dr. A. Karsted  
Dr. L. W. Larson  
Dr. W. H. Long  
Dr. O. I. Mabee  
Dr. J. C. McKinley

Dr. Irvine McQuarrie  
Dr. Henry E. Michelson  
Dr. C. H. Nelson  
Dr. N. J. Nessa  
Dr. Martin Nordland  
Dr. J. C. Ohlmacher  
Dr. K. A. Phelps  
Dr. C. E. Sherwood

Dr. M. A. Shillington  
Dr. J. C. Shirley  
Dr. E. Lee Shrader  
Dr. E. J. Simons  
Dr. J. H. Simons  
Dr. S. A. Slater  
Dr. W. P. Smith  
Dr. S. E. Sweitzer

Dr. W. H. Thompson  
Dr. E. L. Tuohy  
Dr. M. B. Visscher  
Dr. O. H. Wangensteen  
Dr. S. Marx White  
Dr. H. M. N. Wynne  
Dr. Thomas Ziskin,  
*Secretary*

LANCET PUBLISHING CO., *Publishers*, 84 South Tenth Street, Minneapolis 2, Minnesota

MINNEAPOLIS, MINNESOTA, MARCH, 1946

## PSYCHOTHERAPY STRIDES FORWARD

Dr. Charles H. Mayo, speaking at a banquet of The Interstate Post-Graduate Assembly in Detroit about ten years ago, deplored the lack of progress in the treatment of mental diseases in the past, but predicted that the greatest advances in scientific medicine during the next thirty years would be along the lines of psychotherapy. His was a prophetic soul! the accuracy of his prediction is now being realized in both war and peacetime procedures.

The most spectacular example of this progress, that which first comes to the mind of every student of the subject, is the wonderful results achieved by prompt emergency treatment of acute psychosis on the battlefield during World War II. In former frays, because physical mutilation is more apparent, such cases received first attention, to the disadvantage of those whose minds were affected. Mental cases were for the most part dazed, quiet, and uncomplaining, and thus lacked the

urgent appeal. Perhaps also it was because of a feeling that little could be done for mental casualties, beyond time and rest. At any rate they were neglected, not intentionally, but because of failure to appreciate the need, the very great need, of first aid for such cases.

In civilian life, too, psychiatric practice has undergone a great change in the past decade. Today's successful sanitarium does more than merely supply isolation from the irritations of a highly geared, competitive world. It furnishes specific therapies, most of which have been developed and perfected during the past ten years. We have in mind insulin coma, metrazol convulsive therapy, and electroshock treatments. Surgery has contributed the operation of prefrontal lobotomy. Work in mental hospitals has now become more interesting because there is an added incentive to apply these promising modern technics to patients, to the end that they may be cured and discharged in the shortest possible time.

A. E. H.

## BREAD

An article\* with this down-to-earth title in our venerable name-giver, the British *Lancet*, is of timely interest in view of the recent order for higher extraction bread and the resulting beige-colored "white" bread in the United States.

After a thoroughgoing consideration of the structure and composition of wheat grain, the bakers and the public, the millers' point of view, the nutritional value of wheat and wheat flours, and the effect of the war, Professor McCance voices his own recommendations. "If the health of the people really is the first consideration in our bread policy," he writes, "the cheapest, safest, and easiest way to maintain this is to keep up the extraction-rate of the flour used for bread-making. Speaking personally—i.e., nutritionally—I would like to see 85% flour and the "National" loaf reintroduced. . . . If this were done as a long-term policy, milling techniques would be improved and adapted in conformity, and this would lead to a betterment in the 85% flours. Calcium should be added to neutralise the bad effects of phytic acid.

"I recognise that there are difficulties about 85% flour. One is its keeping qualities, which are not so good as those of 70% flour. . . . Now there are, I believe, two aspects of this. One is that the 85% flour goes 'off' on keeping because the fat in the germ becomes rancid. . . . Another is that the baked loaves go mouldy quicker than loaves made from 70% flour. This may be a matter of the moisture content, but it may well be a sign of nutritional quality, for these moulds are very discriminating little creatures and will only grow on the very best media. They much prefer, therefore, an 85% to an 80% or 70% loaf.

"The millers will always be in a difficulty with long-extraction flours, so long as the public has a free choice of loaf and remains more interested in football pools than positive health; but although I hate bureaucratic control I do not feel that these difficulties are insuperable. A good test for the extraction-rate of flour would be a help. Much could be done by frankly and honestly putting the case for its own health before the public. If we revert to a flour of 70% extraction, it will be much more difficult and much more expensive on purses and imports to ensure that Mr. Tom, Mrs. Dick, and Master Harry get their supplies of nutritional minutiae, and I personally would not care to undertake to do it."

\*Vol. CCL, No. 6386, January 19, 1946. By R. A. McCANCE, M.D., Ph.D. Camb., F.R.C.P., Professor of Experimental Medicine, University of Cambridge.

Tuberculosis can be controlled and the fight against it must be continued until it is controlled. The American people cannot be complacent about a disease which exacts such a tragic and needless toll of lives. Today, in particular, it is inexcusable to permit disease to undermine the strength of our people when all their energy is needed in the building of a better world.—HARRY S. TRUMAN.

## ANNOUNCEMENTS

## Graduate Course in Diseases of the Chest

The American College of Chest Physicians, of which Dr. Jay Arthur Myers, Minneapolis, is president, announces that a postgraduate course in diseases of the chest will be given at Michael Reese Hospital, Chicago, during the week April 1-6, inclusive, under the auspices of the Illinois Chapter. Doctors may elect to follow the formal course, with practical instruction in the fields of thoracic surgery, bronchoscopy, pneumothorax, bronchography, and other methods and technics in the diagnosis and treatment of pulmonary disease.

Further information may be secured from the offices of the College, 500 North Dearborn Street, Chicago 10, Illinois.

## Annual Meeting, American Association for the Study of Goiter

The Association announces that its first annual meeting since 1941 will be held at the Drake Hotel, Chicago, June 20-22, inclusive. The Program Committee announces that special features, such as a paper on radioactive isotopes in relation to the investigation and treatment of thyroid disease, have been planned. Those who desire to read papers are requested to send the titles at once to the program chairman, Dr. S. F. Haines, Mayo Clinic, Rochester, Minnesota.

## Preceptorships, American Board of Ophthalmology

The Secretary of the Board, Dr. S. Judd Beach, sends the following notice concerning preceptorships.

In regard to the substitution of a preceptorship for residency in an ophthalmic hospital, the American Board of Ophthalmology has always accepted such training in favorable cases. During the present overcrowding of facilities, the Board expects to take a liberal attitude regarding the requirements for training.

It should, however, be pointed out that neither a residency nor a preceptorship suffices in itself to meet the requirements of the Board. Each case will still be judged on its merits in determining fitness for examination.

In entering upon a preceptorship certain conditions should be kept in mind. First the student will profit most after a sound course in the basic sciences of physiology of the eye and of vision, optics, pathology, bacteriology, chemistry, pharmacology, the relation of the eye to general disease, anatomy, embryology, and neurology. This is essential for a residency, more so for a preceptorship. While men have been accepted from preceptors who are not diplomates of the Board, it is obvious that the Board has more information about those teachers who have passed its examinations.

Any preceptor should understand that he is assuming a responsibility in taking a student and is not merely obtaining help in the drudgery of his office. He should be willing to give time to clinical training and the use of apparatus, slit-lamp, ophthalmoscope, tonometer, and to directing the student's practice in surgery on animal



eyes, assisting in operations, and ultimately in the performance of them.

To cover the same amount of ground will take much longer in a preceptorship than in a residency, and students should accept opportunities to take hospital positions of all sorts as they become available.

#### Annual Convention and Postwar Conference, American Hospital Association

The Association will hold its 48th annual convention and postwar conference in Philadelphia during the week starting Monday, September 30. The Bellevue-Stratford and Benjamin Franklin hotels will provide accommodations. A housing bureau will be conducted in the Association's Chicago headquarters, 18 East Division Street, to handle requests for living quarters. The Philadelphia Commercial Museum, Exhibition, and Convention Hall has been booked for meetings and exhibits.

#### Annual Meeting, American Public Health Association

The Executive Board of the American Public Health Association announces that its 74th annual meeting will be held in Cleveland the week of November 11. This will be the first full-scale convention of the Association since 1942. An attendance of 4000 is anticipated. Dr. Harold J. Knapp, Cleveland's Health Commissioner, is Chairman of the Local Committee.

#### The 1947 Norton Medical Award

W. W. Norton & Company, publishers, announce that they are again inviting the submission of manuscripts to be considered for the Norton Medical Award of \$3500, offered to encourage the writing of books on medicine and the medical profession for the layman.

The first such award was made to *The Doctor's Job*, by Dr. Carl Binger, published in the spring of 1945. Announcement will be made shortly of the winning book for 1946. Closing date for submission of manuscripts this year is November 1, 1946. Particulars relating to requirements and terms may be obtained from the publishers, 70 Fifth Avenue, New York 11, N. Y.

#### New Medical Journals

Two new medical journals, the *Quarterly Review of Psychiatry and Neurology* and the *Quarterly Review of Urology*, will be issued soon by the Washington Institute of Medicine.

Dr. Winfred Overholser, Professor of Psychiatry, George Washington University School of Medicine, and Superintendent of St. Elizabeth's Hospital, is Editor-in-Chief of the first-named review. It will be published in January, April, July, and October. The annual subscription rate is \$9.00.

The *Quarterly Review of Urology*, issued in March, June, September, and December, also at \$9.00 a year, has Dr. Hugh J. Jewett of Johns Hopkins University as Editor-in-Chief. Included on the Editorial Board of ten are Dr. William F. Braasch of the Mayo Clinic and Dr. Reed M. Nesbitt of the University of Michigan.

## MEET OUR CONTRIBUTORS . . .

DR. IRVING HOWARD MAUSS, S.A. Surgeon (R) attached to the U. S. Public Health Service with the U. S. Marine Hospital, Memphis, Tennessee, was director of the Pennington County Health Department, Rapid City, South Dakota, at the time the paper published in this issue was written. Dr. Mauss will soon be on terminal leave and will return to his home in Brooklyn. Dr. Mauss is a graduate of the Royal College of Physicians and Surgeons of Glasgow, Scotland (1940), and interned at Sinai Hospital (one year in pathology) and Baltimore (one year in medicine). He is a member of the Black Hills (Ninth) District Medical Society of South Dakota, the American Public Health Association, the South Dakota Public Health Association, and the American-Soviet Medical Society.

DR. WILLIAM E. OLSON of Fort Meade, South Dakota, has practised his specialty, psychiatry, there since April 1945. He is a graduate of the University of Nebraska College of Medicine (1930).

DR. LOUIS PELNER of Brooklyn is associate physician of the Greenpoint Hospital, assistant attending physician of the Brooklyn Cancer Hospital, and adjunct attending physician of Beth Moses Hospital. He is a graduate of the New York University College of Medicine, with graduate work at the Post Graduate Hospital, the New York Medical College, and the Lahey Clinic. He is a member of the Kings County Medical Society, the American College of Allergists, the American Federation for Clinical Research, and the New York Diabetic Society.

#### ORIGIN OF THE NAME "CESAREAN"

PALMER FINDLEY, in his *Priests of Lucina*, says that "so far as the records show the cesarean operation was not performed on the living woman in the time of Julius Caesar. This fact should effectually dispose of the popular belief that the name of the operation was derived from the alleged manner of birth of Julius Caesar. It is the consensus that the name was derived from the *lex regia*, in which it was ordered that an abdominal section must be performed on all dead and dying women when in the advanced state of pregnancy. Later, the *lex regia* became known as the *lex cesaria* and from this law the name cesarean was derived."

The earliest *authenticated* cesarean on a living woman was performed in 1500 by Jacob Nufer, a butcher who specialized in the gelding of sows. In Bauhin's account of the event (*Fr. Rousset, Basle, 1588*) at Sigerhausen, it is recorded that he "locked the door, offered prayer, placed his wife on the table, and cut her abdomen open. The cut was so skillfully done that the child was removed at once without injury. . . . Later his wife gave birth to twins, and gave birth four times more. The child which was cut from her body lived 77 years."

The Julius Caesar legend does not hold up in the light of the historic facts.—*Medical Times*, 74: 2, 45 (February), 1946.

## Book Reviews

**Hypnoanalysis**, by LEWIS R. WOLBERG, M.D. New York: Grune and Stratton, 1945. Pp. 342. \$4.00.

Every practising physician is frequently confronted with the problem of what to do for the patient whose complaints arise out of a disturbed emotional or mental state.

Although efforts to do something helpful are extremely varied in practice, they depend for their success on the inclusion of the fundamental techniques of psychotherapy, which are *suggestion*, *persuasion*, and *analysis*. Dr. Wolberg has here devoted himself to an exposition of the technique and theory of hypnoanalysis, which utilizes hypnotic suggestion in aiding the analysis of the personality disturbance.

Psychiatrists have long recognized that psychoanalysis in its orthodox form, as discovered and developed by Freud and his co-workers, has limited usefulness as a therapeutic method, since it is time consuming for the therapist, expensive to the patient, and subject to certain unavoidable failures arising out of the uncontrollable resistance of the patient to abandoning his defenses or neurotic goals.

Orthodox psychoanalytic therapy is still in use today in spite of these practical drawbacks, because it is the only therapy effective in certain patients whose lives are hideously blighted by neurotic distortions in personality. Efforts to find techniques which are less time consuming and more universally effective have been pursued by the psychoanalytic group for a quarter of a century, and this book by Dr. Wolberg represents one of the most likely modifications which are in the experimental stage today.

Dr. Wolberg begins his book with a detailed account, comprising 132 pages of the analysis of a state hospital patient who appeared to be a deteriorated schizophrenic. Hypnosis was used extensively throughout the analysis to uncover unconscious material, break through the patient's resistance, and promote re-education along lines of mental health. After four months of intensive treatment the patient was completely recovered and remained so after two years outside the hospital. The movement of the patient during the treatment is such as to make extremely unlikely the theory that a spontaneous recovery (such as is not infrequently seen in untreated schizophrenics) occurred.

The last six chapters of the book are devoted to the practice and theory of hypnoanalysis, apparently largely as evolved in Dr. Wolberg's own experience. Case material is drawn on frequently to illustrate points in technique.

The first half of this book might well be of interest to any physician who cares to familiarize himself with the revelations patients make in a psychoanalytic relationship. The material is given in sufficient detail (much of it is quoted verbatim) to provide an opportunity to form a judgment as to the validity of the basic data upon which psychoanalytic theory is founded. The chapters on technique and theory are, however, of value only to psychoanalytically trained psychiatrists who may wish to repeat Dr. Wolberg's experiment in a case or two of their own.—ALAN CHALLMAN, M.D.

**Dysentery, Colitis and Enteritis**, by JOSEPH FELSEN, B.A., M.D., Director of Medical Research, Bronx Hospital, New York; Director of International and Pan-American Dysentery Registry. Philadelphia and London: W. B. Saunders Company, 1945. Pp. 618, illustrated; 9 color plates. \$6.00.

Dr. Felsen has now completely documented his oft-repeated thesis that chronic ulcerative colitis in most instances stems from bacillary dysentery. Not only the condition commonly known as idiopathic or nonspecific ulcerative colitis, but also ileitis and enteritis and colitis, variously designated, are considered to be sequelae of bacillary dysentery. This concept indubitably simplifies considerations of the etiology of several inflammatory disorders of the large and small bowel, directs attention to the epidemiological relationship of several apparently unrelated con-

ditions, and emphasizes prevention. But for purposes of management and treatment of particular cases a somewhat more eclectic classification would seem to offer more profitable opportunities.

Perhaps no one has done more or better bacteriological or serological investigation of colitis than Dr. Felsen. Concerning the disorder as a general, systemic disease his work has yielded much valuable information, which is here presented in complete detail. Even gastroenterologists and general practitioners who have reservations concerning the validity of the hypothesis should study these data thoughtfully with the purpose of applying whatever is pertinent to a vexatious problem common in all practice.

**Classic Descriptions of Disease**, by RALPH H. MAJOR. 3d ed., revised and enlarged. Springfield, Illinois: Charles C. Thomas, 1945. Pp. 679. \$6.50.

With three editions off the press, Dr. Major's compilation of classic descriptions is itself becoming a classic. The book is a history of medicine unusual in its departure from the customary procedure of grouping all papers in chronological order. The chapters are by subject rather than by eras. This simple device enhances the value of the work to most practitioners, whose interest lies in a particular subject rather than in a special period.

Old English writings are given in the original. French, German, Latin, and Greek works are translated. As is stated in the preface, "Mistakes [in translating] have probably crept in, since in many places it is difficult to be sure just what thought some Italian, Frenchman, or Spaniard writing in medieval Latin was trying to express, and at times the translator almost wonders if the author himself knew."

Articles selected for quotation have been largely limited to inaccessible and unavailable journals and books.—R. B.

**Trauma in Internal Diseases, with Consideration of Experimental Pathology and Medicolegal Aspects**, by RUDOLF A. STERN. New York: Grune & Stratton, 1945. Pp. 575.

Health and accident insurance policies, accidental death benefits, workmen's compensation laws, and other types of insurance bearing on accidents have given the subject of trauma and disease an importance beyond medical considerations. Here is a field of medicine where etiology often is decided in a legal rather than a pathologic amphitheater. Dr. Stern takes up the subject of trauma from the point of view of the expert medical witness. He presents case histories profusely, the dénouement being the award or denial of compensation. His book will serve as a handy reference for physicians called to testify in cases of trauma and disease. Physicians unaccustomed to the ordeal of legal examination and cross examination can profit much from the introduction, which is concerned with general facts concerning the importance of trauma in the etiology of internal diseases.

**Suggested School Health Policies: A Charter for School Health**. 2d ed., revised by the National Committee on School Health Policies of the National Conference for Cooperation in Health Education. New York and Minneapolis: Health Education Council, 10 Downing St., New York 17, 1945. Pp. 46. 25 cents.

This guide integrates the points of view of many professional groups on the contributions that school programs can make to the health of children and communities. It points out that healthier school living can be acquired by raising the standards of inspection for safety and sanitation, improving the quality of health instruction, instituting wider programs of health counseling, and enforcing more intelligent precautions in physical education.

The school health council recommended would coordinate the efforts of teachers, parents, and physicians in planning the health policies of the school and determining and implementing better health procedures.



**The Dietary of Health and Disease**, by GERTRUDE I. THOMAS. 4th ed., revised. Philadelphia: Lea & Febiger, 1945. Pp. 308, illustrated. \$3.50.

In the fourth edition of this practical and comprehensive book the author, Assistant Professor of Dietetics at the University of Minnesota, has incorporated recent findings from nutrition research and psychodietetics. Particularly valuable to the physician who must direct the dietaries of his patients are the chapters concerning the choice and preparation of food for patients suffering from various diseases.

**Brazil: Orchid of the Tropics**, by MULFORD B. and RACINE S. FOSTER. Lancaster, Pennsylvania: The Jacques Cattell Press, 1945. Pp. xi + 314, illustrated. \$3.00.

So delightfully do the naturalist-explorers, Mulford and Racine Foster, relate the story of their months of search and discovery in Brazil that one is transported from one's fireside to join this inspired and intrepid pair in their hunt for rare and new orchids, bromeliads, and cacti. The difficulties and dangers encountered during their 12,000-mile expedition from Bahia to Parana and through the interior of Matto Grosso to the Bolivian border make interesting reading.

Through mountainous rain forests, virgin jungle, deep swamps, and narrow rocky gorges lush with tropical vegetation they explored for new and undescribed bromels, those little known members of the pineapple family. Tons of new plants were collected and preserved for Harvard's Gray Herbarium, the Smithsonian Institution, the Museu Nacional in Brazil, and for the Fosters' own tropical garden in Florida. Over 40 new species of bromeliads were found.

In this pleasantly written narrative the Fosters describe many interesting incidents of their adventures. The hazards and hardships of travel over rough country by narrow-gauge railroad, truck, and horseback were but the prelude to miles, on foot, through uncut vine-entangled jungle. Extremes of daytime tropical heat and near zero temperatures at night; protection in a remote mountain monastery and scant shelter in a primitive frontier hut; monotonous diet of rice and beans, long periods of hunger, and gracious meals with hospitable friends: this was the pattern of life.

Fatigue, often pyramiding to the point of despair, was instantly dispelled by the enjoyment and thrill of discovery. New orchids, hummingbirds, blond monkeys, crying frogs, and sudden encounter with the poisonous snakes that live in leaf cups of bromels provided experiences running the entire gamut from delight to extreme danger.

This entertaining book is handsomely illustrated by 137 black and white photographs, 4 kodachromes, and 32 sketches by Mulford B. Foster.—MARJORIE T. BINGHAM, Cranbrook Institute of Science.

**Pictorial Handbook of Fracture Treatment**, by E. L. COMPERE, M.D., and S. W. BANKS, M.D.; Chicago: The Yearbook Publishers, Inc., 1943, 351 pages, \$4.25.

This is an interesting and useful book; excellent print, composition, well indexed and well illustrated. The discussion of the subject is divided into five parts: Part I, General Considerations of Treatment; Part II, Fractures and Dislocations of the Upper Extremity; Part III, Fractures and Dislocations of Lower Limbs; Part IV, Fractures and Dislocations of the Trunk; Part V, The Face and Skull. The subject matter in each chapter follows a specific line with illustrations clearly defining the matter in the text. Each chapter covers a subject in itself and there is very little duplication in discussing similar subjects. The illustrations, both line and reproductions of X-rays, clearly enumerate the situation which may be met by a practitioner. This book might well be on the desk of any practitioner. In some of the methods of treatment, the authors have carried the subject into a field where hospital treatment only could be advised. The volume as a whole would be of great aid to students and house officers.

## Deaths

### In Memoriam

DR. CHESTER A. STEWART  
1890-1946

The JOURNAL LANCET marks with regret the passing of DR. CHESTER ARTHUR STEWART, who had been a member of the Board of Editors of the Journal since its reorganization in 1929.

Dr. Stewart died on February 8, 1946, in New Orleans, of coronary disease. He had been working regularly until that day. Dr. Stewart had been chief of the department of pediatrics of the Louisiana State University School of Medicine since 1941. Until then he had been engaged in private practice in Minneapolis and was clinical professor of pediatrics at the University of Minnesota Medical School, of which he was a graduate. He was also a member of the staffs of Swedish, Abbott, and St. Barnabas hospitals. In 1934 Dr. Stewart was president of the Hennepin County Medical Society, and at the time he left Minnesota he was a member of the Council of the State Medical Association.

The JOURNAL LANCET plans to make the special pediatrics issue, to be published in May, a memorial to Dr. Stewart.

DR. CHARLES C. ALLEN, 60, of Austin, Minnesota, died February 20, 1946, in Austin, where he had been a physician and surgeon since 1912. He was past president of the Southern Minnesota Medical Society and Mower County Medical Society, and had served as city health officer and county physician.

Dr. George Edgar Armour, 65, died in January, 1946, at his home in St. Ignatius, Montana, following a paralytic stroke. Dr. Armour is remembered as the physician of Lambert, Montana, whose herculean efforts during the influenza epidemic of 1918 became legendary. During the worst part of the epidemic, it is reported, he tended patients for a period of five weeks without resting long enough to remove his clothes, and sleeping only as he drove from one house to another. Since 1925 Dr. Armour had been physician on the St. Ignatius Indian Reservation.

DR. HERBERT BURR BAILEY, 63, died February 11, 1946, at Fairmont, Minnesota, of a heart attack suffered the week before. Dr. Bailey was born in Jackson, Minnesota, the son of a pioneer family. After graduating from the medical school of the University of Minnesota he practised first in Ceylon, Minnesota, then in Fairmont.

DR. WILLIAM JAMES COCHRANE, 79, well-known physician of Lake City, Minnesota, died February 1, 1946, following a long illness. He was a graduate of the College of Physicians and Surgeons of Chicago (1895), and practised in Quincy, Illinois, until 1899, when he went

to Lake City. After serving as a captain in the Medical Corps in World War I he practised in Minneapolis for three years before returning to Lake City.

Dr. Cochrane was for many years on the board of Buena Vista Sanatorium, and for some years was president of the Lake City Hospital. Since 1901 he had been a surgeon for the Milwaukee Railroad. He was a past president of the Wabasha County Medical Society and a member of the Minnesota State Medical Association. Though he had retired some five years ago, Dr. Cochrane continued to assist in surgery and to take cases during the wartime shortage of physicians. He had been a member of both the Congregational Church and the Masonic Order for nearly half a century.

DR. HENRY OSWALD GRANGAARD, 64, of Jamestown, North Dakota, died February 10, 1946, of a heart ailment. Dr. Grangaard had been physician of the State Hospital at Jamestown for a year and a half. He had previously practised at Proctor, Minnesota, and then for many years at Ryder, North Dakota.

DR. WALTER DE WITT SHELDEN, 76, senior consultant in the section of neurology of the Mayo Foundation, died at Rochester, Minnesota, February 13, 1946. Dr. Shelden was a graduate of the University of Wisconsin and Rush Medical College, and before going to the Mayo Clinic in 1913 had been clinical professor of medicine at the University of Minnesota.

DR. WALTER L. VERCOE, 84, died January 30, 1946, at Deadwood, South Dakota, following a short illness. Dr. Vercoe practised in Deadwood as an eye and ear specialist for thirty years before his retirement in 1931, and since then had lived in Florida and in Hot Springs, South Dakota.

Dr. Vercoe was born in Australia on March 1, 1861, the son of an English missionary, and was educated in England. He came to America at the age of 22, studied medicine in Chicago, and began to practise in Deadwood in 1900. He was a member of the American College of Surgeons, the Black Hills District Medical Society, and the American Medical Association. He was a member of the State Board of Health for a number of years. He served as a representative from Lawrence County at the State Legislature, was an officer of the National Guard, and served on the Mexican border in 1915 and 1916.

Dr. Morton A. Seidenfeld has been appointed director of psychological services for the National Foundation for Infantile Paralysis. In cooperation with the medical director of the Foundation, he will inaugurate a research program on the psychological problems and needs of infantile paralysis patients and will develop a plan for their psychological treatment. His appointment, according to the president, Basil O'Connor, will add an important new sphere of activity to the medical program of the organization.

## News Items

### ANNUAL MEETINGS

The Montana State Medical Association will hold its annual session in Great Falls, July 18-20, inclusive. The House of Delegates meeting will be held the first day, and the following two days will be devoted to a scientific program.

The North Dakota State Medical Association will hold its annual meeting during the spring, in Bismarck, May 26-28, inclusive. The meeting will be for the entire membership. A feature of the program will be an open forum on medical care.

The South Dakota State Medical Association, according to present plans, will hold its 1946 convention in Aberdeen, June 1-4, inclusive. Councilors and officers will meet Saturday, June 1, and the House of Delegates on Sunday, June 2. The scientific sessions will be held Monday and Tuesday, June 3 and 4.

### NEWS FROM MINNESOTA

*University of Minnesota.* Dr. Donald Wilson Hastings, former chief psychiatrist of the Eighth Air Force in England, and later chief Air Force psychiatrist in Washington, has been appointed by the University of Minnesota Board of Regents as Professor and Head of the Department of Neuropsychiatry in the Medical School. Dr. Hastings will fill the vacancy left by the illness and resignation of Dr. J. Charnley McKinley.

Since his release from the Army in August 1945, Dr. Hastings has served as Professor of Psychiatry at the Women's Medical College in Philadelphia. Dr. Hastings received the M.A. (1932) and M.D. (1934) degrees from the University of Wisconsin and interned at Philadelphia General Hospital. He held a Rockefeller Fellowship in Psychiatry at the Pennsylvania Hospital and Institute for Nervous and Mental Diseases in 1936-38. He served as psychiatrist of the Students' Health Service of Harvard University in 1938-39, was Clinical Director of the Pennsylvania Hospital in 1939-42, and held an instructorship in psychiatry in Jefferson Medical College before his military service. He will assume his duties at the University of Minnesota March 16.

Dean Harold S. Diehl announces the appointment of Dr. Robert A. Aldrich and Dr. Clifford G. Grulee, Jr., to special teaching assistantships in pediatrics, and Dr. Charles U. Culmer to a similar post in surgery. Dr. Aldrich holds the B.A. degree from Amherst College and the M.D. degree from Northwestern University; Dr. Grulee the B.A. degree from Wayne University and the M.D. degree from Northwestern University; Dr. Culmer the M.D. and Ph.D. degrees from Northwestern University. The funds for the support of these special assistantships are provided by the Rockefeller Foundation, as part of its program to aid in the development of selected young men whose preparation for teaching and research posts was interrupted by mili-



tary service. Additional appointments are under consideration in surgery, neuropsychiatry, and in preventive medicine and public health.

The University of Minnesota School of Public Health is one of nine university schools accredited by the American Public Health Association to give the degree of Master of Public Health for the academic year 1946-47.

Four University of Minnesota men have been appointed by the National Research Council to help plan a research program for the American Cancer Society. They are Dr. John J. Bittner, director of the division of cancer biology at the University, named chairman of a research panel on the milk factor, to work in the division of biology; Dr. Robert Gladding Green, professor of bacteriology and immunology, named to the panel on virus, division of biology; Dr. C. P. Oliver, associate professor of genetics, named to the panel on human genetics, division of biology; and Dr. Harland G. Wood, associate in physiology, named to the panel on isotopes, division of physics. As members of a national planning body of 91 men, they will direct work aimed at the conquest of cancer.

Under the plan described in our February issue, intended to improve medical care and expand the staff at the Minneapolis Veterans Hospital, nine more Twin Cities physicians have been added to the staff upon recommendation of the Dean's Committee, bringing the total to 22 consultants and seven ward physicians.

Dr. Charles Germo, after fifty years of active practice, was honored by the community of Balaton, Minnesota, upon his retirement in February 1946. Dr. Germo is a graduate of the University of Minnesota Medical School, class of 1895. The *Balaton Tribune* of February 7, 1946, pays tribute to the civic and business leadership of Dr. Germo, as well as his professional service. A testimonial banquet honoring Dr. Germo was held February 8.

"Fifty years of service in one community is a record that few businesses achieve," the *Minnesota Mascot* comments. "When it is accomplished by a 'horse and buggy doctor' it is well nigh a miracle. The rigors of country practice are severe. . . . Our Dr. Germo, blessed with a rugged physique, has weathered half a century of strain and stress incidental to looking after the health needs of our people, and it is indeed fitting and proper that we who have been beneficiaries of his work should honor him and his wife on the occasion of their retirement."

Dr. William A. O'Brien, director of postgraduate medical education at the University of Minnesota, speaking at a conference on rural medicine at the Center for Continuation Study, suggested that "adult specialists" be developed by the medical profession to care for the greater number of persons who will be seeking expert medical care, as a parallel to the child specialists. It is Dr. O'Brien's opinion that medical practice during the war gave a great impetus to the development of small groups of doctors practising together in small towns, and that the trend is likely to continue in the postwar years. The three-day course in rural medical problems

was given for a group of 25 community health leaders from small towns in Minnesota.

Dr. W. L. Burnap, Fergus Falls, attended the National Conference on Medical Services in Chicago in February.

Dr. Olle Friberg of Stockholm, who came to this country for training in anesthesiology, observed at the University Hospitals, Minneapolis, and the Mayo Clinic in mid-February. He will return to Sweden in April.

Lt. Col. W. R. Schmidt, Worthington, now on terminal leave, has been made a Fellow of the American College of Surgeons.

The third eye health clinic in a county-wide survey of school children was held at Forest Lake in February under the auspices of the Minnesota Society for the Prevention of Blindness. More than 700 children were given preliminary tests by the Society's nurse. Parents of children showing defective vision are notified and asked to send the children to the center, where eye specialists of the University of Minnesota make follow-up examinations. The physician then recommends needed treatment in a report the parents may give to the family doctor. The Washington County Medical Society and school officials are cooperating with the program.

The Minneapolis Academy of Medicine held a dinner meeting at the Minneapolis Club on February 18. Dr. John F. Pohl spoke on "The Effect of Prostigmine in Cerebral Palsy," and Dr. Willis H. Thompson on "Hereditary Retinoblastoma." A business meeting and election of officers followed.

The Minnesota Pathological Society met Tuesday, February 19, at the University of Minnesota medical science amphitheater to hear Dr. A. B. Baker and Dr. H. H. Noran speak on "Pneumonia Encephalitis and Its Relation to the Blood-clotting Mechanism" and Dr. W. P. Larson on "A Study of the Properties of Lung Extracts."

Dr. E. L. Tuohy, Duluth, speaking on "Future Medicine" before the Kiwanis Club, estimated at about 10 per cent the proportion of the nation's doctors who favor the proposed federal health scheme.

The first permanent diphtheria clinic in Minneapolis has been opened at the public health center, and will be held for an hour every Saturday morning. The clinic will be under the direction of Dr. Alex Berger, and physicians will be supplied through the Hennepin County Medical Society.

Dr. G. A. Knutson, recently returned from military service, has taken over the practice of the late Dr. A. W. Shaleen at Hallock. His coming will offer welcome relief to Dr. Anthony Berlin, who has been the only physician in Kittson County since the death of Dr. Shaleen, and has also been called to points in Pembina and Roseau counties.

The community of Berlin village has honored with a testimonial banquet the founder of its community hospital, Ida Marie Thiel, who organized the Thiel Hospital in 1923. During its 22 years the hospital has had 9424 patients, and 1690 babies have been born in the hospital.

Dr. Harry E. Caldwell has assumed charge of the Veterans' Hospital in Minneapolis.

The Nicollet Clinic, Minneapolis, announces the return from military service of Dr. Gordon G. Bowers and Dr. Ray F. Cochrane, and their association with the clinic. Also resuming practice after military service: Dr. Paul C. Benton, Gibbon; Dr. M. P. Viring, Wells.

Dr. F. E. De Godoy Moreira of Sao Paulo, Brazil, spent a week at the Mayo Clinic recently as part of an extensive tour of American hospitals and medical institutions, to observe techniques of orthopedic surgery. "The purpose of my visit," he said in an interview, "is to see the development of new things, to enjoy an interchange of ideas, and to develop friendship and cooperation between the doctors of this country and those of my country, in the interest of the improvement of scientific information."

### NEWS FROM MONTANA

Dr. H. E. Mortensbak, after two years at New Ulm, Minnesota, has located at Great Falls, where he has taken over the practice of Dr. C. E. Anderson, who has retired.

Dr. Charles R. Lyons, formerly of Parker, Indiana, has located in Drummond, in western Montana. Dr. Lyons, a graduate of Ohio State University Medical School in 1941, will be Drummond's first physician in two years.

*Resuming practice after service:* Dr. M. L. Fisher, Hardin; Dr. C. J. Bresee, Great Falls; Dr. Raymond Polk, formerly of Memphis, Tennessee, in Miles City; Dr. R. Lawrence Casebeer, Butte.

A committee of county and city officials and representatives of medical and dental associations and school districts is studying the advisability of merging county, city, and school district health offices into a full-time, over-all health department in Billings.

The Yellowstone Valley Medical Society will sponsor in May its first state-wide spring clinic since prewar years.

Dr. W. F. Hamilton, Havre, has been appointed county health officer of Hill County by the board of county commissioners.

Dr. D. C. Epler, formerly of Williston, North Dakota, and now on terminal leave from the Army Medical Corps, has begun practice in Bozeman.

The Kalispell General Hospital has elected Dr. H. D. Huggins as president of its medical staff; Dr. J. A. Brassett, vice president; Dr. R. L. Towne, secretary-treasurer.

Dr. Cecil M. Hall has returned to the eye, ear, nose, and throat department of the Great Falls Clinic, following his release from the Army Medical Corps as a major. He was stationed for a time near Salisbury, England, and attended several meetings of sections of the Royal College of Surgeons.

Dr. F. H. Crago has also returned to the Great Falls Clinic as internist after more than five years of service, during which he became group surgeon for the 14th fighter group of the Air Force in Italy.

Dr. Mary E. Martin of Chicago has been appointed director of clinical laboratories at St. Vincent Hospital, Billings.

### NEWS FROM NORTH DAKOTA

Dr. L. J. Alger of Grand Forks attended the Mid-Winter Post-Graduate Clinical Convention in Los Angeles, California, in January. He solved the transportation problem by flying his own Stinson Voyager to Los Angeles.

At Grand Forks school health clinics are being organized and conducted by the two city nurses under the direction of Dr. Louis B. Silverman, city health officer, with the assistance of local physicians, nurses' aides, and P.T.A. members. Dr. Silverman, who has returned from two years' service with the Army Medical Corps, has been appointed city health officer, succeeding Dr. T. Q. Benson, who remains county health officer. Dr. Silverman was formerly assistant professor of medicine at the University of North Dakota.

Dr. John E. Ruud of Grand Forks is now associated with the Doctors Fawcett at Devils Lake in the practice of general medicine. Dr. Ruud interned at St. Barnabas Hospital, Minneapolis.

Dr. Thomas M. Cable, formerly of Cleveland, Ohio, has started practice in Hillsboro following discharge from military service. His wife is a native North Dakotan.

Dr. Robert Blatherwick, after service in the Army Medical Corps, is associated with his father, Dr. W. E. Blatherwick, at Parshall, in the practice of medicine.

Dr. H. G. Cleary, who has returned from duty with the Army Medical Corps, has been appointed physician at the Sharon Community Hospital.

Lakota, county seat of Nelson County, is advertising for a physician to locate there. According to the *Fordville Tri-County Sun* there is no practising physician in Nelson County, one of the larger counties of North Dakota.

Plans have been completed for the construction of the Johnson Clinic at Rugby, where Drs. O. W. Johnson, C. G. Johnson, William Fox, and Ted Keller will be associated. Construction is expected to start in May.

*Resuming practice in North Dakota:* Dr. Charles B. Darner, Fargo Clinic, after serving at Saipan, Tinian, and Iwo Jima, and in Japan; Dr. E. K. Ingebrigtsen, Moorhead Clinic; Dr. James R. Dillard, Fargo, after two years in the Pacific area with the Army Medical Corps.

### NEWS FROM SOUTH DAKOTA

Officers and councilors of the South Dakota State Medical Association held a meeting at the Marvin Hughitt Hotel, Huron, Sunday, January 27, with all officers and a majority of the councilors present. In addition, Dr. Gilbert Cottam and Dr. A. Triolo of the State Board of Health, Pierre, Mr. Karl Goldsmith, Pierre, legal adviser of the Association, and Dr. G. T. Jordan, Dean J. C. Ohlmacher, and President I. D. Weeks, all of the University of South Dakota, also attended.



Dr. M. W. Larson, Watertown, was elected to fill the unexpired term of Dr. H. R. Brown as Councilor of the Watertown District. Dr. Brown is now Vice President. Reports of various conferences attended by the officers in Chicago, St. Paul, and St. Louis, were given by Drs. Duncan, Robbins, Brown, and Mayer. Dr. N. J. Nessa, Delegate, reported upon the House of Delegates session of the American Medical Association. Plans for the four-year medical school for the University of South Dakota were presented by President I. D. Weeks and Dean J. C. Ohlmacher.

Dr. Nelius J. Nessa of Sioux Falls announces the association of Dr. Donald H. Breit in the practice of radiology in the Sioux Falls Clinic. Dr. Breit was formerly at the University of Nebraska.

Dr. E. T. Plowman has left with his family from Marble, Minnesota, where he has been associated with the Mesaba Clinic for ten years, to become associated with a Brookings, South Dakota, clinic.

Dr. R. E. Jernstrom of Rapid City announces the association of Dr. John W. Erickson in a new medical partnership. Dr. Erickson practised in Minneapolis and Jackson, Minnesota, before joining the Army in late 1939, and is now on terminal leave as a lieutenant colonel.

Dr. Gordon S. Owen of Rapid City, who has recently returned from service, has been appointed temporary acting director of the Pennington County Health Department, succeeding Dr. I. H. Mauss, by Dr. Gilbert Cottam.

The recently organized Memorial Hospital Association of Canova is looking for a physician to reopen the Canova Hospital, closed since the death of Dr. Madsen two years ago.

Dr. John E. Dunn, formerly of Groton, has joined the medical staff of Battle Mountain Veterans Facility, succeeding Dr. Jack Dworin.

Dr. George T. Jordan, eye, ear, nose, and throat specialist of the staff of Loyola University, and practising physician in Chicago, has been added to the staff of the University of South Dakota Medical School, which will begin operation on a four-year basis in September. Dr. Jordan is a Fellow of the American College of Surgeons and the American Medical Association and a senior member of the American Academy of Ophthalmology and Otolaryngology.

Dr. L. G. Leraan, Sioux Falls, has been appointed county physician of Minnehaha County, succeeding Dr. J. A. Kittleson.

Dr. Harold P. Adams of Huron has resumed his duties in surgery at Huron Clinic and Sprague Hospital after 42 months in the Army Medical Corps, 14 of them overseas.

Dr. W. A. Delaney, Jr., of Mitchell, has resumed medical practice with his father after 22 months of service with the Navy in the Pacific.

Dr. B. R. Skogmo, formerly of Watertown, is now associated with Dr. J. M. Butler, a contributor to the

January *JOURNAL LANCET*, in the Black Hills Clinic at Hot Springs, South Dakota.

Dr. Kurt Tauber has left the state hospital at Yankton for Wagner, South Dakota, where he will be associated with Dr. Thomas A. Duggan.

The Fourth District Medical Society, meeting at Pierre on January 25, heard a discussion of a proposal from the Farm Security Administration for a full coverage surgical, medical, and hospitalization plan to apply to all rural families regardless of income and to all urban families with incomes of less than \$3,000 a year. The newly elected officers of the society are Dr. O. A. Kimble, Murdo, president; Dr. Gilbert Cottam, Pierre, vice president; Dr. M. M. Morrissey, Pierre, secretary-treasurer; Dr. C. E. Robbins, Pierre, councillor; and Dr. Morrissey, delegate to the state convention.

The Third District Medical Society of South Dakota held their regular quarterly meeting at the Bates Hotel, Brookings, in late February. Members, the Ladies' Auxiliary, and guests met at 6:30 for dinner, with a scientific program following. The guest speaker was Dr. Jan H. Tillisch of the Mayo Clinic, who presented a lantern-slide illustrated lecture on "Advances in Medicine in World War II." He elaborated on the diagnosis and treatment of rheumatic fever and infectious hepatitis. Indications and contraindications for the transportation of various types of patients by air were also discussed at length. The next meeting of the society will be held in Madison, South Dakota, at a time to be announced later.

The Black Hills (Ninth) District Medical society met at Homestake Hospital, Lead, on February 21, for a program including the presentation of the following papers: Dr. P. P. Ewald, "Remarks on the Rh Factor"; Dr. C. A. Søe, "Experiences in a Base Hospital in the Pacific"; and Dr. H. E. Davidson, "Some U. S. Army Methods of Treating Tropical Diseases."

### NEWS OF HOSPITALS

Into the *JOURNAL LANCET* office during the past month has come news of increasing activity on the hospital front.

At the University of Minnesota institute on rural medicine, the superintendent of University Hospitals, Ray M. Amberg, pointed out that six Minnesota counties have no hospitals, and that the only way to build the needed hospitals in the northern part of the state is through government subsidy. The \$1,600,000 that would be allocated to Minnesota for this purpose, for five years, under the Hill-Burton bill is only a fraction of the amount needed, Mr. Amberg said, since present construction plans call for the expenditure of between \$40 million and \$50 million. Careful study, planning, and legislation will be required, he stated, to build facilities in rural areas which will attract competent doctors.

Addressing the same group, Dr. William A. O'Brien, director of postgraduate medical education at the University, pointed out the need for training general practitioners to serve the rural areas and to replace the older

men who "grew up with medicine." At a time when the trend is overwhelmingly toward specialization, he said, the matter is an important one, because the small hospitals that will be built in rural areas will call primarily for general medical men, not specialists.

Karlstad, Minnesota, a community of 700 people on the northern border, which at present has no resident doctor, has organized to provide itself with medical and hospital facilities. It is looking for a "young physician with a penchant for conducting a country doctor type of practice." Following the organization in December 1944 of the Karlstad Memorial Fund Foundation, which had 25 group members by the end of 1945, the community has collected a total of \$9,600 in its hospital fund drive. Several committees are at work clearing the way for construction of a modern, community-financed hospital, on which building is expected to begin soon. The doctor Karlstad seeks would have control of this hospital. Work to complete incorporation of the hospital is under way.

Wesley Hospital, Wadena, Minnesota, reports a total of 1974 patients and 415 births in 1945.

Dr. O. F. Mellby has been re-elected president of the Oakland Park Sanatorium near Thief River Falls, which is owned and maintained jointly by four counties—Roseau, Marshall, Pennington, and Red Lake. Dr. Mellby has been president of the commission for more than 25 years.

St. Barnabas Hospital, Minneapolis, has named Dr. Miland E. Knapp, assistant clinical professor of physical medicine at the University of Minnesota and president of the American Congress of Physical Medicine, chief of staff for 1946. Dr. Joseph P. Spano, recently returned from service, is the new vice chairman; Dr. William E. Proffitt, secretary; Dr. H. D. Giessner, executive committee member. Dr. Carl O. Rice, retiring chief of staff, also becomes a member of the executive committee.

St. Mary's Hospital, Duluth, has named Dr. J. E. Power chief of staff; Dr. A. J. Spang, staff secretary; Dr. L. R. Gowan, chief of staff elect; Dr. Frank Cole, chief of anesthesiology; Dr. J. A. Winter, eye, ear, nose, and throat; Dr. Richard Bardon, medicine; Dr. R. J. Moe, obstetrics; Dr. M. H. Tibbetts, orthopedics; and Dr. M. A. Nicholson, chief of urology. Department heads renamed include Dr. E. L. Tuohy, laboratory; Dr. C. W. Taylor, contagion; Dr. L. E. Schneider, neurology; Dr. R. E. Nutting, pediatrics; and Dr. F. J. Elias, surgery.

In Montana hospital administrators, trustees, and supervisors met in Helena late in January for a two-day session of the governor's hospital survey committee and the annual meeting of the Blue Cross Hospital Service Association of Montana. Chairman Milo Dean of the steering committee reported to the hospital survey com-

mittee, which has been studying the state's hospital needs since July 1945. Systematic relationships between large and small hospitals must be developed, he said, so that rural centers may benefit from the research and scientific knowledge gained in larger centers.

Fully a dozen communities in Montana are planning new hospitals largely based on their own needs and resources, with little thought of whether their hospital will integrate its services into the larger plan, according to the chairman, who is administrator of the Montana Deaconess Hospital in Great Falls. An integrated plan would work to the benefit of all. "Unfortunately," said Mr. Dean, "there is no universally applicable plan for accomplishing this integration. This is the purpose of our hospital survey."

Dr. Carl F. Kraenzel of Montana State College, Bozeman, reported that Montana now has 69 hospitals, with 6.9 beds for every 1000 persons. Proposed additions to hospital facilities would bring the ratio up to 10.2 beds per thousand. Dr. Kraenzel proposed division of the state into 13 public health program areas in relation to trade regions, type of farming areas, existing and proposed transportation facilities, geographic barriers, and other factors. The coordinated plan proposed includes health centers, rural hospitals to serve as a mediary between health center and district hospitals, and district hospitals, where major surgery and various specialties would be available.

In North Dakota, hospitals approved by the American College of Surgeons in its 28th Hospital Standardization Survey include: Bismarck, Evangelical and St. Alexius; Devils Lake, General; Dickinson, St. Joseph's; Fargo, St. John's and St. Luke's; Grand Forks, Deaconess and St. Michael's; Jamestown, North Dakota State, Trinity, and Jamestown; Minot, St. Joseph's and Trinity; Rugby, Good Samaritan; San Haven, North Dakota State Tuberculosis Sanatorium; Valley City, Mercy; Williston, Good Samaritan and Mercy. Provisionally approved: Bottineau, St. Andrew's; Grafton, Deaconess; Langdon, Mercy.

Hazen, North Dakota, which has raised funds for a new hospital, has been granted its request for a hospital to be established by the Lutheran Hospitals and Homes Society of America, which met for a two-day quarterly meeting in Fargo in January.

Westhope, North Dakota, has conducted a campaign to raise \$60,000 to build and equip a 22-room hospital in Westhope. A charter has been secured for the Westhope Memorial Hospital. The Lutheran Hospitals and Homes Society has been asked to take over management of the new hospital. A large area is expected to benefit from the proposed hospital.

A charter has been granted to the Memorial Health Center of De Smet, South Dakota, a nonprofit clinic and hospital corporation.



The Kingsbury County Hospital, Lake Preston, South Dakota, has been incorporated in articles filed with the secretary of state.

Huron, South Dakota, has raised more than half the funds required for the construction of a Lutheran Memorial Hospital, and construction will begin as soon as materials and labor are available.

### State Licensing of General Hospitals Proposed

To protect the public and hospitals themselves from poor services and inadequate facilities, state licensing of all general hospitals was proposed to officers of hospital organizations by Dr. Charles Wilinsky, administrator of Beth Israel Hospital in Boston and chairman of the American Hospital Association's Committee on Model Licensure Law. Representing hospitals in the United States and Canada, through state, regional, and provincial hospital associations, the group met February 8 and 9 to discuss problems and exchange ideas in the Mid-Year Conference of the Association in Chicago's Drake Hotel.

"Ten states now have licensing laws for general hospitals," stated Dr. Wilinsky. "Six failed to pass similar laws in 1945. In many states, under prevailing conditions, almost any institution offering bed care may term itself a 'hospital'. The American Hospital Association, by formulating a model bill incorporating the best features of many laws now in force, hopes to encourage the adoption of general hospital licensing laws in all states. Such laws, to be effective, must be accompanied by a provision for adequate funds to provide regular hospital inspection by a competent staff of state or hospital personnel."

The care of veterans in community hospitals was voted all possible cooperation by the group. "Already several hundred hospitals in the nation have contracted with the Veterans Administration to care for male veterans with service-connected disabilities and for female veterans," said John N. Hatfield of Philadelphia, chairman of the Council on Government Relations.

To facilitate immediate care for these men and women in their own communities and to ease the load on veterans' hospitals, the Association has agreed to furnish as many as 20,000 civilian hospital beds by September 1946. A resolution was passed approving the principle of utilizing an intermediary agency to handle the fiscal relationships between the Administration and the hospital rendering the service. The Michigan Hospital Service (Blue Cross) is performing this service in that state.

Resolutions proposing that hospitals make staff positions available to returning veteran physicians as soon as possible, and urging the continued service of volunteers in civilian hospitals in view of sustained nursing shortages, were passed by the group.

Employee pension plans, nurse relations, and the expansion of medical and Blue Cross voluntary prepayment plans were discussed among hospital and hospital association problems and progress.

### Commission on Hospital Care Report

Expansion of services of the large general hospital to include tuberculosis and nervous and mental care may well take place in the future, suggested Arthur C. Bachmeyer, M.D., at the Mid-Year Conference February 8 and 9 of the American Hospital Association. The director of study of the Commission on Hospital Care, an independent public service committee studying hospital facilities in the United States and initiated by the Association, Dr. Bachmeyer spoke before officers of hospital organizations of the United States and Canada.

Discussions of the relation of the general hospital to all types of health care bring the following considerations to the fore, Dr. Bachmeyer, told the conferees:

The advisability of constructing new tuberculosis facilities adjacent to and operated in conjunction with large general hospitals.

The provision of facilities in large general hospitals for diagnosis of nervous and mental patients, and for treatment of those patients not in need of long-term institutional care.

The feasibility of expanding the functions of special communicable disease hospitals now operated by cities, towns, and villages to include all types of illness.

Other proposals related to the group by Dr. Bachmeyer were: the possibility of the maintenance of nursing schools by large institutions only, which would affiliate for rural hospital experience with hospitals in smaller communities; improved hospital care for Negroes; and the computation of the need for hospital beds in local or state-wide areas based upon the ratio between the death rate and the days of hospital care.

"Action on state surveys of hospital facilities has now been taken in every state and in the District of Columbia," he said. "Thirty-one surveys are now actually in progress.

"Because developments have come rapidly, the Commission feels that it can complete its work by October 1, 1946, the termination date of the original two-year allotted period," stated Dr. Bachmeyer.

It is expected that the Commission's report will be published shortly thereafter.

### The Care of Communicable Disease: As It Developed\*

The plague, leprosy, and typhus were the fearful enemies of the public health which all through early periods of history focused attention upon the need for rigid control of those who were infected with contagious disease. But because of ignorance of the causes of these illnesses and the assumption that the afflicted were being punished by divine dictate, the adopted method was complete isolation of infected sections of communities, whole cities, and sometimes wide geographic areas. Unfortunate victims were left to live or die according to the pleasure of the Gods.

The advent of Christianity changed these conditions. The adherents to this new, compassionate religion accepted the responsibility of visiting the sick and ministering

to their needs. Food and shelter were provided for the stricken and the destitute. Through observation by those who tended these unfortunates, the communicable nature of their illnesses soon became apparent. Lacking effective methods of treatment, isolation hospitals were set apart from cities and from avenues of traffic. Most of these isolation units were temporary buildings which were abandoned or destroyed as soon as the "scourge" had passed. They were then re-established in new locations when the need arose again.

There was no differentiation of the various diseases in these isolation units. Even in the relatively few continuously operated hostels, all types of patients were admitted.

Late in the nineteenth century, Koch, Pasteur, and their contemporaries demonstrated the relation of bacteria to the cause and spread of contagious diseases. The communicable nature of many illnesses was recognized, but methods of transmission were debated. The lack of full understanding of the nature of disease and the manner in which it spread led to renewed emphasis upon the need for isolating patients afflicted with communicable diseases.

Scientists then engaged in a long period of controversy over the relative merits of the theories of air-borne versus contact methods of the transmission of infection.

During this period of development in the science of bacteriology, contagious disease patients again had been isolated, usually in separate buildings, from those with other illnesses. They provided much of the clinical ma-

terial from which the present techniques for the control of contagion were evolved. Earlier it had been observed that a person suffering with a contagious disease was a source of infection for others. It now was discovered that the establishment of a barrier around the infected person, across which no contaminated articles were passed, would interrupt the transmission of infection.

Methods of treatment, organization of procedures, and training of personnel, supplementary to those considered necessary for the care of ordinary illness, were established in communicable disease hospitals. The development of these techniques, the trend toward specialization in medical practice, the differentiation between communicable and noncommunicable disease, and placement of emphasis upon public health programs, which included public support for the maintenance of institutions designed to improve or protect public health, influenced the construction of special contagious disease hospitals financed from tax funds or operated with subsidies from public resources.

Thus from the beginning of organized care for illness, when contagious disease patients were outcasts of society, and through periods when they were housed in temporary isolation units, then admitted to general hospitals and later treated in separate contagious disease hospitals, we have come to a time in the development of medical science when methods for the care of this type of patient are again being revised.

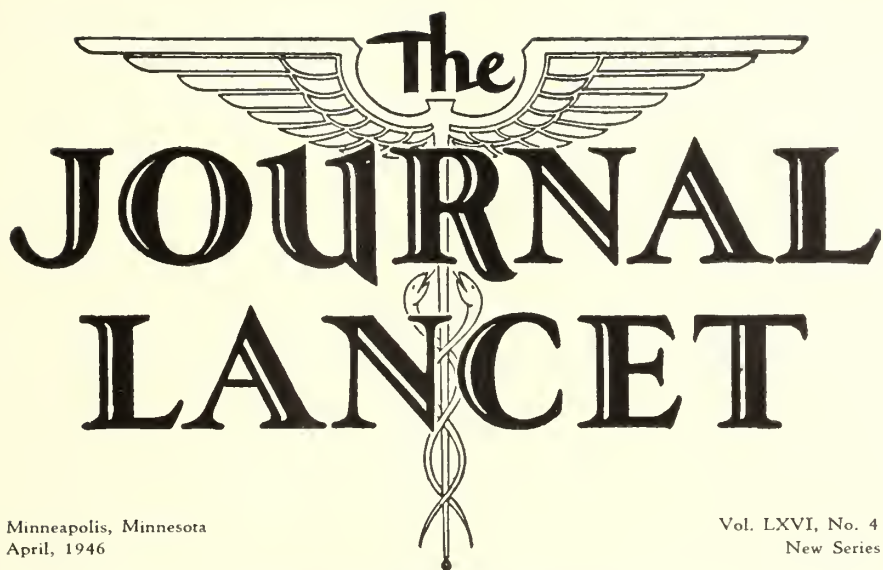
\*From the *Hospital Survey News Letter*, January 1946.

## COLLEGES IN NEED OF PHYSICIANS

*The American Student Health Association directs attention to the following colleges and universities in need of physicians.*

| COLLEGE OR UNIVERSITY                                      | PERSON IN CHARGE                                | POSITION                                         |
|------------------------------------------------------------|-------------------------------------------------|--------------------------------------------------|
| Pennsylvania State College, State College, Pennsylvania    | J. P. Ritenour, M.D.                            | Man assistant                                    |
| University of Maine, Orono, Maine                          | Joseph M. Murray,<br>Health Service Committee   | Director                                         |
| University of Alabama, University, Alabama                 | Noble B. Hendrix,<br>Dean of Students           | Director                                         |
| Alabama Polytechnic Institute, Auburn, Alabama             | J. W. Dennis, M.D.                              | Full-time woman physician                        |
| University of Florida, Gainesville, Florida                | Embree R. Rose, M.D.                            | Associate in Department,<br>salary \$5000 a year |
| University of New Hampshire, Durham, New Hampshire         | President Fred Engelhardt                       | Man physician                                    |
| University of Michigan, Ann Arbor, Michigan                | Warren Forsythe, M.D.                           | Woman physician                                  |
| State University of Iowa, Iowa City, Iowa                  | C. I. Miller, M.D.                              | Man physician                                    |
| Iowa State College, Ames, Iowa                             | J. A. Grant, M.D.                               | ?                                                |
| State College of Washington, Pullman, Washington           | President E. O. Holland                         | Assistant physician                              |
| Ohio University, Athens, Ohio                              | E. H. Hudson, M.D.                              | Assistant physician                              |
| Union College, Schenectady, New York                       | President Benjamin P. Whitaker                  | Physician                                        |
| Lehigh University, Bethlehem, Pennsylvania                 | President Clement C. Williams                   | Assistant director                               |
| University of Missouri, Columbia, Missouri                 | Dan G. Stine, M.D.                              | Young woman physician                            |
| Northern Illinois State Teachers College, DeKalb, Illinois | President Karl L. Adams                         | Man physician                                    |
| University of Nebraska, Lincoln 8, Nebraska                | L. E. Means, M.D.                               | Staff technician                                 |
| Michigan State College, East Lansing, Michigan             | C. F. Holland, M.D.                             | 1 man physician, 1 woman physician               |
| New York State Teachers College, Cortland, New York        | President Donnal V. Smith                       | Director                                         |
| Colorado State College of Education, Greeley, Colorado     | President George W. Frasier                     | 1 man physician, 1 woman physician               |
| University of Illinois, Urbana, Illinois                   | J. Howard Beard, M.D.                           | 2 women physicians, 1 man physician              |
| Montana State University, Missoula, Montana                | Donald M. Hetler,<br>Chairman, Health Committee | 1 man physician with<br>training in psychiatry   |
| University of Wisconsin, Madison 6, Wisconsin              | Annette C. Washburne, M.D.                      | 2 assistant physicians                           |
| University of Wyoming, Laramie, Wyoming                    | President G. D. Humphrey                        | Man physician                                    |





# The JOURNAL LANCET

Minneapolis, Minnesota  
April, 1946

Vol. LXVI, No. 4  
New Series

SPECIAL TUBERCULOSIS NUMBER  
Jay Arthur Myers, M.D., Editor

## Tuberculosis and War

Kendall Emerson, M.D.

Managing Director, National Tuberculosis Association

New York City

In this country the dreaded postwar upturn in tuberculosis mortality has not occurred. The estimated rate for 1945 is well below that of the previous year. Several reasons may be cited for this happy circumstance, among them the inclusion of chest X-rays in examination of recruits for the armed forces. From this procedure a threefold benefit accrued: contact infection among the fighting men was noticeably reduced; many early cases found, though unfortunately not all, sought proper treatment; and, perhaps most significant of all, there was wide educational value in this huge example of the mass X-ray process itself.

The public was not slow to grasp the diagnostic importance of chest X-rays for the apparently healthy. The facts revealed at induction centers called physicians' attention anew to their obligation to discover and treat tuberculosis in its incipient, symptomless stage.

Fifty years ago Dr. Fitz at Harvard taught that in no baffling case could differential diagnosis be called complete till tuberculosis had been ruled out. Today the general practitioner has the means, denied to earlier physicians, for carrying out this teaching, namely, the tuberculin test and the X-ray.

Finally, it must be borne in mind that mortality and infection rates are not the same. The decline in infection rates lags far behind. A large residual pool of potential infection still remains, against which the public can be protected only by discovery and adequate treatment of the potential spreader in his nonbacillary period.

# The Relationship of Tuberculosis and Silicosis

O. A. Sander, M.D., F.A.C.P.

Milwaukee, Wisconsin

IT has long been recognized that the tuberculosis death rate among industrial workers exposed to siliceous dusts exceeds that of the population as a whole. This influence of silica on the susceptibility of tissues to infection by the tubercle bacillus has been shown both pathologically by extensive animal experimentation and clinically by numerous industrial surveys. Dusts that are low in free silica, such as hematite, marble, gypsum, limestone, and coal, have no such effect. As the free silica ( $\text{SiO}_2$ ) content in dusts increases, however, as with granite, chalcedony, and quartz, so also does the tuberculosis morbidity and mortality increase, approximately in direct proportion with the silica.

Explanations for this apparently specific effect of silica have interested certain groups of tuberculosis workers and pathologists for the past twenty to twenty-five years, notably Gardner and his co-workers at the Saranac Laboratory for the Study of Tuberculosis, Kettle in England, and the Banting Institute in Canada. An evaluation of their work requires an understanding of the early pathogenesis of both silicosis and tuberculosis and the numerous points of similarity. Both become established by way of inhalation of silica particles or tubercle bacilli into the lung alveoli, and both bring into play the same defense mechanism to rid the lungs of the foreign material. Both are ingested by endothelial cells or phagocytes, which carry them through the alveolar walls into the lymphatic channels, whence they are transported to the lymph glands at the root of the lung. Here the early tissue response is entirely similar for both, since fibroblasts form around them to wall them off.

It has been shown by Fallon that the action on the phagocytic cell of both tubercle bacilli and silica particles liberates toxic phospholipids, and that these substances are responsible for the further proliferation of fibroblastic cells, resulting in granulomatous nodules. (While interesting, this observation never has been substantiated.) With the tubercle bacillus, the resulting fibrotic nodules are called "tubercles"; with the silica particle, they once were known as "pseudo-tubercles," so similar is their early histologic appearance.

Some authorities, in fact, have felt that silicosis could not develop in a nontuberculous lung and that the silicotic nodule always is a silicotic tubercle. The French investigator Policard was the principal advocate of this theory, but it has had little support elsewhere. Extensive animal and clinical investigation has definitely established the fact that silicosis can develop in lungs that have never been the seat of tubercle formation. Both types of nodules, therefore, the silicotic and the tubercle, may become localized in the same lymph gland and may develop side by side.

Because of this close proximity of the silicotic and tuberculous reaction in lymphatic tissues, the maximal

opportunity exists for the silica effect on tubercle bacilli. Price showed that when silica was added to the artificial culture medium a more luxuriant growth of tubercle bacilli resulted. Neither Gardner nor Kettle could consistently verify this *in vitro* observation. Kettle demonstrated that subcutaneous lesions due to the presence of silica are favorable foci for the localization and proliferation of intravenously injected bacilli. Such proliferation did not occur in necrotic areas produced by such irritating agents as turpentine and calcium chloride. Using the same method, Vorwald and Landau showed that the injection of nonsiliceous dusts caused no unusual multiplication of bacilli. Gardner has demonstrated repeatedly that the intravenous injection of human bacilli of low virulence into silicotic rabbits causes progressive tuberculosis, whereas the same strain of bacilli injected into nonsilicotic animals causes no progressive disease.

All these observations tend to prove the specificity of the silica reaction, which appears to furnish a medium in which tubercle bacilli multiply with increased rapidity. Gardner believes that, not the silica itself, but chemical products liberated by the action of silica on the tissues, are the stimulating factor. He bases this belief on the presence of large numbers of bacilli in fresh necrotic silicotic foci and their paucity in silicotic lesions that are old and without degenerative changes. The precise factor remains to be demonstrated and is the object of much continued investigation.

Were this stimulating or activating effect the only factor in the relationship between silicosis and tuberculosis, all cases in which they are combined in the same lung would be of the rapidly fatal phthisis-florida type of "galloping consumption." Only rarely, however, is this the situation with silico-tuberculosis. Clinically, it is the most chronic type of tuberculosis one sees, with dense overgrowth of fibrous tissues. The fibrosis produced by the silica appears to fortify that laid down by the tuberculosis to such a degree that a dense fibrotic barrier is set up between the viable bacilli and the rest of the lung. So effective is this barrier that clinical evidence of activity of the tuberculous focus is often entirely lacking for many years. Because toxic products from the bacilli fail to get into the blood stream, even the tuberculo-allergy may become depressed. Because of decreased blood and lymph supply to the tuberculous focus and the low oxygen tension in the sequestered area, the bacilli are scarcely able to maintain themselves. They may lie completely dormant for many years, and in some cases for a lifetime. With such individuals the silicosis may even have been beneficial in prolonging life or saving the life of one who would have developed an earlier progressive tuberculosis.

Unfortunately, in the majority of such cases silica-laden phagocytes eventually filter into the caseous area



and produce further silica reaction. The dormant but viable bacilli in turn are stimulated to multiply and the silico-tuberculous lesion is stimulated to proliferate and spread. This process may continue very slowly for many years, still without clinical evidence of active infection. Eventually, however, enough of the proliferating bacilli may work their way out to the surface of the lesion, there to multiply more rapidly and spread to other areas of the lung. Bacilli now will be found in the sputum for the first time, and the clinical symptoms of active tuberculous disease will develop.

#### MODE OF ONSET

Although this is the usual result of the close proximity of the silicotic and tuberculous reaction in the same lung, clinically many cases do not fit this pattern. The end picture depends to a considerable degree on the condition of the lungs at the time dusting begins, as well as on the time the reinfection tuberculous infiltration occurs as related to the dusting. Four main possibilities are recognized:

1. An active or quiescent tuberculous lesion already present in a lung before silica invades these organs. (a) Primary infection focus in the lung parenchyma or regional lymph nodes, or both. (b) Reinfection tuberculous lesion in the lung parenchyma, usually in the apices of the upper or lower lobes.

2. Invasion of the lungs by tubercle bacilli and free silica particles, more or less at the same time.

3. Obsolete and well calcified sterile tuberculous scar or scars in the lung parenchyma or lymph nodes before silica invades the lungs.

4. Invasion of the lungs by tubercle bacilli after a nodular silicosis is already present, either primary or reinfection.

The first two possibilities could be grouped together, because both follow more or less the same pattern, depending largely on the amount of dust inhaled, its content of free silica, and the relative amount and type of the nonsiliceous components. Assuming for the moment that the dust is almost entirely free silica, in particle sizes less than 5 micra in diameter, and in sufficient quantity to produce a nodular silicosis in a few years, its original effect appears to be to aid nature by accumulating in excessive quantities around the tuberculous tissue and building around it a dense wall of fibrosis.

From then on the clinical course of most of these cases becomes chronic. The disease does not become manifest for many years, often not until the sixth or seventh decade, and sometimes never.

This typical progressive combined lesion is usually referred to in this country as silico-tuberculosis, but is known as tuberculo-silicosis to the South African investigators. This unfortunate difference in terminology has resulted in some confusion, but its use has become so well fixed in America that the term "silico-tuberculosis" is used throughout this review for the progressive combined lesion.

Not all cases become chronic, however, because when the preceding tuberculous lesion is quite extensive or the invasion of bacilli massive, extension and excavation may occur before any significant fibrotic barrier has had time

to develop. That such cases are in the minority is shown by the relatively few active tuberculosis cases found in the early age groups in surveys of dusty trades, as compared with the numerous chronic fibrotic cases. In other words, these clinical surveys have shown that the increased incidence of tuberculosis in the silica dusty trades is confined to the group with associated silicosis. Ordinary uncomplicated tuberculosis has been shown to be no more prevalent in these trades than in trades involving no silica exposure. Dust exposure must have been long enough and intense enough to develop a recognizable silicosis before an associated tuberculosis can be said to have resulted from the dust exposure.

Cases of silico-tuberculosis confined to the regional lymph nodes at the roots of the lungs are relatively uncommon. The author has observed two cases of acute miliary tuberculosis in which post-mortem studies revealed that the only caseous foci to be found were in the root glands, which also were silicotic. One of these workers was 69 and the other 60 years of age at death. The only logical explanation was that the accumulating silicosis in the root glands had kept alive a pre-existing primary tuberculous infection in these glands. The lungs themselves had shown only a slight amount of nodular silicosis before the hematogenous spread of tubercle bacilli late in life from the infected glands.

One wonders, as a matter of fact, why these combined lesions in the root glands are not a common finding. It is in these glands that both the silicotic reaction and tubercle formation occur first, giving the maximal opportunity for intimate association of tubercle bacilli and silicotic tissue reaction. The fact that this is one of the rarest forms of silico-tuberculosis suggests that the primary infection in these glands dies out as calcium deposits develop, and the glands have become sterile in most cases by the time silicosis occurs in adult life. This observation bears out the finding of Feldman and Baggenstoss that viable tubercle bacilli are found only rarely in the calcified root glands of adults.

When the silica content of inhaled dust is low and the nonsiliceous components high, the stimulating factor on tuberculous tissue is lessened and the resulting combined lesion has a lesser tendency to progress. The inhaled dust has the same tendency, however, to accumulate in excessive amounts around the tuberculous lesions and there add to the fibrosis laid down by the tubercle bacilli. If the amount of infection was slight, it may completely die out, leaving nothing but a dense overgrowth of fibrotic tissue.

This finding is characteristic with soft coal miners, post-mortem studies of whom often show dense fibrotic and contracted upper lobes with secondary emphysema below. Microscopic tissue studies frequently show no remnants of the previous tuberculous tissue within the fibrotic areas. Iron miners whose dust exposures were relatively low in silica have shown similar lesions. The fact that the fibrotic areas are usually in the upper lobes strongly suggests their tuberculous origin, even though such an origin cannot be proved in all cases. In cases in which the pre-existing tuberculosis was more extensive or where the new infiltration is considerable, the inhaled

low-silica dust may have no significant effect in localizing the infection. In that event the tuberculosis will develop exactly as though no dust were being inhaled.

With the third possibility for mode of onset, in which silicosis develops in lungs with old and well healed tuberculous scars, there is the same tendency for the silica particles to accumulate in excessive amounts around the scars. However, since the obsolete scars are no longer stimulating the development of more fibrous tissue, only silicotic nodules develop in such areas. The fibrosis therefore becomes massive only when the individual nodules begin to conglomerate by encroachment on one another. Such conglomerate fibrosis is never as massive as when the tuberculous infection is also laying down fibrosis, although it may become quite dense when the silica inhalation is excessive. The author has seen several such cases develop, in which there was also a compensatory emphysema below the dense fibrotic lesions. Because the tuberculous scars are sterile, there is no sequestered tuberculous infection, and hence no progressive silico-tuberculosis results.

It has been argued by some, notably the Sea View Hospital investigators, that such fibrotic lesions should not be referred to as "silico-tuberculosis" because of the absence of tuberculous disease. They believe that this condition should be called "third-stage silicosis" or "massive conglomerate silicosis," because silicotic fibrosis is the only pathological tissue involved, except for the calcified tuberculous scars. These scars, they believe, have no connection whatever with the type of fibrosis that results.

There is reason to believe, however, that the scars were a factor in the excessive localization of silica, since classical silicosis, in the absence of previously damaged areas of the lung, develops as a more or less uniform distribution of nodules throughout both lungs. Interference with lymphatic flow in the region of the scars appears to be a logical explanation for the excessive deposit of silica around such damaged areas. It has been suggested that the term "tuberculo-silicosis" may be properly applied to such lesions, because it gives recognition to the probable mode of onset and still emphasizes that the lesion is primarily silicosis.

The fourth possible combination of silicosis and tuberculosis is one in which the lungs are invaded by tubercle bacilli after a nodular silicosis has already developed. If the number of bacilli in the invasion are relatively few, they may localize exactly as they would in a nonsilicotic lung, in the upper lobes with a reinfection infiltration or anywhere in the lung if the infiltration is primary. The resulting lesion may be no different than in a nonsilicotic lung if the bacilli are not localized adjacent to silicotic tissue. However, if silica inhalation continues after the invasion of the tubercle bacilli a chronic silico-tuberculous lesion may result, exactly as described above. Occasionally the rapidly progressive perinodular type of silico-tuberculosis results, owing, possibly, to overwhelming invasions of bacilli. Tuberculous granulation tissue seems to develop on the surface of the silicotic nodules, and a relatively rapid multiplication of bacilli and spread of the infection result. Such cases are relatively uncommon, however, probably because few workers have

developed a nodular silicosis before age 50 and primary or first reinfection infiltrations of tubercle bacilli are rare after age 50.

#### SYMPTOMATOLOGY

The typical case of chronic silico-tuberculosis often remains entirely free from symptoms for many years, except for varying degrees of dyspnea, depending on the extent of the dense fibrosis and the resulting compensatory emphysema. Small areas of conglomerate fibrosis, however, may be no more disabling than a discrete nodular silicosis, which does not usually cause any significant dyspnea until it is well advanced. At what point dyspnea becomes manifest in the development of a silico-tuberculosis varies considerably with different individuals, and depends largely on the coexistent development of emphysema, as well as on the status of the cardiovascular-renal system. If the associated emphysema was due to causes other than the developing silico-tuberculosis, and was already present when the latter developed, as with a long-standing asthma, dyspnea may become severe relatively early. The same is true for a pre-existing heart disease or a progressive arteriosclerotic heart disease. In evaluating the disability of a well developed case of silico-tuberculosis for medico-legal purposes, these other causes of dyspnea must be considered along with the lung pathology. At times the dissociation of the non-occupational causes from the occupational is most difficult.

The symptoms and signs of active tuberculosis may be absent for many years. When the cough becomes productive and loss of weight is apparent we may suspect that tubercle bacilli have made their way to the surface of the chronic lesion, where their multiplication and eventual spread occur.

#### DIAGNOSIS

When a worker who gives a history of significant silica exposure is found to have a massive fibrotic lesion, as seen on his chest X-ray film, the usual follow-up tests are indicated to determine whether tubercle bacilli are being liberated into the bronchial tree. Repeated sputum tests are necessary, and several gastric analyses are advisable if the sputum remains negative. It is often helpful to determine whether a cavity is present in the center of the dense fibrosis, by means of an overpenetrated or Bucky film. The presence of a significant cavity usually, but not always, means an active focus of tuberculosis. In the absence of any tuberculous tissue, extremely dense fibrotic areas may occasionally become necrotic, owing to deprivation of blood supply. Such nontuberculous or ischemic cavities are not uncommon, but usually do not attain any great size.

A blood sedimentation test may be helpful in the differential diagnosis. A normal sedimentation rate usually indicates that the fibrotic lesion is not harboring necrotic tuberculous tissue. However, this result does not rule out a dormant tuberculous infection, which makes this test most useful for periodic observations of such a case. When a previously normal sedimentation rate suddenly increases, one must be suspicious of a threatening breakthrough and spread of the infection, even though no change has been observed on the periodic chest films.



A tuberculin test is not as helpful as one might expect in differentiating the infected and noninfected case. The tuberculo-allergy has been observed to become definitely depressed in cases where the fibrotic wall around a silico-tuberculous lesion is extremely dense, doubtless because of the decreased absorption of toxic material from the infected area. However, reactions are usually obtained with larger doses of tuberculin, and this test is recommended as a routine procedure when there is doubt about the presence of an associated tuberculosis in a case of conglomerate silicosis.

Even when all clinical and laboratory signs indicate an absence of active tuberculous disease, it is not safe to conclude that one is dealing with a nontuberculous conglomerate silicosis. In some cases only by periodic observations for evidence of spread of infection is it possible to differentiate the infected from the non-infected. In some instances the tuberculous disease is so completely isolated that some pathologically active cases escape detection until the post-mortem studies are made. From a practical point of view it is safer to assume that a dense fibrotic lesion is infected, for then the affected worker is offered more frequent observations. Too often in such cases the worker has been assured that the disease is pure silicosis, only to be discovered later with far advanced open tuberculosis. In the meantime he may have disseminated countless numbers of bacilli in his daily contacts, owing to carelessness that might have been avoided had he been warned that he might in future develop an open tuberculous lesion.

#### MANAGEMENT OF CASES

A true understanding of the relationship of silicosis and tuberculosis is of great practical importance to all physicians dealing with these problems. It is not enough to determine the current clinical inactivity of a silico-tuberculous lesion and then dismiss the patient. Each case must be carefully analyzed and evaluated. The physician must attempt to ascertain the rate of development of the present pathology (by consulting previous films if available); to determine the exact silicosis hazard of the worker's job; and to predict the future course of the lung pathology.

Obviously, if the worker's job involves considerable silica exposure a shift to a dust-free or silica-free job is advisable, unless adequate protection from further silica inhalation can be given. An estimate of present disability, if any, must also be made, so that the work will not be too great a strain physically.

Since disabling silicosis or silico-tuberculosis is compensable in states that have occupational disease laws, compensation is due such a worker when he is no longer able to carry on with his regular job or a similar one because of the lung pathology. Before he is advised to discontinue his work altogether, a very careful analysis of all associated factors is necessary, including an evaluation of his possible mental reaction to complete dissociation from his life's work. In most cases it is better to keep these clinically inactive employees at their regular

occupations if possible, or to shift them to more sedentary and less dusty jobs for the same employer. Such a course necessitates frequent periodic observations, in order to detect the development of clinical activity of the tuberculosis as early as possible.

The management of the case with threatening development of clinical activity is often very difficult. At what point to advise that work be discontinued and sanatorium care started cannot be defined accurately. In general the determining factor must be the type and extent of the lung pathology. If there is definite hope of arresting the progress of a spreading infection by sanatorium care, then every effort should be made to convince the affected worker that he will be benefited by quitting his work and starting treatment.

On the other hand, if the silico-tuberculous fibrosis is extensive and little hope can be held out for stopping its continued progress, the worker should be kept on a sedentary and dust-free job and examined frequently for evidence of clinical activity. No one wishes to deprive a wage earner of his job when there is doubt that bed rest and other modern methods of treatment will be at all effective in altering the future course of the disease. These decisions require all the clinical acumen and intelligent handling that can be mustered, and each case must be dealt with individually.

It seems too obvious to mention at all that clinically active cases with tubercle bacilli in their sputum must be removed from their work as soon as discovered and placed in a sanatorium if possible. Yet everyone dealing with these problems has met with cases where the infected wage earner flatly refuses to leave his work. Such cases must be turned over to the public health authorities for disposition. Where the public health regulations are lax and the laws have no teeth in them, these cases sometimes become a most difficult problem. Usually, however, a clear-cut explanation of the situation suffices, particularly when the wage earner is assured that he will be given a job after the disease is arrested.

While it is generally agreed that the treatment of active silico-tuberculosis is not too effective or satisfactory, occasional cases have shown surprising results. Where the silicosis is early and the tuberculous lesion relatively recent, even collapse therapy has been effective in some cases.

The author has under observation a number of silicotic foundry workers who made a satisfactory arrest of their tuberculosis and who are working daily in departments where they no longer are exposed to dust and where the work is not too arduous. Experience has shown that it is safer to offer an optimistic prognosis and attempt treatment, even when the chances of obtaining a favorable result do not appear too bright. With a true understanding of the relationship between silicosis and tuberculosis, and with close medical supervision and intelligent handling of cases when they arise, at least some of these unfortunate individuals may be rehabilitated to a useful life.

# Histoplasmin Skin Sensitivity and Pulmonary Calcifications

## A Review

Herbert L. Mantz, M.D.

Kansas City, Missouri

**C**ALCIUM deposits in the lungs are the end result of necrotizing lesions. They are to be found in the parenchyma, the pleura, and especially in the lymph nodes of the lung and the mediastinum. The tubercle bacillus has been considered the most common necrotizing agent, and with few exceptions calcium deposits found in the pulmonary structures have been attributed to tuberculous infection.

Because of the work of Myers, Hetherington, McPhedran, and many others the tuberculin test came to the number one position as a case finding weapon. The reliability of this test was hardly questioned until a few years ago, when, as X-ray studies became more numerous, films were made of nonreactors as well as reactors, and the efficiency of the tuberculin test was questioned.

It is necessary to mention only a few of these tuberculin-X-ray studies. Nelson, Mitchel, and Brown<sup>11</sup> found many patients with manifest calcium deposits to be nonreactors to tuberculin. Crimm and Short,<sup>2,3</sup> in a series of 1384 nonreactors, found 191 to have calcium deposits. The most striking surveys were made in Tennessee, where Gass and his co-workers<sup>8</sup> found 39.4 per cent of tuberculin reactors and 46.2 per cent of nonreactors to have calcium deposits.

Such reports were so positive and conclusive that some workers accepted the findings and concluded that in many persons there is an early loss of sensitivity to tuberculin. Dearing,<sup>5</sup> from the results of his study in which he found 35.4 per cent calcium in tuberculin reactors and 34.2 per cent in nonreactors, concluded that the single dose Mantoux testing is reasonably efficient, but the X-ray is the basic tool in case finding.

In this controversy the tuberculin test had its followers. The test was found to be positive in almost all cases in which a definite diagnosis of tuberculosis could be made, i.e., by the demonstration of tubercle bacilli. Douglas<sup>6</sup> and his group in Detroit found the test efficient in practical case finding. Furculow *et al.*<sup>7</sup> in their studies found that the tuberculin test was very reliable and that very few active cases of the disease would be missed by the use of a relatively small dose of tuberculin. Dahlstrom<sup>4</sup> reported that most cases positive to low doses of tuberculin did not lose their sensitivity.

We can sum up these studies as follows: Reliable reports show that almost all cases of tuberculosis react to tuberculin. A large number of young people who have calcifications fail to react to tuberculin. Thus the question arose as to whether the lesions producing calcium in nonreactors were tuberculous.

In 1939 Long<sup>9</sup> stated: "However, there is still room to doubt that all of the lesions commonly diagnosed as

calcified nodules of primary tuberculosis are really tuberculous. In a community where calcifications are present in half of the adolescent population, it is pertinent to inquire if there could be any other cause than tuberculosis for the calcifications."

Several studies have sought causes for calcifications other than tuberculosis. Aronson *et al.*,<sup>1</sup> who tested a group of Indians with tuberculin and coccidioidin, concluded that coccidioidomycosis was a common source of calcifications in the area in which it was endemic. If this disease produced calcium in the Southwest, why could not it, or some other fungus, produce the calcifications found in the midwestern area? Some tests with coccidioidin have been made in the Midwest, and from them it appears extremely unlikely that coccidioidomycosis is a source of calcium in this area.

The study of minimal tuberculous lesions in nurses gave Carroll Palmer an opportunity to attempt an answer to this question. This study has been in progress over three years, and approximately ten thousand nurses in 65 schools located in widely separated metropolitan centers have been under close observation. Tuberculin tests and 14 x 17-inch X-ray films of all students, both tuberculin reactors and nonreactors, were made at six-month intervals. The tuberculin used was PPD, and the dose was 0.0001 mg. Reactions with induration or edema measuring 5 mm. or more in diameter 48 hours after infection were considered positive. The results of this study bring out the geographical difference in calcium deposition and also demonstrate that this calcium does not correspond to the incidence of tuberculosis infection.<sup>13</sup>

To demonstrate further the difference in calcium deposits and tuberculin sensitivity, the results in Kansas City and Minneapolis are shown. In approximately equal numbers of nurses the percentages of tuberculin reactors are almost identical. However, the percentage with calcium deposits in Kansas City is over ten times as great. There must be something besides tuberculosis to produce this difference.

Smith<sup>14</sup> had stated that this area of high calcification in tuberculin-negative persons was the endemic area of histoplasmosis. Christie,<sup>12</sup> who had made some studies in Tennessee, thought that histoplasmosis or a similar closely related infection, which may be the cause of pulmonary calcifications, is common in this locality.

With these leads, Palmer tested nurses in Detroit, Minneapolis, St. Paul, Columbus, the two Kansas Cities, New Orleans, Philadelphia, and Baltimore, with the results shown in Table 1.



TABLE 1  
Showing Pulmonary Calcifications among Histoplasmin  
and Tuberculin Reactors

| City                  | Histo-<br>plasmin<br>Reactors | Pulmonary<br>Calcifica-<br>tions | Tuberculin<br>Reactors | Number<br>Tested |
|-----------------------|-------------------------------|----------------------------------|------------------------|------------------|
| Kansas City, Missouri | 65.8                          | 23.7                             | 14.2                   | 646              |
| Columbus              | 59.9                          | 19.3                             | 14.1                   | 700              |
| Kansas City, Kansas   | 54.0                          | 20.7                             | 18.8                   | 213              |
| Baltimore             | 27.0                          | 10.9                             | 17.8                   | 926              |
| New Orleans           | 26.1                          | 6.4                              | 16.3                   | 498              |
| Detroit               | 14.4                          | 7.4                              | 15.1                   | 623              |
| Philadelphia          | 14.0                          | 7.1                              | 20.9                   | 772              |
| Minneapolis           | 6.4                           | 2.4                              | 12.0                   | 1018             |

These data do not represent a true geographical distribution, because though most students attend schools close to their homes, some come from other areas.

The most striking evidence comes from a study of the nurses with pulmonary calcifications. Of 5396 nurses tested, 590 had demonstrable calcific deposits. Table 2 shows the number and percentage of tuberculin and histoplasmin reactions among nurses having pulmonary calcifications.

TABLE 2  
Tuberculin and Histoplasmin Reactions among Nurses  
Having Pulmonary Calcifications

|                                           | Percent-<br>age | Number |
|-------------------------------------------|-----------------|--------|
| Tuberculin positive-Histoplasmin positive | 14.1            | 83     |
| Tuberculin positive-Histoplasmin doubtful | 2.1             | 12     |
| Tuberculin positive-Histoplasmin negative | 9.2             | 54     |
| Subtotal (all tuberculin positive)        | 25.3            | 149    |
| Tuberculin negative-Histoplasmin positive | 66.8            | 394    |
| Tuberculin negative-Histoplasmin doubtful | 2.2             | 13     |
| Tuberculin negative-Histoplasmin negative | 5.8             | 34     |
| Subtotal (all tuberculin negative)        | 74.7            | 441    |
| Total                                     | 100.0           | 590    |

Among those having calcium a much higher proportion reacted to histoplasmin than to tuberculin. In fact, 9.2 per cent reacted only to tuberculin and 66.8 per cent reacted only to histoplasmin. These data exclude doubtful reactors. Given a case of calcium in this area, it is more likely to react to histoplasmin than to tuberculin. Especially interesting is the small number with calcium who were nonreactors to both tuberculin and histoplasmin. This number becomes more significant when we consider the numbers tested, as shown in Table 3.

TABLE 3  
Percentage and Number of Student Nurses Having Pulmonary  
Calcifications according to Tuberculin and  
Histoplasmin Reactions

| Skin reactions                            | Percentage<br>with cal-<br>cifications | Number<br>tested |
|-------------------------------------------|----------------------------------------|------------------|
| Tuberculin positive-Histoplasmin positive | 34.5                                   | 275              |
| Tuberculin positive-Histoplasmin negative | 10.2                                   | 528              |
| Tuberculin negative-Histoplasmin positive | 30.9                                   | 1317             |
| Tuberculin negative-Histoplasmin negative | 1.0                                    | 3276             |

Only 1 per cent of 3276 nurses negative to both tests had calcium. This percentage is statistically rather insignificant and could be accounted for by many variables. Apparently histoplasmin and tuberculin skin reactions will screen out almost all persons in this area who have pulmonary calcifications.

Histoplasmosis, or infection with *Histoplasma capsulatum*, was first described by Darling in 1906. Two excellent discussions of the disease in recent literature are found in "Histoplasmosis in Man," by Parsons and Zarafonitis (*Archives of Internal Medicine*, January 1945) and in *Manual of Clinical Mycology*, by Conant et al. (Saunders, 1945).

The disease occurs at all ages. It attacks the reticulo-endothelial system primarily, and pulmonary lesions are common. The diseases to be differentiated most frequently are tuberculosis, Hodgkin's disease, aleukemic leukemia, and malignant neoplasm. Successful antemortem diagnosis has been most frequently provided by histologic examinations of biopsy material. Cultures from blood and biopsy material have been successful in several instances. It is necessary for cultures to grow a considerable length of time, i.e., two to four weeks. The yeast or parasitic form is the one found. On culture it will revert to the mycelial form, but on proper culture the yeast form can be maintained. Some cases of the disease have terminated fatally.

The history of coccidioidomycosis, and, for that matter, of tuberculosis, reminds us that at one time these diseases were considered almost universally fatal. Further studies showed that there was practically universal infection in the endemic areas, but that the proportion of death to infection was relatively low. Smith<sup>14</sup> states that not over one in 500 to 1000 cases of coccidioidomycosis becomes disseminated.

By analogy with these two diseases it is not too unreasonable to postulate that histoplasmosis may be a similar infection, with a widespread mild primary phase and only an occasional fatal progressive termination. If this disease does occur in a subclinical form it becomes necessary to know how infection occurs, the nature of the precalcific lesion, and the usual course. Studies intended to clarify these points are now in progress.

Before any histoplasmin tests were done, routine X-rays were made of 2500 Kansas City school children. Three months later histoplasmin and tuberculin (PPD) tests were made on a considerable number of this group. The results of this study are shown in Table 4.

TABLE 4  
Histoplasmin and Tuberculin Reactions and Calcifications  
in 2500 Kansas City School Children

|                       | Tuberculin<br>reactors<br>(Per Cent) | Histoplasmin<br>reactors<br>(Per Cent) | Calcifi-<br>cations<br>(Per Cent) |
|-----------------------|--------------------------------------|----------------------------------------|-----------------------------------|
| Kindergarten children |                                      |                                        |                                   |
| White                 | 3.5                                  | 20                                     | 3                                 |
| Colored               | 6.5                                  | —                                      | —                                 |
| Junior high school    |                                      |                                        |                                   |
| White                 | 14                                   | 50                                     | 17                                |
| Colored               | 30                                   | —                                      | —                                 |
| Senior high school    | —                                    | 60                                     | —                                 |

This is a rather rough estimation. At present a more extensive survey, including some 15,000 school children, is under way. From this study more information should be obtained.

From the number tested and inspected by X-ray to date many have been selected for follow-up. There are many with soft parenchymal shadows and hilar node involvement who do not react to tuberculin. These have much the appearance of primary tuberculosis lesions. Such cases are being followed with serial films. A laboratory has been set up for pathological and bacteriological studies. We have every reason to believe that the stage of calcification is the end result of this disease, and if the organism is to be demonstrated it will be found at the time soft lesions are seen. These cases are apparently asymptomatic, or the symptoms and signs are such that they have been attributed to some of the many common childhood infections.

The work to date rests solely on the acceptance of the specificity of the histoplasmin reaction, for which indirect evidence has been obtained. With this evidence Palmer<sup>12</sup> concluded:

1. That mild, probably subclinical, infection with *Histoplasma capsulatum* (or an immunologically related organism) is widely prevalent in certain states and relatively infrequent in others.
2. That, in general, those states in which the frequency of reactions to histoplasmin is high are those in which pulmonary calcifications are also high.
3. That a very high proportion of the pulmonary calcifications observed in roentgenograms of tuberculin-negative persons are due, not to tuberculosis, but probably to histoplasmosis.

We may conclude from the present evidence that the tuberculin test is a more accurate index of tuberculous infection than the X-ray film, thus reversing often expressed ideas.

#### REFERENCES

1. Aronson, J. D., and others: Relationship of Coccidioidomycosis to Calcified Pulmonary Nodules. *Arch. Path.*, 34: 31, 1942.
2. Crimm, Paul D., and others: Tuberculin Tests and Roentgenograms. *Am. Rev. Tuberc.*, 42: 203, 1940.
3. Crimm, Paul D., and Short, Darwin M.: Tuberculin Anergy in Cases with Pulmonary Calcifications. *Am. Rev. Tuberc.*, 39:64, 1939.
4. Dahlstrom, A. W.: The Instability of the Tuberculin Reaction. *Am. Rev. Tuberc.*, 42: 471, 1940.
5. Dearing, Palmer: Tuberculin and X-ray Survey. *Am. Rev. Tuberc.*, 40: 640, 1939.
6. Douglas, Bruce: X-ray Findings in Tuberculin Reactors and Nonreactors. *Am. Rev. Tuberc.*, 40: 621, 1939.
7. Furculow, Michael N., and others: Quantitative Studies of the Tuberculin Reaction. *Public Health Repts.*, 56: 1082-1100, 1941.
8. Gass, R. S., Gauld, R. L., Harrison, E. F., Stewart, H. C., and Williams, W. C.: Tuberculosis Studies in Tennessee. *Am. Rev. Tuberc.*, 38: 441, 1938.
9. Long, Esmond R.: Editorial. *Am. Rev. Tuberc.*, 40: 607, 1939.
10. Long, E. R., and Stearns, W. H.: Physical Examination at Induction. *Radiology*, 41: 144, 1943.
11. Nelson, Waldo E., Mitchell, A. Graeme, and Brown, Estelle: The Intra Cutaneous Tuberculin Reaction Associated with Calcified Intra Thoracic Lesions. *Am. Rev. Tuberc.*, 37: 311, 1938.
12. Palmer, Carroll E.: Nontuberculous Pulmonary Calcification and Sensitivity to Histoplasmin. *Public Health Repts.*, 60: 513, 1945.
13. Palmer, Carroll E., and Furculow, Michael N.: Unpublished charts and reports.
14. Smith, E. C.: Coccidioidomycosis. *M. Clin. North America*, 27, 790, 1943.
15. Zwerling, Henry B.: Unpublished report.

### PENICILLIN SUPPLY MAY BE DOUBLED BY DEVELOPMENT OF NEW STRAIN OF MOLD

Research workers at the University of Wisconsin have developed a new strain of mold which opens the possibility of doubling the nation's supply of penicillin. The feat was accomplished by two botanists, Myron P. Backus and John F. Stauffer, who exposed the spores of the penicillin-producing mold to powerful ultraviolet rays. Such rays cause changes, unpredictable and incompletely understood, in the genes of spores and seeds, with resultant changes in the characteristics of the plants or fungi springing from them.

The new strain, known as Q176, has not been patented, and soil cultures of it are therefore being supplied gratis on request to penicillin manufacturers in this country and in England, France, China, and other countries, and many are already using it in their fermentation tanks.

The news is of special importance in view of the fact that demand for penicillin has increased far beyond the enormous production built up in the last three years by American scientists and drug manufacturers. Because of the acute shortage penicillin was recently returned to an allocation basis by the government.

American production in December 1945 was 700 billion units, or something over 1000 pounds of the powdered sodium form of the pure chemical, but it was still short of demand for human use in this country by at least 100 billion units. Demand also is rising rapidly for veterinary use in the United States, while the need of the rest of the world is just beginning to manifest itself. Wisconsin's Q176 is considered to be a major step forward in bringing supply into line with the increasing need.

The hunt for a still more efficient penicillin producer is still on, despite the possibility that chemical synthesis of penicillin might render the world free of dependence on natural production.



# Tuberculosis Control Depends Upon the Practicing Physician

L. L. Collins, M.D.

Ottawa, Illinois

**A**LTHOUGH there has been for nearly one hundred fifty years a very effective means of preventing smallpox and for nearly fifty years an effective means of preventing diphtheria, neither of these diseases has been eradicated. However, both diseases are under control, if by control we mean low morbidity and mortality rates.

These diseases were brought under control only after the practicing physician became interested and actually participated in the immunization programs, as is evidenced by the fact that there are many people today who refuse to be immunized or to have their children immunized against these diseases because the type of doctor to whom they go advises against it.

The success or failure of a health program depends largely upon the attitude of the practicing physician toward it. No health program can succeed if it is opposed by him, and its success is assured if he co-operates and participates in it.

We possess all the knowledge we need to control tuberculosis. It has long been recognized that it could be controlled if all cases were found while in the minimal or early stage. The national, state, and county tuberculosis associations have emphasized the importance of early diagnosis and have conducted special early diagnosis campaigns since 1928.

Various procedures for obtaining an early diagnosis have been advocated. They include radio talks, movies, posters, pamphlets, talks to civic groups, tuberculin testing surveys, and, more recently, mass X-ray surveys. All these procedures, or combinations of them, have been found disappointing unless the practicing physician co-operated and participated. The high percentage of cases of advanced tuberculosis still being discovered is evidence of this failure.

This fact has been recognized by many leaders in tuberculosis work.

Dr. Edward Livingston Trudeau, in an address to the National Tuberculosis Association in 1905, stated: "Early detection of the disease is the first requisite for success in its treatment. On the general practitioner and the dispensary physician rests the great responsibility of detecting the disease in its incipiency, for it is to them and not the specialist that the patient first applies."

Dr. J. A. Myers wrote in 1926: "There is no part of tuberculosis work that has been so overlooked as that carried on in the physician's office. Here is where the bulk of diagnostic work has always been done and where it must continue to be done."

Dr. Osler said, in a last word message to the general practitioner on the subject of tuberculosis, "The leader-

ship of the battle against this scourge is in your hands."

Dr. Albert Daniels of California reported in 1938: "Thirty per cent of the population consult some doctor for some complaint during the year. If all private physicians would be on the alert for tuberculosis a complete survey of the population would be made every three years. This policy would result in the finding of the majority of tuberculosis cases while the disease was still in the early stages."

Studies made at the Chicago Municipal Tuberculosis Sanitarium and by Dr. Douglas of Detroit revealed that 65 to 70 per cent of the persons newly diagnosed as having tuberculosis were first seen by the private physician. In smaller communities, without the excellent facilities and the highly trained personnel for diagnosing tuberculosis that these cities have, the percentage of cases diagnosed by the private physician is much greater.

The control of tuberculosis depends on finding cases while they are still in the early stages, and it is evident that to do so we must have the co-operation of practicing physicians.

Experience in Detroit proved this beyond question. When special emphasis was made upon getting the participation of the practicing physician, the percentage of minimal cases diagnosed increased from 17 to 27 within the first year, and the death rate decreased 11.4 per hundred thousand. When the program was discontinued the percentage of minimal cases diagnosed promptly decreased.

Our own experience also indicates what can be expected from a program in which the practicing physician participates. On January 1, 1938, a program to control tuberculosis was started in De Kalb County, which has a population of 35,000. The importance of the interest and co-operation of practicing physicians for the success of the program was fully appreciated, and their participation was enlisted. All the doctors participated in the surveys made throughout the county.

Tuberculin was furnished the doctors, and they were urged to test all their patients and to make X-ray inspections of the chests of all reactors. Clinics were set up at the sanatorium as a consultation service to the doctors. No patient was accepted except at the request of the practicing physicians, and a report on each examination made at the clinic was sent to the doctor referring the case. X-ray film and fluoroscopic inspections and laboratory work were free to both doctor and patient.

This type of program has had excellent results. The co-operation and participation of the practicing physicians are excellent. The effectiveness of this kind of program can be judged by the results.

Remarks as retiring president of the Mississippi Valley Trudeau Society at the annual banquet, October 9, 1945, held at the Edgewater Beach Hotel, Chicago.

The percentage of minimal cases discovered each year has varied between 45 and 70 per cent. The number of deaths from tuberculosis decreased from an average of 15 per year to two in 1940, two years after inauguration of the program. In no year since 1940 have deaths exceeded three.

There are now 11 patients under treatment at the sanatorium. There is only one patient in the county with a diagnosis of active tuberculosis who is not in the sanatorium. His sputum is negative and he co-operates fully with the clinic. The percentage of tuberculin reactors in the high school groups has steadily decreased.

In September 1938 a similar program was introduced in La Salle County, which has a population of 100,000. Here the co-operation and participation of the doctors are equally good, and the results obtained are just as encouraging. The percentage of minimal cases discovered each year has varied between 37 and 50 per cent. Deaths from tuberculosis dropped from 48 in 1938 to 10 in 1942, and in the past three years there has been an average of 12 deaths from pulmonary tuberculosis per year. The incidence of active tuberculosis has likewise decreased. As of October 1, 1945, we had 32 patients in the sanatorium under treatment and three patients under treatment elsewhere. There are six patients with known active tuberculosis who refuse sanatorium care.

In two high schools in La Salle County, each with an enrollment of approximately one thousand students, one school had 94 per cent and the other 98 per cent of the students examined for tuberculosis last year.

The co-operation of the doctor assures the co-operation of the public.

A most important phase of our program is the use we make of the tuberculin test. It was interesting to note that the doctors did not become interested in the program, nor did they tuberculin test their private patients, until they had experience of tuberculin testing in a survey. There is a very small group of doctors in La Salle County who have not had an opportunity to participate in a tuberculin testing program. Some of these doctors have had the experience of treating a patient for a considerable period of time before it was discovered that the patient had far advanced pulmonary tuberculosis. No doctor has had this embarrassing experience after he has participated in a tuberculin testing survey.

Tuberculin testing in a survey makes the doctor tuber-

culosis minded. A tuberculosis-minded doctor does not overlook a case of active tuberculosis. In our program the use of the tuberculin test was the most effective factor in obtaining the co-operation and participation of the practicing physician. The educational value of the tuberculin test to both patient and doctor cannot be overemphasized. The greater the number of practicing physicians instructed in the use and value of the tuberculin test, the greater will be the number of people tuberculin tested, and the more tuberculosis minded will be both the physician and the people of the community. And a community in which the practicing physician and the people are tuberculosis minded will soon have tuberculosis under control, for examinations for tuberculosis will be made on a larger scale and a high percentage of new cases will be discovered in the early stages.

The tuberculin test should be a part of these examinations, for otherwise a diagnosis of tuberculosis is sure to be made in error. Such an error is not only unfair to the patient; it will also react unfavorably toward the tuberculosis program. Of the 159 Army rejectees for tuberculosis I examined in the three counties, 46 were found to be nonreactors to tuberculin. Subsequent examinations established that these men did not have tuberculosis. A simple tuberculin test would have avoided this mistake.

These cases illustrate the importance of the tuberculin test as a diagnostic aid and demonstrate the errors that will occur if the diagnosis is made from an X-ray film alone.

Tuberculosis surveys offer a splendid opportunity to acquaint physicians with the technique and value of the tuberculin test. People who have found that they react to tuberculin usually become interested in tuberculosis control measures.

In conclusion: Tuberculosis can be controlled with our present-day knowledge, and the success of our control programs will be in direct proportion to the co-operation and participation of the practicing physician. It is fitting that I close these remarks by referring again to the teachings of such leaders in tuberculosis work as Dr. Trudeau, Dr. Osler, Dr. Myers, and others, who for many years have affirmed that tuberculosis control depends upon the practicing physician.

---

Tuberculosis—a pandemic, infectious disease that claimed 55,000 lives in 1944—commands the immediate attention of all the people of this country. Its eradication will lag just in proportion to the ignorance, carelessness, and apathy of the population. The fact that the death rate was only one fifth of that prevailing fifty years ago is scant cause for complacency in the light of that needless toll of wasted lives. The further consideration that there are at least 500,000 actual or potential spreaders of infection scattered throughout the country is still less reassuring. The menace is not lessened by the fact that the major portion of these are either unrecognized or under insufficient observation.—KENDALL EMERSON, M.D.



# Facts and Inferences of Minnesota Sanatorium Admittances

Edwin J. Simons, M.D.  
Swanville, Minnesota

WITH the anti-tuberculosis campaign of the United States Public Health Service in progress, with mass radiography programs for the detection of tuberculosis in Minnesota being initiated and in various stages of advancement, an analysis of sanatorium admittances and other statistical data seemed warranted in order to justify or refute the need for such intensified diagnostic measures.

Owing equally to lack of time and the difficulty of obtaining statistics for the years 1936 and 1937, this analysis covers only eight years, 1938 to 1945, inclusive, instead of ten years, as seemed preferable.

As shown in Table 1, both total admittances and first admittances of reinfection cases are listed, but the subdivisions into minimal, moderately advanced, and far advanced cases, and their respective percentages, apply only to first admittances in both Tables 1 and 2. This portion of the work and its interpretation, accordingly, are based entirely upon first admittances to Minnesota sanatoriums. By the term "reinfection cases" is meant all "adult or destructive pulmonary tuberculosis," or all pulmonary tuberculosis other than "childhood or first infection pulmonary tuberculosis."

Table 1 shows that total admittances of all reinfection cases decreased from 1476 in 1938 to 1389 in 1945, a decrease of 87 cases. During the same years total first admittances of reinfection cases decreased 223 cases, from 927 to 704. Since general trends over an eight-year period are considered more significant, minor or even major fluctuations occurring within the study period are left to the reader's interpretation. The yearly total admittances of all reinfection cases during this period averaged 1475, and the decrease of 87 cases from 1938 through 1945 represents only 6 per cent of this average. Over the same period the yearly first admittances of reinfection cases averaged 829, of which the 223 eight-year decrease is 27 per cent. The marked decrease of first admittances of reinfection cases in comparison with total admittances of all reinfection cases may be significant.

From the diagnostic and epidemiological point of view, percentages of first admittances by classification are important. In these columns (Table 1), it is seen that from 1938 to 1945 minimal cases first admitted to sanatoriums increased 2.47 per cent, from 11.87 to 14.34 per cent. This increase is neither progressive nor significant, since there was a fluctuation of 7.87 per cent in the years 1939 to 1942. It could be considered important that from the high percentage of 18.58, in 1941, first admittances of minimal cases decreased in 1945 to 14.34 per cent, which is less than the eight-year average of

14.95 per cent. However, in spite of fluctuations, both major and minor, the percentage of first admittances of minimal cases to Minnesota sanatoriums over the eight-year study period cannot be considered to have changed appreciably.

First admittances of moderately advanced cases have increased in eight years from 29.66 per cent in 1938 to 35.94 per cent in 1945, or 6.28 per cent. The converse is true of admittances of far advanced cases, which decreased from 58.47 per cent in 1938 to 49.72 per cent in 1945, or 8.75 per cent.

Thus, it can be seen that fewer far advanced cases were first admitted to Minnesota sanatoriums in 1945 than in 1938, and that more moderately advanced and slightly more minimal cases were first admitted in 1945 than in 1938. This shift of 8.75 per cent, composed of 6.28 per cent moderately advanced and 2.47 per cent of minimal cases, represents a trend in the right direction of early admittance. Nevertheless, the fact that over the last eight years an average of 85 per cent of first admittances to Minnesota sanatoriums have been moderately and far advanced cases, while only 15 per cent have been minimal cases, is not encouraging.

In order to determine any difference in urban and rural factors, the data were divided into two groups. The urban group consisted of the three sanatoriums serving Hennepin, Ramsey, and St. Louis counties, in each of which is located a city of the first class: Minneapolis, St. Paul, and Duluth, respectively. All other sanatoriums of the state provided data for the rural group. The statistics for each of the two groups are seen in Table 2.

Table 2 shows that 13.4 per cent of first admittances in urban sanatoriums are minimal cases, as compared with 16.7 per cent in the rural areas—a difference of 3.3 per cent. The comparable percentages for far advanced cases are 52.5 in urban sanatoriums and 52.6 for rural sanatoriums. In moderately advanced cases the percentages are 34.1 for urban sanatoriums and 30.8 per cent for rural sanatoriums. In general, then, the slight advantage the rural sanatoriums have in early admittances of minimal cases is balanced by a higher percentage of first admittances of moderately advanced cases.

Table 2 shows another trend that may be of importance. In urban sanatoriums total admittances of reinfection cases from 1938 through 1945 decreased 80, while first admittances of reinfection cases decreased 85. In contrast, in rural sanatoriums total admittances of reinfection cases decreased only 7 over the eight-year period, from 700 in 1938 to 693 in 1945, but total first admittances decreased 140, from 420 in 1938 to 280 in 1945. It may be that variations from year to year in both these tabular columns minimize the significance of such a minimal variation as 7 cases.

TABLE 1  
First Admittances of Reinfection Cases to State Sanatorium and County Sanatoriums for the Years 1938-1945

| Year                | Total Admittances of all Reinfection Cases | Total First Admittances Reinfection Cases | Minimal Sputum |            |          | Moderately Advanced Sputum |          |          | Far Advanced Sputum |          |          | Percentage of First Admittances by Classification |                     |              |
|---------------------|--------------------------------------------|-------------------------------------------|----------------|------------|----------|----------------------------|----------|----------|---------------------|----------|----------|---------------------------------------------------|---------------------|--------------|
|                     |                                            |                                           | Positive       | Negative   | Not Done | Positive                   | Negative | Not Done | Positive            | Negative | Not Done | Minimal                                           | Moderately Advanced | Far Advanced |
| 1938                | 1476                                       | 927                                       | 17             | 70         | 23       | 111                        | 130      | 34       | 383                 | 111      | 48       | 11.87                                             | 29.66               | 58.47        |
| 1939                | 1445                                       | 906                                       | 14             | 55         | 28       | 131                        | 94       | 65       | 391                 | 78       | 50       | 10.71                                             | 32.01               | 57.28        |
| 1940                | 1481                                       | 847                                       | 18             | 109        | 4        | 122                        | 110      | 7        | 386                 | 77       | 14       | 15.46                                             | 28.22               | 56.32        |
| 1941                | 1488                                       | 829                                       | 24             | 123        | 7        | 118                        | 135      | 5        | 352                 | 56       | 9        | 18.58                                             | 31.12               | 50.30        |
| 1942                | 1617                                       | 914                                       | 19             | 125        | 6        | 132                        | 143      | 13       | 373                 | 96       | 7        | 16.41                                             | 31.51               | 52.08        |
| 1943                | 1483                                       | 733                                       | 7              | 99         | 1        | 95                         | 151      | 9        | 288                 | 73       | 10       | 14.60                                             | 34.79               | 50.61        |
| 1944                | 1419                                       | 772                                       | 11             | 117        | 8        | 124                        | 154      | 7        | 278                 | 64       | 9        | 17.62                                             | 36.92               | 45.46        |
| 1945                | 1389                                       | 704                                       | 7              | 90         | 4        | 105                        | 144      | 4        | 276                 | 66       | 8        | 14.34                                             | 35.94               | 49.72        |
| Totals and Averages |                                            |                                           | 117            | 788        | 81       | 938                        | 1061     | 144      | 2727                | 621      | 155      | 14.95                                             | 32.52               | 52.54        |
| Range               |                                            |                                           | 1476 to 1389   | 927 to 704 |          |                            |          |          |                     |          |          |                                                   |                     |              |
| Difference          |                                            |                                           | 87             | 223        |          |                            |          |          |                     |          |          |                                                   |                     |              |
| Average             |                                            |                                           | 1475           | 829        |          |                            |          |          |                     |          |          |                                                   |                     |              |

However, it is noteworthy that first admittances of minimal cases decreased in rural sanatoriums by 140 cases, or 37 per cent, over an eight-year period. Also, as seen in Table 1, this decrease of 140 cases in rural sanatoriums constitutes the greater part of the eight-year decrease of 223 cases in first admittances of reinfection cases in all sanatoriums, and is greatly in excess of the decrease of 83 cases in urban sanatoriums.

Several questions are immediately raised by these findings, namely: Is there any relation between this 140-case decrease of total first admittances and the eight-year decrease in percentage of minimal cases first admitted, or between this 140-case decrease and the appreciable eight-year increase of moderately advanced first admittances, from 25.71 to 34.64 per cent? Further, are fewer cases in rural districts being diagnosed, or are as many cases being diagnosed but failing to enter sanatoriums? Suffice it to say that this disproportionate 140-case decrease of first admittances of reinfection cases in rural sanatoriums does justify intensification of diagnostic and patient segregation programs in rural districts.

For further consideration of the problems presented by first admittances to the sanatoriums of the state, Table 3 was prepared by the Minnesota Department of Health.<sup>1</sup> From this table it is seen that, except for an increase in 1943, the total yearly deaths from tuberculosis in Minnesota have steadily decreased over eight years to an all-time low of 625 in 1945. During this same period nonresident deaths from tuberculosis show a gradual but irregular increase. The same trend is shown in both the total annual death rate from tuberculosis and the rate exclusive of deaths of nonresidents. Thus the trend in Minnesota is an encouraging one.

New cases exclusive of the primary phase, that is, "reinfection cases," as they are termed in Tables 1 and 2, are worthy of some consideration. Fluctuations from year to year are seen to be both irregular and inconstant. Yet 1801 cases in 1945 are 122 cases less than in 1938, and 202 cases lower than the eight-year average, and the 1945 figure represents an all-time low.

New cases reported per death numbered 2.88 in 1945, while in 1938 only 2.36 cases were reported for each death. While the 1945 ratio of 2.88 is not the highest during the study period, it is the third highest and is above the average 2.72 for the eight-year period. Both these facts, the number of new cases per year and the

ratio of new cases per death, indicate that the total decrease of 223 cases of first admittances of reinfection cases to all sanatoriums and the decrease of 140 cases of first admittances of reinfection cases to rural sanatoriums are consistent with actual case incidence in Minnesota, and do not imply faulty case finding or diagnosis.

One of the most deplorable features shown in Table 3 is the remaining high number and high percentage of cases of tuberculosis first reported by death certificate. It is true that the number of such cases has rather steadily decreased from 166 in 1938 to 94 in 1945, that 94 is better than the eight-year average of 130, and that it is also the lowest number of such cases reported in any one year, and that, with one exception, the percentages of cases first reported by death certificate show a similar decrease. Nevertheless, these data indicate that great improvement is needed in case finding and diagnosis.

Here, again, an attempt has been made to determine whether the greater problem is an urban or a rural one (Table 4).

Table 4 shows the cases first reported by death certificate in urban and rural areas. That the total number of cases in the three larger counties shows a comparable relation to population is apparent. The population of the state is preponderantly rural, and accordingly more cases of tuberculosis were first reported by death certificate in rural areas than in urban areas in each year except 1941 and 1945. With the exception of one year, 1941, such cases have shown a steady decrease during the eight years.

However, the number of such cases remains inordinately high, i.e., 15 per cent (Table 3). It is true that such cases may represent merely a failure to report them before death as cases of tuberculosis. On the other hand, the high total of them each year may present an important diagnostic or epidemiological problem. Needless to say, whichever factors are at work, concerted efforts should be made to reduce the number of such cases.

From this analysis three facts appear to warrant intensification of diagnostic and case finding methods: (1) the low percentage of first admittance minimal cases, (2) the decreasing number of first admittances of reinfection cases, especially in rural districts, and (3) the high number and percentage of tuberculosis cases first reported by death certificate.



TABLE 2  
First Admittances of Reinfection Cases to Urban and Rural Sanatoriums for the Years 1938-1945

| Urban               | Total Admittances of all Reinfection Cases | Total First Admittances Reinfection Cases | Minimal Sputum |          |          | Moderately Advanced Sputum |          |          | Far Advanced Sputum |          |          | Percentage of First Admittances by Classification |                     |              |
|---------------------|--------------------------------------------|-------------------------------------------|----------------|----------|----------|----------------------------|----------|----------|---------------------|----------|----------|---------------------------------------------------|---------------------|--------------|
|                     |                                            |                                           | Positive       | Negative | Not Done | Positive                   | Negative | Not Done | Positive            | Negative | Not Done | Minimal                                           | Moderately Advanced | Far Advanced |
| 1938                | 776                                        | 507                                       | 4              | 35       | 10       | 49                         | 101      | 17       | 199                 | 70       | 22       | 9.67                                              | 32.94               | 57.39        |
| 1939                | 762                                        | 468                                       | 2              | 22       | 17       | 53                         | 65       | 41       | 190                 | 50       | 28       | 8.76                                              | 33.98               | 57.26        |
| 1940                | 728                                        | 441                                       | 3              | 50       | 2        | 60                         | 80       | 3        | 184                 | 56       | 3        | 12.47                                             | 32.43               | 55.10        |
| 1941                | 768                                        | 422                                       | 8              | 63       | 2        | 47                         | 93       | 2        | 169                 | 36       | 2        | 17.30                                             | 33.65               | 49.05        |
| 1942                | 808                                        | 496                                       | 5              | 55       | 1        | 63                         | 94       | 4        | 199                 | 74       | 1        | 12.30                                             | 32.46               | 55.24        |
| 1943                | 730                                        | 408                                       | 3              | 55       | 1        | 44                         | 94       | 0        | 159                 | 52       | 0        | 14.46                                             | 33.82               | 51.72        |
| 1944                | 741                                        | 445                                       | 7              | 71       | 0        | 55                         | 108      | 0        | 159                 | 43       | 2        | 17.53                                             | 36.63               | 45.84        |
| 1945                | 696                                        | 424                                       | 5              | 55       | 3        | 63                         | 92       | 1        | 153                 | 48       | 4        | 14.86                                             | 36.79               | 48.35        |
| Totals and Averages |                                            |                                           | 37             | 406      | 36       | 434                        | 727      | 68       | 1412                | 429      | 62       | 13.4                                              | 34.1                | 52.5         |
| Average             | 751                                        | 451                                       |                |          |          |                            |          |          |                     |          |          |                                                   |                     |              |
| Range               | 776 to 696                                 | 507 to 424                                |                |          |          |                            |          |          |                     |          |          |                                                   |                     |              |
| Difference          | 80                                         | 83                                        |                |          |          |                            |          |          |                     |          |          |                                                   |                     |              |
| Rural               |                                            |                                           |                |          |          |                            |          |          |                     |          |          |                                                   |                     |              |
| 1938                | 700                                        | 420                                       | 13             | 35       | 13       | 62                         | 29       | 17       | 184                 | 41       | 26       | 14.52                                             | 25.71               | 59.77        |
| 1939                | 683                                        | 438                                       | 12             | 33       | 11       | 78                         | 29       | 24       | 201                 | 28       | 22       | 12.78                                             | 29.91               | 57.31        |
| 1940                | 753                                        | 406                                       | 15             | 59       | 2        | 62                         | 30       | 4        | 202                 | 21       | 11       | 18.72                                             | 23.65               | 57.63        |
| 1941                | 720                                        | 407                                       | 16             | 60       | 5        | 71                         | 42       | 3        | 183                 | 20       | 7        | 19.90                                             | 28.50               | 51.60        |
| 1942                | 809                                        | 418                                       | 14             | 70       | 5        | 69                         | 49       | 9        | 174                 | 22       | 6        | 21.29                                             | 30.38               | 48.33        |
| 1943                | 753                                        | 325                                       | 4              | 44       | 0        | 51                         | 57       | 9        | 129                 | 21       | 10       | 14.77                                             | 36.00               | 49.23        |
| 1944                | 678                                        | 327                                       | 4              | 46       | 8        | 69                         | 46       | 7        | 119                 | 21       | 7        | 17.73                                             | 37.31               | 44.96        |
| 1945                | 693                                        | 280                                       | 2              | 35       | 1        | 42                         | 52       | 3        | 123                 | 18       | 4        | 13.57                                             | 34.64               | 51.79        |
| Totals and Averages |                                            |                                           | 80             | 382      | 45       | 504                        | 334      | 76       | 1315                | 192      | 93       | 16.7                                              | 30.8                | 52.6         |
| Average             | 723                                        | 378                                       |                |          |          |                            |          |          |                     |          |          |                                                   |                     |              |
| Range               | 700 to 693                                 | 420 to 280                                |                |          |          |                            |          |          |                     |          |          |                                                   |                     |              |
| Difference          | 7                                          | 140                                       |                |          |          |                            |          |          |                     |          |          |                                                   |                     |              |

At this point the question arises: "What influence has mass radiography upon early diagnosis of tuberculosis and early admittance of tuberculous patients to sanatoriums?"

Experience in Ontario, as shown by Table 5 (Brink<sup>2</sup>), provides the answer and emphasizes some features of the present Minnesota analysis.

Table 5 shows that the percentage of minimal cases admitted to Ontario sanatoriums prior to 1943 was 21, whereas in Minnesota the eight-year average of minimal cases among first admittances was 15 per cent. To include all admittances in the present study would decrease, rather than increase, the 15 per cent. It is evident that the percentage of moderately advanced cases in Ontario, namely, 33, is almost the same as that in Minnesota, i.e., 32.5 (Table 1). The improvement in Canada lies in a marked decrease of admittances of far advanced cases, that is, 44 per cent, as compared with Minnesota's 52.5 per cent.

The most important feature of Table 5 is the second division, which shows that by use of mass radiography

these percentages have been reversed. That is, after instituting mass radiography surveys, 57 per cent of sanatorium admittances were minimal cases and only 13 per cent far advanced. These data show a marked improvement over the previous 21 per cent admittances of minimal and 44 per cent far advanced cases in Ontario, and over the comparable figures of 15 per cent and 52.5 per cent admittances of minimal and far advanced cases in Minnesota.

In Minnesota mass radiography was pioneered by Nopeming Sanatorium and its superintendent, Dr. G. A. Hedberg. Recent data from him<sup>3</sup> confirm Brink's experiences, as shown in Table 6.

Dr. Hedberg reported as follows on February 26, 1946: "On August 28, 1943, Nopeming Sanatorium had 250 patients and 22 vacant beds. Today the sanatorium has 271 patients and a waiting list of 43 definitely active cases of tuberculosis." Thus it is evident that in St. Louis County—where 72,433 persons were studied by mass radiography during the period from September 1943 through August 1945—this method

TABLE 3  
Number of Deaths, Death Rate per 100,000 Population, and Number of New Case Reports, 1938-1945

| Year    | Deaths |              | Death Rate |                          | New Cases (Exclusive of Primary Phase) | New Cases per Death | Cases First Reported by Death Certificate |                         |
|---------|--------|--------------|------------|--------------------------|----------------------------------------|---------------------|-------------------------------------------|-------------------------|
|         | Total  | Non-resident | Total      | Exclusive of Nonresident |                                        |                     | Number                                    | Total Deaths (Per Cent) |
| 1938    | 816    | 36           | 29.7       | 28.5                     | 1923                                   | 2.36                | 166                                       | 20                      |
| 1939    | 807    | 48           | 29.1       | 27.4                     | 2009                                   | 2.49                | 144                                       | 18                      |
| 1940    | 762    | 45           | 27.3       | 25.7                     | 2111                                   | 2.78                | 143                                       | 19                      |
| 1941    | 754    | 47           | 27.0       | 25.3                     | 1863                                   | 2.47                | 117                                       | 16                      |
| 1942    | 705    | 44           | 26.3       | 24.7                     | 2190                                   | 3.11                | 138                                       | 20                      |
| 1943    | 753    | 77           | 29.6       | 26.6                     | 1951                                   | 2.59                | 128                                       | 17                      |
| 1944    | 699    | 42           | 27.5       | 25.9                     | 2172                                   | 3.10                | 109                                       | 16                      |
| 1945    | 625    | 49           | 24.6       | 22.7                     | 1801                                   | 2.88                | 94                                        | 15                      |
| Average |        |              |            |                          | 2003                                   | 2.72                | 130                                       | 17                      |

TABLE 4  
Tuberculosis Cases First Reported by Death Certificate in Hennepin, Ramsey, and St. Louis Counties and in the Rural Counties, 1938-1945

|                   | Population | 1938 | 1939 | 1940 | 1941 | 1942 | 1943 | 1944 | 1945 |
|-------------------|------------|------|------|------|------|------|------|------|------|
| Hennepin County   | 568,899    | 43   | 26   | 35   | 27   | 25   | 29   | 28   | 28   |
| Ramsey County     | 309,935    | 23   | 24   | 22   | 16   | 20   | 19   | 15   | 15   |
| St. Louis County  | 206,917    | 14   | 15   | 14   | 18   | 15   | 10   | 9    | 7    |
| Total Urban Cases | 1,085,751  | 80   | 65   | 71   | 61   | 60   | 58   | 52   | 50   |
| Total Rural Cases | 1,706,549  | 86   | 79   | 72   | 56   | 78   | 70   | 57   | 44   |
| Total             | 2,792,300  | 166  | 144  | 143  | 117  | 138  | 128  | 109  | 94   |

brought to light a high percentage of minimal cases of tuberculosis and converted sanatorium vacancies into a waiting list.

Confirmation of this experience is seen in the result of the Red Lake Indian survey<sup>4</sup> conducted by the Minnesota Department of Health and the Minnesota State Sanatorium. In this survey, carried out in October 1945, 1500 persons submitted to thoracic X-ray study, and 27 new active cases were revealed in this Indian population. As a result of this survey all vacant beds in the Indian Building at the State Sanatorium were filled and it became necessary to place some Indian patients in beds for white patients.

TABLE 5  
Influence of Mass Radiography upon Early Diagnosis and Early Admittance to Sanatoriums

|                                                                                                        | Cases   |                     |              |
|--------------------------------------------------------------------------------------------------------|---------|---------------------|--------------|
|                                                                                                        | Minimal | Moderately Advanced | Far Advanced |
| Percentage of classifications of all admissions to Ontario sanatoriums (1943)                          | 21      | 33                  | 44           |
| Percentage of classifications of all active tuberculosis cases found by mass surveys in Ontario (1943) | 57      | 30                  | 13           |

CONCLUSIONS

From the facts presented the following conclusions appear to be justified:

TABLE 6  
Influence of Mass Radiography at Nopeming (Minnesota) Sanatorium

|                                  | Minimal Cases |          | Moderately Advanced Cases |          | Far Advanced Cases |          |
|----------------------------------|---------------|----------|---------------------------|----------|--------------------|----------|
|                                  | Number        | Per Cent | Number                    | Per Cent | Number             | Per Cent |
| Active Tuberculosis              | 19            | 36.4     | 41                        | 57.0     | 12                 | 16.6     |
| Questionably Active Tuberculosis | 10            | 35.7     | 18                        | 64.3     | 0                  | 0.0      |
| Inactive Tuberculosis            | 741           | 70.4     | 245                       | 23.3     | 66                 | 6.3      |
| Total                            | 770           | 66.8     | 304                       | 26.4     | 78                 | 6.8      |
| Total Number of Cases, 1152      |               |          |                           |          |                    |          |

1. The eight-year stability of first admittances to Minnesota sanatoriums of 15 per cent minimal cases and 85 per cent moderately advanced and far advanced cases indicates that improvement is needed in either diagnosis or case finding of tuberculosis, or both.

2. The marked decrease of first admittances of minimal cases from rural districts over an eight-year period emphasizes the need for greater diagnostic alertness in rural Minnesota.

3. The disproportionately high number and percentage of cases first reported by death certificate call for improvement in diagnostic acumen as well as extension of case finding programs.

4. Experiences with mass radiography in Ontario and in St. Louis County (Minnesota) indicate that it may offer a solution to problems of diagnosis and case finding in Minnesota.

5. Judging from experiences in St. Louis County and in the Red Lake surveys, vacancies in Minnesota sanatoriums may be replaced by waiting lists as soon as mass radiography surveys are possible throughout the state.

REFERENCES

- Chesley, A. J.: Personal communication.
- Brink, G. C.: Tuberculosis Control. *Canad. Pub. Health J.*, 37: 1-6 (Jan.), 1946.
- Hedberg, G. A.: Personal communication.
- Callahan, F. F.: Personal communication.

TUBERCULOSIS CONTROL—A BARGAIN IN HEALTH

When compared with some other diseases, the purchase price of control of tuberculosis may be considered a bargain. This is so because we know its cause. We know how it is spread. We know how to prevent it, and we know how to treat it. Moreover, it costs pennies to control it, and dollars to tolerate it.

To be sure, encouraging inroads against tuberculosis have been made. However, when we critically appraise how little our present knowledge is actually put to work in the warfare against it, we will be forced to conclude that we have but scratched the surface of potentials in its prevention and control.—ROBERT E. PLUNKETT, M.D., New York State Department of Health, January 1946.



# The Hazard of Tuberculosis During Medical Training

## *An Abridged Report of a Case-Finding and Follow-Up Regime among Women Medical Students, with an Effective Control Program against Tuberculosis\**

Sarah I. Morris, M.D.

Chambersburg, Pennsylvania

THE degree of hazard presented to the medical student through exposure to tuberculosis "in line of duty" has been a matter of controversy in medical educational circles, and reports from medical schools vary greatly.

This diversity of opinion may be only a measure of the degree of interest in the subject, the efforts to locate diseased students, the criteria or methods used, or the proportion of susceptible individuals in the various college groups.

Since it has repeatedly been demonstrated, by tuberculin testing in medical schools and schools of nursing, that infection with tuberculosis and sensitization to tuberculo-protein are rapidly acquired while the student is in training, it may be assumed that more rapid "seeding" with tubercle bacilli takes place on exposure to tuberculous patients and materials at the vulnerable age of the young adult in medical school than in civilian life—a risk intrinsic in the occupation, and against which the individual cannot protect himself.

Most of the studies have been made in medical schools where men students predominate, and comparisons have been made chiefly with schools of nursing, whose students do not parallel medical students in sex, age, or duties. Since the morbidity and mortality rates in women are earlier than in men, it is possible that in many men's schools the number of active clinical cases developing during medical school years may not be significant under normal conditions, but, with so high a degree of "seeding" as has been demonstrated, more nearly complete and accurate evidence might be expected were routine entrance and periodic physical and X-ray examinations made obligatory for internships and residencies. Certainly the number of medical student and physician patients in most sanatoriums suggests a greater eventual morbidity rate than medical school reports indicate.

The new quicker and less expensive methods for mass surveying developed during World War II will demonstrate the incidence of disease in the young male adult in the general population at comparable age levels. These data should be helpful in comparative occupational studies.

The influence of sex is still controversial, but data to date suggest an endocrine factor in tuberculosis. These data include the earlier onset at adolescence in girls, the earlier peak of mortality in women, the accelerated progress of the disease in the pregnant tuberculous woman,

and the earlier drop in mortality at the climacteric in women.

### OBJECTIVES OF THE SURVEY

With these facts in mind a survey and follow-up program for women medical students was proposed in 1931 by the professor of preventive medicine in the Woman's Medical College of Pennsylvania, the only medical school in the United States exclusively for women.

It has been thought wise to report on the material assembled and the results of the survey, in the hope that its errors and achievements may be helpful to others undertaking similar projects and that the results may contribute data that will aid in clarifying certain doubtful points regarding tuberculosis in medical schools.

The twelve years covered by the survey, 1932 to 1944, paralleled a period of great unrest in the world. During this period criteria for medical practice and teaching methods, as well as methods for case finding and therapeutics for tuberculosis, were changing rapidly. In addition, the school surveyed was entirely reorganized and there was consequently a considerable turnover in college officials and faculty that alternately helped and hindered the study.

The survey was to consist of observation of successive classes of students for approximately a decade, by annual routine Mantoux testing and X-ray inspections, with a follow-up program for confirmation of diagnosis and therapeutic guidance through the college course, and by correspondence after the student left, in order to determine the ultimate results.

Upon conversion from Mantoux negativity to positivity, the student was to be warned of infection and sensitization, reassured, and her co-operation solicited in establishing as careful a regime of living as possible. She was to avoid any additional known exposure, in order to prevent overwhelming infection before stabilization, and to report at intervals for further checking, and also at any time she developed suspicious symptoms, or after intercurrent illnesses.

Upon X-ray evidence of pulmonary involvement or development of suggestive symptoms, the student was to be warned of a probable early diseased process, reassured, and her co-operation solicited for further study to learn the extent of involvement. Repeated X-ray inspections, recording the weight and temperature for a prescribed period, the securing of a sedimentation rate and blood examination, and a sputum examination by smear, culture, and guinea pig inoculation, if the facilities for it were available, or of stomach contents otherwise, were included in the study.

\*A more detailed report of this study will appear in the *American Review of Tuberculosis*.

The student with a minimal asymptomatic case was to be allowed to remain in school till further evidence of active tuberculosis was secured. Upon proof of activity by X-ray or laboratory findings, the student was to be advised to withdraw for treatment, regardless of symptoms. This procedure, by removing the student from the infective environment of the medical college, gives her the best chance for stabilization with no further disease. All students suspected or watched for tuberculosis during attendance at college were to be followed up after leaving, to check subsequent developments.

The object of the survey was to learn the amount of disease in the student body, the points of greatest hazard, the type of disease encountered at the age and sex level of the students, the progress of the disease under medical school conditions, the adequacy of the control facilities available, and the ultimate results. It was hoped that an adequate control program might develop from the survey.

The obstacles to carrying out this program were those more or less common to all schools attempting such studies. Indifference was encountered, owing to varying opinions about the relative gravity of the minimal case in the young adult medical student and differing degrees of confidence in the changing criteria for diagnosis of the primary "safe" case and in the adequacy of early ambulatory treatment, as well as reliance on collapse therapy to control conditions later.

Actual opposition was experienced from those who placed academic objectives above the health of the student or who relied on the ability of the student to "work out her own salvation." Sometimes the college management, confronted by annoying adjustments to safeguard the student, failed to co-operate. To some degree the students themselves failed to realize the importance of early treatment and were encouraged by the attitude of college officials to procrastinate till serious disease developed.

Even after diagnosis and demonstration of progress of the disease, decisions were colored by administrative rules and regulations, by the advice of family physicians who lacked full appreciation of the strain of modern medical curriculums or by the advice of consultants accustomed to more advanced disease, and by conflicting medical and legal opinions in fellow faculty members and corporation officials.

As a result of these obstacles the survey was begun as a compromise undertaking. Case finding and follow-up for confirmation of diagnosis were carried out in the student health service under the direction of the professor of preventive medicine, who was director of the health service till 1941. At that time, under a new dean and with a complete reorganization of the college and hospital, the student health service was transferred to the clinical medical department and became part of the hospital service. The student clinic headquarters were transferred to the out-patient department of the hospital, and the clinic was thereafter manned by a series of young clinicians under the supervision of the dean and the superintendent of the hospital.

From the beginning clinical decisions as to disease status, prognosis, treatment, and ultimate disposal of cases were made through the professor of medicine, who guided administrative action by clinical advice.

The procedure, however, was affected adversely by the legal advice of the corporation lawyer, who decided that proof of infectiousness of the student by demonstration of tubercle bacilli in the sputum was necessary to require withdrawal. This policy resulted in dangerous procrastination, progress of the disease, and its spread to others while such proof by culture and guinea pig inoculation was awaited. Similar results followed from allowing students to return to college before complete or safe stabilization; there was a 45 per cent relapse in such returning students and a demonstrable spread of the disease to others. It also caused a pyramiding of dangerous cases, and from these cases several chains of student to student contact cases were traced.

A second legal opinion, to the effect that the college, which had no dormitories, could not dictate regarding places of student residence, led to the housing of students in a dwelling whose landlady was suspected of having tuberculosis. Four consecutive cases developed in the students living in this house, and from them three other students were infected later when they became roommates of these girls. Of this group two students were permanently lost from the profession by withdrawal and two, still unstabilized, will probably be lost; to date these students have spent a total of twenty years in recuperation.

Two years were required to secure routine Mantoux testing, and four years passed before a complete routine X-ray chest inspection of the students could be secured.

During this four-year interval 181 students were observed. Eighteen cases of active tuberculosis developed among them. Without the assistance of the X-ray, 50 per cent were diagnosed by signs and symptoms as having fairly well advanced disease. Of these 18 cases three only were arrested at a minimal stage, three died, and two more were lost to the profession by permanent withdrawal. A total of 47¼ years of treatment were required for those who recovered. This experience constituted a challenge to further study and justified the need for the survey.

#### RESULTS OF THE SURVEY

The Mantoux testing of all students at entrance and of all subsequent nonreactors yearly till 1937 and semi-annually (fall and spring) thereafter revealed some significant data.

During the twelve years of observation there was a gradual reduction in the number reacting at entrance. This finding suggests a parallel with the reduction in mortality rates in the general public, which in turn suggests fewer ambulatory "open cases" spreading disease.

However, in each successive year there was a rapid increase in tuberculin reactions in each class, and by the senior year each class reached 100 per cent positivity. Similar surveys in men's medical schools show a somewhat lower rate. Nevertheless, the rate is sufficiently high among both men and women students to suggest



a corresponding exogenous infection during the four years of attendance at medical school.

The most rapid increase occurred in the second half of the second year, suggesting some unusual contact with tubercle bacilli during that year. A search was therefore made at the most likely points—in bacteriological and pathological laboratory experiences, in handling infective material, in autopsy work, and in the use of active cases for physical diagnosis demonstrations.

No evidence of gross exposure was disclosed in the laboratory experiences, but conditions in the autopsy room of the city hospital were found to be potentially hazardous. Attempts to rectify conditions there led eventually to installation of foot-controlled wash basins for students, to replace the use of the sink where specimens were cleansed; establishment of a controlled regime for collection, sterilization, and redistribution of soiled gowns, gloves, and aprons, previously taken to students' rooms; and a decrease in the time spent, per student, in the autopsy room.

Significantly, during this study the first class to reach the senior year without a case of active tuberculosis in its membership was the first to have its autopsy experience under these bettered conditions.

No specific data were made available during this survey to determine the degree of hazard occasioned by the use of active tuberculous cases for physical diagnosis demonstration. However, since the only case showing physical signs is the advanced case, it may be assumed that this experience is potentially dangerous for vulnerable young adults. A more protective regime is advocated than exists in most medical schools during the training period.

It has been widely assumed that medical students develop a rapid immunity, owing to continuing exposure to tuberculosis, and the Mantoux positive reaction, *per se*, is accepted by many as a criterion of safety in exposure to the disease. Analysis of figures showing the relation of Mantoux conversion to positivity to the subsequent development of disease proves these assumptions to be false. Of those developing active disease, 58 per cent did so within six months after becoming tuberculin positive, 32 per cent within twelve months, 5 per cent within twelve to eighteen months, and 5 per cent within two years. This finding supports the claim that new sensitization predisposes to disease.

In medical schools the tuberculin test is extremely important. Conversion to positivity constitutes a warning against early subsequent exposure and against assigning students to especially hazardous duties and to routine section work in clinics and hospitals where active tuberculous patients may be encountered.

Comparison of Mantoux reactions at entrance with X-ray findings revealed that many showing X-ray evidence of hilar calcified glands were negative to the tuberculin test. This phenomenon we had interpreted as significant of loss of allergy following complete neutralization of all the tuberculo-protein of an earlier infection, with termination of the disease process. However, recent work that appears to demonstrate the nonspecificity of calcified hilar glands for tuberculosis throws doubt on

this interpretation and may necessitate a revision of our whole concept of the prevalence of a harmless "infantile type" of tuberculosis and our more or less arbitrary division of the disease into childhood and adult disease complexes.

The total number of students observed during this period was 449. Among them 56 (12.5 per cent) active cases of tuberculosis developed, 43 while the students were still in college, and 13 relatively soon thereafter. Minimal X-ray lesions were demonstrated in 19 others who were never proved tuberculous by laboratory methods and who did not progress beyond the early minimal stage—the so-called prephthisical case. These cases, together with those showing at entrance evidence of healed parenchymal lesions that remained quiescent and those showing X-ray evidence of hilar calcified glands only, are excluded from the totals analyzed.

The 56 cases were studied as to mode and time of infection, transmission, disease development and progress, prognosis, and ultimate results.

The unusual development of fairly well advanced disease while the students were still in school, resulting from delay in withdrawal after diagnosis had been established, and the spread of disease to others from students allowed to remain after evidence of progression, justifies the original recommendation for early withdrawal from the infective environment of a medical school.

Even after the student's withdrawal, the results of delay in seeking sanatorium treatment till further progress prompted collapse therapy bear out the statement that reliance on special means for collapse has encouraged a dangerous laxness in securing adequate rest treatment for the early minimal case and has robbed the young adult of his best chance for early stabilization without further disease progress.

The return of students before complete stabilization resulted in a lamentable number of relapses. There was a 45 per cent incidence of relapse in those returning after treatment, and, in several instances, traceable spread of disease to others.

Although X-ray evidence alone, at time of diagnosis, is not a reliable index of the amount of disease or a satisfactory basis for prognosis, nevertheless comparison of such early evidence with later developments has been helpful in evaluating types of cases and estimating the probable outcome in a number of instances.

As elsewhere, the light flocculent shadows, usually in the upper lung fields, in these young subjects, were found most frequently to indicate early minimal tuberculous lesions. Upon early withdrawal of the student, and under a relatively short rest regime, these lesions were usually promptly arrested, leaving little if any permanent evidence of disease. In a few instances where complete disappearance of a lesion was noted soon after Mantoux conversion, allergic edema or patchy atelectasis, so-called epituberculosis, may have accounted for the X-ray shadows.

When these students did not withdraw, however, most of their cases progressed as exudative processes. Five typical minimal cases were aborted by early withdrawals,

and seven students who attempted to remain went into progressive disease.

The exudative-productive type gave a more hopeful prognosis. Since healing has already begun, with care the tendency to heal may continue, although the disease may run a rather long course before stabilization. Following extreme fatigue, after experiencing superimposed infections, or in gross exposure to further tuberculosis, these students also may succumb and the exudative process may outstrip the fibrotic.

In both these types of process, withdrawal and removal from danger of added infection till fibrosis was complete gave the best results. Four exudative-productive cases, at first progressing satisfactorily, later developed into active open cases with cavitation.

Twice a large caseous nodule of unusual density was diagnosed as a calcified lesion and subsequently underwent liquefaction and excavation, with positive sputum and a febrile course. Such lesions need watching and correlating with other signs and symptoms, such as fever or sedimentation rate.

The greatest difficulty in early diagnosis consisted of mistaken diagnosis of tuberculosis as nontuberculous upper respiratory disease, when the associated increased bronchovascular markings tended partially to obscure the lung field—even in the presence of fever, loss of weight, anorexia, and increased sedimentation rate. In one instance, despite a familial history of tuberculosis and a positive Mantoux reaction, the condition was diagnosed as sinusitis, although the student showed fever, loss of weight, and demonstrable rales. Sinusitis was the most frequent interpretation of these early cases by the roentgenologist.

Diabetes, endocarditis, and arthritis, with fever, malaise, anorexia, elevated sedimentation rate, and pleurodynia, also masked a concurrent tuberculosis by causing a delay in the report of symptoms attributed to these respective diseases.

Pleurodynia was reported sometime early in the course of the disease by the majority of cases reviewed during the survey, often before there was X-ray evidence of disease. This warning symptom may serve, by prompting more frequent X-rays, to diagnose disease at a very early reversible stage.

Active disease usually developed during the last two clinical years, even when infection occurred earlier, frequently after upper respiratory infection or following unusual strain, such as out-practice work or academic examinations with irregular hours. The role of superimposed infection and fatigue in activating disease is evident in these cases.

A notable exception to the development of disease in the clinical years occurred in 1941, when the student health service was transferred from the college to the hospital. At this time student cases were cared for in the hospital out-patient department, and the clinic for students was located across a narrow corridor from the city chest clinic, and the clinic patients used the same waiting benches as the students.

An unusual number of severe tuberculin reactions were experienced among the members of the first and second

year classes, and very soon thereafter, in the second half of the second year (the spring testing), an unusual number of active disease cases were disclosed, several of which quickly developed into fulminating cases of a type rarely seen today in the white race. Two of these students have since died, and several still remain unstabilized.

In a class of 36, ten active cases developed, giving a class morbidity rate of 27 per cent, a case fatality rate of 20 per cent, and a mortality rate of 5.5 per cent.

No common source of exposure to active tuberculosis could be located. It seems logical to conclude that an unappreciated hazard existed for these young women at an earlier stage than usual in their college experience, when the student health service was transferred from the department of preventive medicine, with its safer location in the college building, to the hospital out-patient department in close proximity to the city chest clinic.

A second exposure the same year for the second year students—namely, in their autopsy experiences—presumably overwhelmed their body defense mechanisms, allowing for rapid disease development and the quick course in the six fulminating cases in this group.

A similar episode has been reported in a middle western medical school where autopsy exposure and use of active cases for demonstration were blamed for the untoward developments. Soon after this experience a set of rigid rules regulating autopsy service and governing technique for students, interns, residents, pathologists, and visiting physicians, was adopted in the hospital involved. Since the adoption of these regulations new cases have been very rare, and these cases, diagnosed early and given early treatment, have stabilized satisfactorily.

#### SUMMARY OF FINDINGS

In the total of 449 cases observed over twelve college years, and followed after withdrawal for two to five years, a total of 56 active cases of tuberculosis developed, resulting in six deaths, two within a year of onset. Long periods of semi-invalidism were experienced by an appreciable number of others before stabilization of the disease; some are still incapacitated.

An infection and allergizing rate of 100 per cent while in school, X-ray evidence of disease in 16.7 per cent, a morbidity rate of 12.5 per cent, a case fatality rate of 10.7 per cent, and a mortality rate of 1.3 per cent, developing in a medical school with every facility available, present a situation that should challenge the interest of medical educators and stimulate an investigation of the extent of the problem in other medical schools and hospitals.

#### RECOMMENDATIONS

The ultimate cost—in personnel lost from the profession, in time spent in recuperation (a total of more than 100 years in this small group), in monetary expenditure, and in disappointment and embitterment of students forced to alter their life plans—makes this a serious social problem, as well as a grave medical one.

The responsibility for solving this problem rests primarily with the medical profession, and especially with medical educators and hospital officials. The financial burden eventually rests on the public, who must pay in



tax support for medical schools and hospitals, for the care of the tuberculous in sanatoriums, and for public health services to find and follow up cases. Unless this responsibility is recognized and assumed by the profession we may expect medical schools and hospitals to be held responsible for the results under occupational disease compensation laws.

When finally adopted in its entirety, the originally proposed plan accomplished the aims and purposes of its originators, though by a system of trial and error and at much too high a price. The program should be continued and expanded to include a case finding program in all college and hospital personnel, including ambulatory and bed patients. Its application should also be extended to the intern and resident training periods.

With some such program carried on in all medical schools and hospitals the medical profession may eventually make its training period a safely regulated, even though an essentially hazardous, experience for its young acolytes. To do so, however, will require hearty cooperation and eternal vigilance.

#### CONCLUSIONS

Tuberculosis is to date the major occupational disease hazard of the student of medicine during the undergraduate and early graduate years.

Infection with tuberculosis takes place readily in the medical school, chiefly in the preclinical years, and disease may follow during the clinical or postgraduate training periods.

Tuberculosis occurs earlier and progresses more rapidly in women than in men. Accordingly, it will be found more frequently in women during the medical school years, and in men must be looked for especially in the intern and resident years.

Autopsy service and the use of tuberculous patients in physical diagnosis demonstrations and clinical training constitute the chief sources of infection in routine medical school procedures.

Where there is lack of appreciation of the gravity of tuberculous disease in the young adult and reliance is placed on doubtful or controversial criteria for diagnosis and prognosis, or where there is undue confidence in the later application of collapse therapy, delay occurs in diagnosis and treatment, with increased danger to the student.

When the withdrawal of diseased students is delayed or students return before full stabilization, we may expect disease progression, relapse, and spread to others, by student to student contact.

The ultimate cost of tuberculosis—to the student, in time lost, expense of treatment, sacrificed career or even life; to the medical school, in wasted educational effort; to the profession, in loss of promising future physicians; and, indirectly, to the public—is far greater than is generally realized.

Development and operation of an adequate control program against tuberculosis in medical schools and hospitals are imperative. The program should include case finding and follow-up programs in medical schools; establishment of safer techniques in autopsy rooms, laboratories, clinics, and wards of hospitals; obligatory en-

trance and periodic examinations of interns and residents, including X-ray inspections; early removal of all tuberculous individuals; and routine examinations of all college and hospital personnel, including ambulatory and bed patients.

The responsibility for safeguarding students and graduates of medicine against tuberculosis rests with the medical profession. Unless this responsibility is realized and assumed compensation laws covering tuberculosis as an occupational disease, already existent in some states, will probably become general.

#### REFERENCES

1. Banyai, K. L., and Caddes, A. V.: Diabetes and Tuberculosis. *Arch. Int. Med.*, 74: 445 (Dec.), 1944.
2. Boucot, K. S.: Mass Radiography in Philadelphia. *Philadelphia Med.*, 40: 1461 (July 7), 1945.
3. Cutler, J. W.: Harmful Influence of Pregnancy in Advanced Tuberculosis. *Am. J. Obst. & Gynec.*, 47: 1, 1944.
4. Doran, Martha V.: Tuberculosis in Employed Women: Morbidity and Mortality Trends in Relation to Age. *Am. Rev. Tuberc.*, 49: 170 (Dec.), 1944.
5. Feld, D.: The Significance of Tubercle Bacilli in Gastric Contents. *Am. Rev. Tuberc.*, 40: 481 (Dec.), 1944.
6. Fitz, R.: Concerning Interns and Their Health. *J.A.M.A.*, 117: 1125 (Sept. 26), 1941.
7. Heimbach, J.: Incidence of Tuberculosis in Young Adult Women, with Special Reference to Employment. *Brit. J. Tuberc.*, 32: 154, 1938.
8. Hetherington, H. W., and Israel, H. C.: Tuberculosis in Medical Students and Young Physicians. *Am. J. Hyg.*, 31: 2, 1940.
9. Hilleboe, H. E., and Morgan, R. H.: Mass Radiography of the Chest. Chicago: Year Book Publishers, Inc., 1945.
10. Kennedy, J. A.: Pulmonary Complications of the Common Cold and Sinusitis. *Lancet*, 1: 769 (Jan. 19), 1943.
11. Löffler, W., and Zwingl, F.: Primary Group Infection with Tuberculosis in Military and Civil Life. *Schweiz. med. Wechschr.*, 73: 761.
12. Long, E. R., and Lew, E. A.: Tuberculosis in the Armed Forces. *Am. J. P. H.*, 35: 469 (May), 1945.
13. Lurie, M. B.: Experimental Epidemiology of Tuberculosis: The Prevention of Natural Air-Borne Contagion of Tuberculosis in Rabbits by Ultraviolet Irradiation. *J. Exper. Med.*, 77: 55 (June), 1944.
14. Mattison, B. F.: Some Factors Affecting the Early Diagnosis of Tuberculosis. *Am. J. P. H.*, 34: 1163, 1944.
15. Medlar, E. M., and Reid, A. C.: Demonstration of Tubercle Bacilli in an Employee Group with Clinically Inactive Pulmonary Tuberculosis. *Am. Rev. Tuberc.*, 51: 490 (Dec.), 1944.
16. Morris, S. E.: Occupation and Tuberculosis. In Wampler et al., *Principles and Practice of Industrial Medicine*. Baltimore: Williams & Wilkins Company, 1943.
17. Myers, J. A., Diehl, H. S., and Boynton, R. E.: Tuberculosis among Students and Graduates of Medicine. *Ann. Int. Med.*, 14: 4 (March), 1941.
18. Myers, J. A., Harrington, F. E., and Suarez, G.: Detection of Tuberculosis in Children. *J.A.M.A.*, 128: 852 (July 12), 1945.
19. Nicholson, E. E.: Tuberculosis among Young Women. New York: National Tuberculosis Association, 1938.
20. Palmer, C. E.: Non-Tuberculous Pulmonary Calcification and Sensitivity to Histoplasmin. Washington: U. S. Public Health Repts., 60: 19 (May 11), 1945.
21. Piersol, P. H.: Modern Methods Used in Finding Pulmonary Tuberculosis and Treatment of the Asymptomatic Case. *M. Clin. North America*, 29: 5, 1945.
22. Pollock, W. C., and Forsil, J. H.: Reinfection among Tuberculo-Allergic Doctors and Nurses at Fitzsimmons Hospital. *Am. Rev. Tuberc.*, 40: 444 (Oct.), 1939.
23. Rappaport, I.: Pre-physical Tuberculosis. *J.A.M.A.*, 27: 15 (Jan. 4), 1945.
24. Reiser, D., and Downes, J.: Minimal Tuberculous Lesions of the Lung. *Am. Rev. Tuberc.*, 51: 393 (May), 1945.
25. Rich, A. R.: The Pathogenesis of Tuberculosis. Springfield: Charles C Thomas, 1944.
26. Saranac Symposium: Tuberculosis in Industry. New York: National Tuberculosis Association, 1932.
27. Scatchard, G. N., and Duszynski, D. O.: Miniature Chest X-Ray Films in a General Hospital. *J.A.M.A.*, 127: 746 (March 31), 1945.
28. Schultz, J. H.: Medical Students and Tuberculosis. *J. Lancet*, 44: 96 (April), 1944.
29. Steinbach, M. M., and Duca, C. J.: Tuberculin Testing of Medical Students. *Am. Rev. Tuberc.*, 51: 478, 1945.
30. Terplan, Kornel: Anatomical Studies on Human Tuberculosis. *Am. Rev. Tuberc.*, 51: 952, 1944/45.
31. Weinerman, E. R., and Coe, F. O.: The Control of Tuberculosis among Medical Students, with Additional Reference to Interns and Student Nurses. *J. Lancet*, 42: 115 (April), 1942.
32. Westermarck, N.: On Epituberculosis and Lung Atelectasis. *Acta radiol.*, 22: 501, 1941.
33. Wilson, J. L.: Recent Advances in the Treatment of Tuberculosis. *M. Clin. North America*, 29: 445, 1945.

# The Out-Patient Chest Clinic

John Francis Briggs, M.D., and Everett K. Geer, M.D.

St. Paul

THE out-patient chest clinic at the Ancker Hospital, St. Paul, holds a unique and enviable position. It is unique in being situated in a general hospital, and it is enviable in that the out-patient clinic, the general hospital, and the tuberculosis unit are all under the same roof. Because of this relationship all those interested in chronic chest diseases are familiar with the problems of the patient, whether he is confined to bed or ambulatory.

The chief functions of the out-patient department are (1) the diagnosis of tuberculosis and (2) the post-sanatorium care of the patient ill with tuberculosis. In addition the clinic cares for all patients who suffer from nontuberculous chest diseases, for it is recognized that patients with nontuberculous chest conditions often become problems from the point of view of the diagnosis of open tuberculosis. Lastly, the clinic provides rehabilitation programs for those who suffer from chronic pulmonary diseases.

The patients who attend the chest clinic come from many sources. They may be referred directly to the out-patient department from other agencies, or they may be referred from other departments in the out-patient service. Many are referred directly from the general medical department whenever the chest X-ray examination suggests pulmonary disease. In order to avoid clerical oversight on these suspicious cases, the roentgenologist reports directly to the chest clinic all questionable tuberculous lesions seen on routine film taken of out-patients. Patients who are to have post-hospital or post-sanatorium care are referred directly to the clinic at the time of their discharge from the institution. The number of referrals to the chest clinic can be greatly increased following installation of the 4 x 5-inch X-ray unit, because every patient who enters either the hospital or the out-patient medical department will have a routine chest X-ray inspection.

When a patient is referred to the clinic for diagnostic purposes he has already had a complete history and a physical examination. In addition a hemoglobin, white blood count, differential blood count, sedimentation rate, blood Wassermann test, and urinalysis are done. A Mantoux test is applied routinely to each patient in the chest department. An X-ray film of the chest has already been taken as a routine procedure. Further, in those patients past the age of 45, or if otherwise indicated, a blood sugar determination and a blood urea determination are done. A routine electrocardiogram is also made on all patients in the middle-aged group.

Other forms of laboratory work are requested whenever they are indicated. The sputum is examined routinely, and if repeated sputum examinations are negative a gastric wash is made. The material thus obtained is investigated by culture as well as guinea pig inoculation. Any individual found to have active tuberculosis is referred to the hospital immediately. If the patient is

found to have arrested or apparently cured tuberculosis, he remains under observation in the out-patient clinic. Patients too ill to undergo the diagnostic survey in the clinic are also referred to the general medical service for such care.

At all times the out-patient department is in a position to perform when indicated any special examination, such as bronchoscopy, lipiodal injection, and allergy tests. When a patient with open tuberculosis is admitted to the hospital the clinic nurse immediately notifies the city health department of the existence of the case. The public health nurses then investigate all those who were in contact with the case. These contacts are referred to the city tuberculosis clinic, where a Mantoux test and a routine chest film are made. If tuberculosis is found the patient is referred to his family physician for further advice.

The post-sanatorium care of tuberculous patients represents a large amount of time spent in the treatment of tuberculosis. All such patients are referred to the out-patient department at the time of their discharge from the pavilion.

On their first visit to the clinic a hemoglobin, white blood count, urinalysis, sedimentation rate, and an X-ray examination of the chest are done. The patient is weighed, his temperature is taken, and the blood pressure and pulse rate are recorded. The patient is then questioned concerning his activities since leaving the pavilion, and his chest is examined.

If the patient is doing well he returns in two months, when he again undergoes the entire examination. If the patient is raising sputum, it is examined for the tubercle bacillus, and when indicated a gastric wash is repeated.

The patient's return visits are graduated according to his clinical progress. If he improves, his visits are spaced until he is returning about every four months. At each visit the entire examination and the laboratory work are repeated. The patient is always examined and questioned concerning his progress. When the clinical course is such that he is apparently cured, he is told to return after a period of six months, at which time we again repeat the laboratory work, the X-rays, and the physical examination.

The return visits of the apparently cured patient are so spaced that ultimately he returns annually, but it is understood that he may return at any time that he feels the need of care. A patient who fails to return at the time indicated is notified by postal card, and, if he still fails to return, the public health nurse is notified. She visits the patient and attempts to teach him the need for further and prompt observation.

During the time the patient is returning to the clinic for observation and care, plans are made for his rehabilitation. If the patient's occupation previous to his illness is such that it does not jeopardize or interfere with his



recovery, he returns to work on a graduated time schedule, and his hours of employment are gradually increased until he works a full eight-hour day. When the patient is economically secure he no longer returns to the clinic but is referred to his private physician for care. Arrangements are made for the Minnesota Department of Education to rehabilitate those whose work before the onset of tuberculosis was such as to jeopardize their recovery were they to continue in it. Obviously, such rehabilitation is a very important function of the out-patient department.

Any patient suffering from a nontuberculous disease of the chest, such as bronchial asthma, bronchiectasis, and allergic conditions, such as seasonal pollenosis, with or without asthma, is asked to return to the out-patient department for observation and treatment. These patients are usually examined every three months. The examination and re-examination are identical with those used for patients suffering from tuberculosis. It is surprising how frequently an individual who for many years has apparently had asthma or bronchiectasis will suddenly be found to have open tuberculosis. For this reason we feel that these people should be under constant observation and should be followed in the same manner as the individual who has or has had tuberculosis.

One of the outstanding features of the chest department is the weekly conference concerning the patient. This conference is held every Friday morning, and is attended by all physicians responsible for the care of the tuberculous patients. In addition, Dr. Richards Aurelius, director of the X-ray department, is present, and on most occasions Dr. John F. Noble, chief of the laboratory at the Ancker Hospital, as well. At these conferences the new patients who have been admitted to the sanatorium are investigated, their records are reviewed, and treatment for each individual is suggested. Any person who is a diagnostic problem is restudied. The course of illness of patients ready for discharge from the hospital is discussed, and recommendations for discharge are made. These patients are then referred to the out-patient department. Any type of collapse therapy, such as surgical procedures, is discussed by Dr. D. Greth Gardiner, chief of the thoracic surgery division. Owing to these conferences we are all familiar with the condition of the patient and with any problem concerning his care, whether he is ambulatory or confined to the hospital.

Necessary treatments for the patient in the out-patient department are given by the physicians and nurses in attendance in the clinic. The pneumothorax treatments are given on different days from the regular chest clinic, and are under the direction of Dr. George Roth. Patients receiving pneumothorax treatment are re-examined and checked in the chest clinic at stated intervals, even though they may be returning for air injections at weekly or monthly intervals.

When it is considered that a patient has received pneumothorax treatment over a sufficiently long period of

time, he is informed that it may now be well to abandon the pneumothorax treatment. If the patient elects to do so, the matter is discussed in the Friday conference. If in the opinion of the group such a procedure is indicated, the pneumothorax is gradually released. As these patients return at stated intervals for examination many problems other than tuberculosis arise, and all these problems are handled through conferences with the entire group on the tuberculosis division.

The tremendous advantage of being under the same roof as the general hospital is seen daily when some nontuberculous disease is found in the tuberculous population. In such cases we have at hand specialists who are cooperative and willing to aid in any emergency that may arise. This arrangement is of great help in handling patients suffering from chronic lung afflictions.

In conclusion it may be emphasized that the chest clinic in the out-patient department of the Ancker Hospital is primarily interested in the diagnosis and post-sanatorium care of any individual with tuberculosis, but it is also interested in nontuberculous diseases of the chest because of the frequent appearance of open tuberculosis in what was previously a nontuberculous disease, and because tuberculosis frequently masquerades as some other form of pulmonary disease.

The out-patient department is unique in its relationship with the sanatorium division of the hospital for the care of tuberculosis, and is also housed under the same roof as the general hospital. This arrangement is advantageous, for it aids in the care of both tuberculous and nontuberculous patients.

The clinics are fortunate in the understanding of their function by the members of the Welfare Board and their secretary, Miss Ruth Bowman, and in having the close cooperation and understanding of Dr. Thomas E. Broadie, superintendent of the hospital. The hospital and clinic are indebted to the Health Department, under Dr. Robert B. J. Schoch, and to his nurses and staff, for the follow-up examination of contacts and for bringing patients back to the hospital and out-patient department for further treatment and examination.

Dr. Edward Meyerding and his group in the Ramsey County Public Health Service, as well as others interested in promoting the Christmas Seal Fund, have contributed greatly to the function of the tuberculosis division of the hospital by furnishing us with funds to purchase a 4 x 5-inch X-ray unit.

Dr. Richards Aurelius, chief of the department of roentgenology, and Dr. John F. Noble, chief of the department of pathology, are valuable consultants to the sanatorium division, and particularly to the out-patient department, because of their wide knowledge of tuberculosis in their respective fields and their willingness to cooperate in the problems of the out-patient department. Lastly, the entire division is indebted to the general medical staff of the hospital and to the nursing staff for their kindness and consideration in helping to care for patients afflicted with pulmonary disease.

# Who Should Have the Tuberculin Test?

Julius B. Novak, M.D.

Chicago

THE value of the tuberculin test as a modern weapon in the control of tuberculosis has been proved beyond doubt. However, its effectiveness differs in various age groups, localities, and races.

The answer to the question "Who should be tested with tuberculin?" is relatively simple. Everyone should be tested. However, we must not expect the same results or the same epidemiological value from all groups. If we expect a good clinical case yield from a case finding project in children of preschool age, either by X-ray or the tuberculin test method, we are certain to be disappointed. The number of cases of reinfection type of tuberculosis in this group is small, and in many places this is true also of the primary type.

Then why do any tuberculin testing in this age group? The answer is that, although the number of clinical cases found is infinitesimal, these children possess a characteristic that makes tuberculin testing imperative, namely, that they have a limited contact with people and that we can trace the source of the infection among them much more easily than in any other age group.

As an example: A child, 3½ years old, reacted to tuberculin. As would be true in almost all children of this age, the X-ray and physical examination were negative. Nevertheless, the test provided us with the important fact that this child was infected with tubercle bacilli. It was probable that the infection came from one of her few adult associates. Tuberculin testing and X-ray inspection of the immediate family revealed that an uncle who was working every day as a railroad conductor had open tuberculosis. Thus the tuberculin test led to the discovery of a case of tuberculosis, the victim of which was innocently but nevertheless dangerously infecting a great many people. It also stopped the reinfection of the child.

A great many pediatricians routinely tuberculin test all infants. The infection attack rate is roughly one per cent per year. The test has no value unless the source of the infection is found. All adults with whom the child who reacts has intimate contacts should be examined for contagious tuberculosis. We have been able to find 40 per cent of the sources of infection in this manner.

The grammar school group of children, aged 6 to 14, has been extensively tested. The number of clinical cases found has been small, and therefore some physicians have advocated that tuberculin testing be discontinued in this age group. In fact, only one case in five hundred tuberculin reactors shows any lung pathology. The same poor results are obtained with X-ray surveys when cases of reinfection tuberculosis are sought.

However, when a tuberculin testing program is properly carried out a tremendous amount of good is accomplished. A program should not consist of a single test-

ing project, but should be repeated annually. All non-reactors should be retested each year. Whenever someone becomes a reactor under these conditions we are able to find the source much more easily, since we know that the infection has occurred during the preceding year.

Let me cite two examples. In a grammar school where tuberculin testing was done for the first time the incidence of reactors was about 10 per cent, the usual proportion for this age group in the locality where they were tested. We found two sisters, aged 8 and 12, who were reactors. It was probable that they were not infected at school, because of the general low incidence of reactors. In their home, however, it was found that the father, though working every day, was an open case of tuberculosis. The care and control of the case eliminated further infection of the girls and also of the man's associates.

The second example occurred in a school where tuberculin testing had been done for a great many years. All nonreactors were retested every year. One year during the annual testing we found three of a family of six reacting to tuberculin. All six had previously been non-reactors. Close questioning disclosed that the three who became reactors had spent a summer vacation at the home of relatives, and a check of these relatives revealed a previously unknown case of contagious tuberculosis.

The educational value of tuberculin testing is enormous. Participation in such a project teaches more about tuberculosis than lectures or motion pictures can ever accomplish. A child with a tuberculin reaction will usually remember to be examined at yearly intervals.

In the high school group the case finding potentialities increase. One in every two hundred tuberculin reactors will show some evidence of the reinfection type of tuberculosis. During the last twelve years our percentage of high school reactors has dropped from 33 to 21—an encouraging decrease in the incidence of infection.

Owing to the greater number of adult contacts, it is much more difficult to find the source of infection in the high school group. However, as the following example shows, an alert testing program can accomplish a good deal in this direction. In one of our high schools we observed that five girls from the same class who had previously been nonreactors had become reactors. After some investigation our nurse found that these girls were working in a sausage factory after school hours. A survey of this small factory revealed a previously unknown case of tuberculosis among the permanent workers.

A straight X-ray survey in the high school group is very costly, since 80 to 90 per cent of the group are non-reactors and do not need X-ray inspection of their chests. The argument that everyone will be X-rayed, while only 60 per cent of the group is tested, and that we therefore



find more cases by X-ray, merely indicates that we are trying to find an easy way out. A good testing program will get out most of the school population.

The teachers and other personnel of the school should be X-rayed, and any with suspicious lesions should be tested with tuberculin and also with all other phases of the examination necessary to determine whether the lesions are tuberculous.

As the infection rate becomes less and less, college students as a group have a lower percentage of reactors. X-ray inspection of reactors shows evidence of lung disease in one in every 150. During the college years students offer a great opportunity for teaching the story of the spread of tuberculosis. The best way to learn

is by participation. The college student who reacts to tuberculin knows what it means and is smart enough to submit to periodic examination to detect the presence of the reinfection type of tuberculosis.

When mass X-ray surveys reveal pulmonary densities the tuberculin test should always be administered before a diagnosis of tuberculosis is made. When there is no reaction to an adequate dose of tuberculin, tuberculosis is usually not the cause of the X-ray shadow.

In summary, I would say that everybody should be tested with tuberculin. Such testing has different values in different age groups, races, and localities. Nevertheless, tuberculin testing, properly used, is a very effective weapon in the control of tuberculosis.

### ANTECEDENTS OF THE NATIONAL TUBERCULOSIS ASSOCIATION

. . . "There is a wealth of records to attest that the birth of the present National Tuberculosis Association was exceedingly painful. Differences of opinion there were, some mild, others acrimonious. The principles of organization which we accept today with little thought or question were fraught with bitterest debate at the beginning of the present century.

"It seems clear now that, broadly speaking, there were at least six forces or factors which had to be welded into one to make the present national movement. Their impact on society was not yet fully felt in 1892.

"The first force was exerted by a number of private physicians interested in tuberculosis as a disease. Most of the leaders in this group were members of the American Medical Association and the American Climatological Association. These men were concerned primarily with tuberculosis as a disease in the individual.

"The second influence was that of the public health officers in the respective states and cities throughout the country. Practically all of these men were members of the American Medical Association and the American Public Health Association. They were interested in tuberculosis largely as a problem affecting the public health. In this connection it should be remembered that in 1900, the death rate from tuberculosis in the United States was 194 per 100,000 of population. The disease accounted for 1 death in 9 and was far and away the leading cause of mortality. The public health officials were, therefore, acutely conscious of the need for some action which would give promise of a reduction in such menacing figures.

"The third influence was that of the physicians who had established institutions for the care and treatment of tuberculosis or were engaged in medical service in such institutions. These men were comparatively few in number but wielded a large influence in the discussions of tuberculosis in the organized medical, climatological and public health associations.

"The fourth influence was that exerted by laymen who recognized the devastation wrought by tuberculosis among the people and who gave thought or financial assistance to bring about an organized resistance against the disease. At the outset, this group was small. It was recruited among the philanthropists, lawyers and those whom we term today, social workers. They were interested in any proposal which gave promise of alleviating the vicious social effects of the disease.

"The fifth force came from a minute group which devoted itself to the organization of the campaign against the disease. Today they are termed 'tuberculosis secretaries.' They were interested in the disease as a medical, institutional, public health and social problem. They later became one of the chief forces in the welding process.

"A sixth factor was the attitude of the victims of the disease, their families and friends. That this group was virtually mute but ready for a unified leadership is attested by the subsequent history of the movement in this country.

"Obviously, it must be borne in mind in any such categorical classification of forces that there were individuals in each of the groups who had a wider view of the problem. It is only necessary here to point to such men as Drs. Vincent Y. Bowditch, Edward L. Trudeau, William Osler, Hermann M. Biggs, Lawrence F. Flick, Henry Barton Jacobs and Edward O. Otis, to mention a few of the outstanding leaders. They were not alone interested in the medical aspects of tuberculosis but were equally concerned with the possibilities of prevention."

—ROBERT G. PATERSON, Secretary, Committee on Archives, National Tuberculosis Association.

# Report of a One-Year Survey of a Diagnostic Tuberculosis Service in a General Hospital

Willard E. Peterson, M.D.

Minneapolis

FOR several years the Minneapolis General Hospital has maintained an active tuberculosis control program within the institution. The procedure has been to apply a Mantoux test routinely to all new hospital admissions and to take chest X-ray films of all reactors. By this method we endeavor to screen out all unsuspected open cases on the hospital wards who might constitute a dangerous source of exposure to other patients and to the hospital personnel.

Until recent months it was found to be most practical to engage one person, a part-time nurse, to do all the tuberculin testing and recording. However, the shortage of nurses has made it necessary for the hospital clerks and interns to assume this function. We hope the first method can soon be reinstated. All suspected cases found are isolated on the tuberculosis unit. This unit has an eight-bed capacity, all single rooms, and is located in the contagion unit.

The hospital staff has attempted to detect and isolate all cases of suspected tuberculosis as quickly as possible and to make an accurate specific diagnosis of the disease process before final disposition of the case. Toward this end several diagnostic procedures are employed, i.e., the tuberculin test, X-ray inspection, sputum and gastric content smears, and guinea pig inoculation. Since difficulty arose from false positive findings with the smear technique alone, we have recently used culture methods to complement guinea pig inoculation. The results have been gratifying. Sternal aspiration has proved a very useful adjunct in the diagnosis of miliary tuberculosis during life.<sup>2,3</sup>

jail and workhouse, those referred by the Minneapolis Public Health Service as diagnostic problems or as constituting a health menace to the community, those referred by private doctors and private hospitals for isolation and diagnosis, and, finally, those patients seeking hospital care on whom the admitting diagnosis was suspected tuberculosis. The remaining patients (31.5 per cent) were those admitted to the hospital on other services but in whom tuberculosis was later suspected, with resultant transfer to the contagion unit.

TABLE 2  
Showing Distribution of Patients According to Diagnosis

| Diagnosis                   | Number of patients | Percentage of Total |
|-----------------------------|--------------------|---------------------|
| Active tuberculosis .....   | 76                 | 53.2                |
| Inactive tuberculosis ..... | 27                 | 18.9                |
| No tuberculosis .....       | 40                 | 27.9                |
| Total .....                 | 143                | 100.0               |

Of the 143 cases admitted, active tuberculosis was diagnosed in 76, or 53.2 per cent (Table 2). The value of an active tuberculosis control program and a hospital staff alert to its enforcement is evident when it is noted from Table 1 that 32 of the 76 active cases of tuberculosis, or 42 per cent, were first admitted on other hospital services and were therefore, until the time of transfer, an unsuspected source of infection to other patients and the hospital personnel.

TABLE 3  
Showing Age Distribution of Cases of Active Tuberculosis

| Age Group   | Number of Cases | Percentage of Cases |
|-------------|-----------------|---------------------|
| 0-19 .....  | 2               | 2.6                 |
| 20-29 ..... | 9               | 11.8                |
| 30-39 ..... | 10              | 13.2                |
| 40-49 ..... | 14              | 18.5                |
| 50-59 ..... | 8               | 10.5                |
| 60-69 ..... | 18              | 23.7                |
| 70-79 ..... | 13              | 17.1                |
| 80 up ..... | 2               | 2.6                 |
| Total ..... | 76              | 100.0               |

That active tuberculosis is becoming relatively more common in the older age groups is illustrated in Table 3. Here it is shown that 73.4 per cent of the active cases were over 40 years of age, 54.9 per cent were over 50 years of age, and 44.4 per cent, or almost half the cases, were over 60 years of age. While it is true that the age incidence would probably closely parallel the average age of patients admitted to a charity hospital during a war year and a prosperous year, nevertheless, tuberculosis in the population of this community is apparently becoming

TABLE 1  
Showing Source of Patients Admitted on the Tuberculosis Service, in Relation to Diagnosis

| Diagnosis                   | Number admitted direct to service | Number transferred from other services |
|-----------------------------|-----------------------------------|----------------------------------------|
| Active tuberculosis .....   | 44                                | 32                                     |
| Inactive tuberculosis ..... | 23                                | 4                                      |
| No tuberculosis .....       | 31                                | 9                                      |
| Total .....                 | 98                                | 45                                     |
| Percentage .....            | 68.5                              | 31.5                                   |

During the year 1945 a total of 143 patients, representing 1.7 per cent of 8740 hospital admissions, were admitted to the tuberculosis service. Most of these patients (68.5 per cent) were admitted directly from the receiving ward (see Table 1). They include patients suspected of tuberculosis who were referred from the hospital out-patient clinic, those sent in from the city

From the Tuberculosis and Internal Medicine Services, Minneapolis General Hospital.



ing more and more a problem of the older age group. This fact would be expected from the known exposure of the older generation to tuberculosis compared with the decreased exposure and decreased incidence of primary infection in the younger age group.<sup>1</sup>

TABLE 4  
Showing Type of Lesion and Stage of Activity of Active Tuberculosis

|                         | Below age 50 | Above age 50 | Total Number | Percentage of Group I |
|-------------------------|--------------|--------------|--------------|-----------------------|
| <b>Group I</b>          |              |              |              |                       |
| Pulmonary lesions       |              |              |              |                       |
| Far advanced            | 16           | 21           | 37           | 56.1                  |
| Moderately far advanced | 9            | 12           | 21           | 31.8                  |
| Minimal                 | 4            | 4            | 8            | 12.1                  |
| Total, Group I          |              |              | 66           |                       |
| <b>Group II</b>         |              |              |              |                       |
| Extrapulmonary lesions  | 12           | 8            | 20           |                       |
| Grand Total             |              |              | 86           |                       |
| Percentage, Group I     |              |              |              | 76.7                  |
| Percentage, Group II    |              |              |              | 23.3                  |

Pulmonary lesions as seen in Table 4 represent 76.7 per cent of all active tuberculous lesions. Some patients, of course, had both pulmonary and extrapulmonary lesions, accounting for the fact that the number of lesions is greater than the number of cases. Regrettably, almost 88 per cent of the patients with pulmonary lesions were advanced cases at the time the diagnosis of activity was made. There was no appreciable difference in this respect between the patients grouped above or below the age of 50.

TABLE 5  
Types and Number of Extrapulmonary Tuberculosis Lesions

| Type                   | Number of Cases |
|------------------------|-----------------|
| Miliary                | 6               |
| Renal                  | 2               |
| Larynx                 | 2               |
| Pleurisy with effusion | 5               |
| Enteritis              | 2               |
| Bone                   | 1               |
| Otitis                 | 1               |
| Adenitis               | 1               |

The type and distribution of extrapulmonary lesions are shown in Table 5. There were six cases of miliary tuberculosis, most of whom were diagnosed during life by sternal aspiration. Five of these patients had generalized miliary tuberculosis and have since expired. The other patient, who had miliary tuberculosis of the bone marrow associated with tuberculous adenitis, is living and in good condition over one year after initial diagnosis.

TABLE 6  
Other Pathological Conditions Suspected as Tuberculosis

| Diagnosis              | Number of Cases |
|------------------------|-----------------|
| Bronchiectasis         | 7               |
| Pneumonia, upper lobes | 5               |
| Pneumonia, unresolved  | 3               |
| Cardiac decompensation | 4               |
| Pulmonary infarction   | 2               |
| Bronchogenic carcinoma | 1               |
| Acute lung abscess     | 1               |
| Metastatic carcinoma   | 1               |
| Nontuberculous empyema | 1               |
| Luetic endometritis    | 1               |
| Others                 | 14              |

Numerous other conditions are frequently mistaken for tuberculosis, and the differential diagnosis is often difficult and time consuming. These conditions are listed in Table 6. This table does not include patients who proved to have inactive tuberculosis but were admitted suspected of activity because of acute upper respiratory infections, bronchopneumonia, or other conditions.

As would be expected, chronic bronchiectasis, owing to the productive cough and episodes of hemoptysis associated with it, is the condition most commonly suspected clinically as tuberculosis. The X-ray shadows of upper lobe pneumonias, of both acute and unresolved types, caused some difficulty in differentiation. That cardiac decompensation (left ventricular type) was so commonly confused with tuberculosis is a little surprising. However, in pulmonary infarction, particularly where either upper lobe is involved and hemoptysis is present, differentiation must be made by careful study. Other conditions found included bronchogenic and metastatic carcinomas and acute lung abscess. One patient admitted with a histologic diagnosis of tuberculous endometritis was later found to have a luetic involvement of the endometrium.

TABLE 7  
Mortality

|                            |      |
|----------------------------|------|
| Total number of admissions | 143  |
| Number of deaths           | 21   |
| Mortality rate (per cent)  | 14.6 |
| Autopsy percentage         | 42.8 |

The mortality figures for the service are given in Table 7. The mortality rate of 14.6 per cent seems rather high, but it must be realized that most of these patients were admitted in a moribund state; in other cases terminal bronchopneumonia or pulmonary edema could not be differentiated from tuberculosis and necessitated admission on that service. Four of the deaths in this hospital were due to generalized miliary tuberculosis. In eight other patients tuberculosis was considered a contributing cause of death, making a grand total of twelve, or 57.2 per cent of the cases.

REFERENCES

1. Myers, J. A.: Tuberculosis among Persons over Fifty Years of Age. *Geriatrics*, 1: 27-39, 1946.
2. Schleicher, E. M.: Miliary Tuberculosis of the Bone Marrow. *Am. Rev. Tuberc.*, 53: 115, 1946.
3. Schleicher, E. M.: Pernicious Anemia and Miliary Tuberculosis of the Bone Marrow Organ. *Am. J. Clin. Path.*, 15: 402, 1945.

## . . . MEET OUR CONTRIBUTORS . . .

DR. JAY ARTHUR MYERS, editor of this special tuberculosis issue, is also chairman of the Board of Editors of the *JOURNAL LANCET*, as well as chairman of the Editorial Board of *Diseases of the Chest*, official journal of the American College of Chest Physicians, and an Associate Editor of *Geriatrics*. Dr. Myers is Professor of Internal Medicine and Preventive Medicine at the University of Minnesota, and Chief of Tuberculosis Service, Minneapolis General Hospital. He is a member of many professional societies, including the American College of Chest Physicians, the American Association of Thoracic Surgeons, the American Trudeau Society, and the American College of Physicians.

DR. KENDALL EMERSON, of New York, distinguished surgeon who contributes the introduction to this special issue, has been managing director of the National Tuberculosis Association since 1928. A graduate of Amherst College and Harvard Medical School, Dr. Emerson has been consulting surgeon of Worcester Memorial Hospital, where he began the practice of orthopedic and general surgery, since 1928. He is a Fellow of the American College of Surgeons and a member of many professional societies.

DR. OSCAR A. SANDER of Milwaukee is a graduate of the University of Wisconsin and had his medical training at the University of Pennsylvania (M.D., 1927), with graduate work in internal medicine at the University of Pittsburgh Medical School in 1928-29 and in pathology at the University of Vienna in 1930. His specialties are internal medicine and diseases of the chest. He is a Fellow of the American College of Physicians and a member of the American Trudeau Society, the American Public Health Association, and the American Association of Industrial Physicians and Surgeons.

DR. HERBERT L. MANTZ of Kansas City, Missouri, has practised in that city for 24 years. He is a graduate of the University of Missouri and had his medical training at Jefferson Medical College (M.D., 1920). He interned at the Kansas City General Hospital and the Kansas City Tuberculosis Hospital. His specialty is diseases of the chest. Dr. Mantz is Medical Consultant in Vocational Rehabilitation in Missouri, Consultant to the U. S. Public Health Service, and Regional Consultant of the U. S. Veterans Bureau. A member of the Jackson County Medical Society, the Missouri State Medical Association, the American Medical Association, the Kansas City Southwest Clinical Society, the American College of Chest Physicians, and the American Trudeau Society, Dr. Mantz is also President of the Missouri Tuberculosis Association and Governor for Missouri of the American College of Chest Physicians.

DR. LOREN L. COLLINS of Ottawa, Illinois, is past president of the Mississippi Valley Trudeau Society, as his article indicates. He is a graduate of the University of Illinois College of Medicine (1925), and has his office at the La Salle County Tuberculosis Sanatorium.

DR. EDWIN J. SIMONS, Chief of the Medical Services Unit of the St. Paul Division of Social Welfare, and President of the Minnesota State Medical Association, has practiced medicine in his home state for 22 years. He is a triple graduate of the University of Minnesota (B.S., B.M., and M.D., 1924). His specialties are internal medicine and diseases of the chest. Dr. Simons is a member of the Upper Mississippi Medical Society, the American Medical Association, the American College of Physicians, the American College of Chest Physicians, and the American Academy of Tuberculosis Physicians.

DR. SARAH I. MORRIS, Professor of Preventive Medicine at Wilson College, is a graduate of the Woman's Medical College of Pennsylvania. Her specialty is tuberculosis.

DR. JOHN FRANCIS BRIGGS of St. Paul is a graduate of the University of Minnesota Medical School (1929) and a Diplomate of the American Board of Internal Medicine. He is physician to the Ancker Hospital and also Clinical Assistant in Medicine, University of Minnesota Medical School. He is a fellow of the American College of Physicians, a Fellow of the College of Chest Physicians, and a member of the American Medical Association, the American Trudeau Society, the Minnesota Society of Internal Medicine, and the American Heart Association. His specialty is internal medicine.

DR. EVERETT K. GEER, chief of the tuberculosis department at Ancker Hospital, St. Paul, is also Clinical Assistant Professor of Internal Medicine at the University of Minnesota. He is also a graduate of the University of Minnesota (B.S., M.D., 1917), with graduate work at the Trudeau School. Dr. Geer has practised in St. Paul for 27 years. A Diplomate of the American Board of Internal Medicine, his specialty is diseases of the chest. He is a member of the American Medical Association, the American College of Physicians, the Central Society for Clinical Research, the American Trudeau Society, and the Minnesota Society of Internal Medicine.

DR. JULIUS B. NOVAK, Medical Director of the Tuberculosis Institute of Chicago and Cook County, is a graduate of the University of Illinois (B.S., M.D., 1926), and was resident physician of Cook County Hospital in 1927-28. Dr. Novak is a Fellow of the American College of Chest Diseases and a member of the Trudeau Society, the Chicago Tuberculosis Society, and the American Medical Association, as well as a member of the Tuberculosis Committee of the American School Health Association. He has practised in Chicago for 19 years.

DR. WILLARD E. PETERSON is a graduate of the University of Minnesota Medical School (M.B., 1942, M.D., 1943), and has been with the Minneapolis General Hospital since 1943. He is a member of the Minnesota Trudeau Society.



# The JOURNAL LANCET

Serves the *Medical Profession of*  
MINNESOTA, NORTH DAKOTA, SOUTH DAKOTA AND MONTANA

Official Journal of the American Student Health Assn., Great Northern Railway Surgeons' Assn., Minneapolis Academy of Medicine, Montana State Medical Assn., North Dakota Society of Obstetrics and Gynecology, North Dakota State Medical Assn., Northwestern Pediatric Society, Sioux Valley Medical Assn., South Dakota Public Health Assn., South Dakota State Medical Assn.

## ADVISORY COUNCIL

### *North Dakota State Medical Assn.*

Dr. James F. Hanna, *Pres.*  
Dr. A. E. Spear, *Pres.-Elect*  
Dr. L. W. Larson, *Secy.*  
Dr. W. W. Wood, *Treas.*

### *North Dakota Society of Obstetrics and Gynecology*

Dr. E. H. Boerth, *Pres.*  
Dr. Paul Freise, *Vice Pres.*  
Dr. G. Wilson Hunter, *Secy.-Treas.*

### *Minneapolis Academy of Medicine*

Dr. Karl W. Anderson, *President*  
Dr. Russell W. Morse, *Vice Pres.*  
Dr. J. C. Miller, *Secretary*  
Dr. Ragnvald S. Ylvisaker, *Treasurer*  
Dr. Henry E. Hoffert, *Recorder*

### *South Dakota State Medical Assn.*

Dr. William Duncan, *Pres.*  
Dr. F. S. Howe, *Pres.-Elect*  
Dr. H. R. Brown, *Vice Pres.*  
Dr. Roland G. Mayer, *Secy.-Treas.*

### *South Dakota Public Health Assn.*

Dr. J. M. Butler, *Pres.*  
Dr. C. E. Sherwood, *Vice Pres.*  
Dr. Gilbert Cottam, *Secy.-Treas.*

### *Sioux Valley Medical Assn.*

Dr. D. S. Baughman, *Pres.*  
Dr. Will Donahoe, *Vice Pres.*  
Dr. R. H. McBride, *Secy.*  
Dr. Frank Winkler, *Treas.*

### *Montana State Medical Assn.*

Dr. S. A. Cooney, *Pres.*  
Dr. M. A. Shillington, *Pres.-Elect*  
Dr. R. F. Peterson, *Secy.-Treas.*

### *Northwestern Pediatric Society*

Dr. G. B. Logan, *Pres.*  
Dr. Geo. Kimmel, *Vice Pres.*  
Dr. Northrop Beach, *Secy.-Treas.*

### *Great Northern Railway Surgeons' Assn.*

Dr. W. W. Taylor, *Pres.*  
Dr. R. C. Webb, *Secy.-Treas.*

### *American Student Health Assn.*

Dr. Ralph I. Canuteson, *Pres.*  
Dr. Glenadine Snow, *Vice Pres.*  
Dr. G. T. Blydenburgh, *Secy.-Treas.*

## BOARD OF EDITORS

Dr. J. A. MYERS, *Chairman*

Dr. J. O. Arnson  
Dr. A. B. Baker  
Dr. D. S. Baughman  
Dr. Ruth E. Boynton  
Dr. Gilbert Cottam  
Dr. H. S. Diehl  
Dr. L. G. Dunlap  
Dr. Ralph V. Ellis  
Dr. W. A. Fansler

Dr. A. R. Foss  
Dr. James M. Hayes  
Dr. A. E. Hedback  
Dr. E. D. Hitchcock  
Dr. R. E. Jernstrom  
Dr. A. Karsted  
Dr. L. W. Larson  
Dr. W. H. Long  
Dr. O. J. Mabee

Dr. J. C. McKinley  
Dr. Irvine McQuarrie  
Dr. Henry E. Michelson  
Dr. C. H. Nelson  
Dr. N. J. Nessa  
Dr. Martin Nordland  
Dr. J. C. Ohlmacher  
Dr. K. A. Phelps  
Dr. C. E. Sherwood

Dr. M. A. Shillington  
Dr. J. C. Shirley  
Dr. E. Lee Shrader  
Dr. E. J. Simons  
Dr. J. H. Simons  
Dr. S. A. Slater  
Dr. W. P. Smith  
Dr. S. E. Sweitzer

Dr. W. H. Thompson  
Dr. E. L. Tuohy  
Dr. M. B. Visscher  
Dr. O. H. Wangenstein  
Dr. S. Marx White  
Dr. H. M. N. Wynne  
Dr. Thomas Ziskin,  
*Secretary*

LANCET PUBLISHING CO., *Publishers*, 84 South Tenth Street, Minneapolis 2, Minnesota

MINNEAPOLIS, MINNESOTA, APRIL, 1946

## TUBERCULOSIS IS CONTAGIOUS

Several centuries before Christ the contagion of tuberculosis was suspected. Despite the fact that Villemin proved its contagiousness beyond doubt in 1866, and Koch actually demonstrated the specific organism, we find constitution, inheritance, race, and a dozen other factors being emphasized as the cause of tuberculosis, sometimes almost to the exclusion of the tubercle bacillus. One disease after another, like diphtheria and typhoid, were accepted as contagious and so treated, but when tuberculosis was proved to be contagious many persons, and even some physicians, refused to accept the evidence.

Probably this attitude was due to the fact that the primary lesions of tuberculosis usually are not visible on the surface of the body. They do not cause significant illness, and therefore in the great majority of cases they are not known to exist. Thus, individuals who are exposed to contagious cases of tuberculosis go blithely on

assuming that the disease is not contagious, despite the fact that they themselves have developed primary lesions as a result of the exposure. Usually it is months, years, or decades later that clinical manifestations appear—so long after the contact that they are not associated with the exposure, and therefore the disease often is not recognized as contagious.

Not until we had an accurate and specific test for primary tuberculosis could the more detailed facts concerning its contagion be determined. It was then discovered to be one of the most contagious of all diseases. For example, a tuberculous teacher could transmit bacilli, resulting in primary tuberculosis as manifested by the tuberculin reaction, to nearly all her pupils, and tuberculous parents could transmit the disease to all their children.

Long after we instituted strict contagious disease technique in the management of persons suffering from such

diseases as scarlet fever, we continued to manage cases of tuberculosis with almost no regard for its contagion, and in many places we still do. About all we did to protect fellow patients, personnel, and visitors was to ask the patient to cover the mouth with gauze or paper napkin when coughing or sneezing and to collect sputum in a special container. These procedures are inadequate, as demonstrated beyond doubt by the large number of students of nursing and medicine who develop primary tuberculosis through contact with patients in sanatoriums and hospitals, with consequent illness and death for many in later years. Any hospital today that would ignore the contagion of such diseases as scarlet fever, diphtheria, and typhoid fever, as is done in the case of tuberculosis, probably would be voted out of state and national hospital organizations and would have many persons claiming compensation for disease contracted from patients.

It is one of the outstanding paradoxes in medicine that we build institutions for the tuberculous for the express purpose of protecting girls and boys against contagion in their homes and communities, and then ask, or even demand, that the same girls and boys come to these institutions to work with patients, without effective protection against the disease, despite the fact that in such institutions there is more intimate contact with and exposure to patients than there would have been in their own homes. Battles are waged against contagion as long as patients are in their own homes and communities, but as soon as they are admitted to hospitals and sanatoriums peace and tranquillity reign, as though the mere admission to an institution rendered the disease noncontagious or domesticated tubercle bacilli.

The hazard of contact with contagious cases of tuberculosis in homes, places of work, hospitals, and sanatoriums has been clearly demonstrated. Nevertheless, some schools and nursing organizations have maintained that a nurse is not well qualified to practise her profession unless she has had tuberculosis training that brought her in contact with patients. Although there is considerable diversity of opinion as to whether work with tuberculous patients is necessary, certainly no one could object to such a service if contagion were given the same consideration as it is in other transmissible diseases.

At the present moment the United States Veterans Administration is facing a serious and difficult problem with reference to the contagion of tuberculosis. Already there are many thousand veterans of World War II, and there are still a considerable number of veterans of World War I, who have clinical tuberculosis. The responsibility of the Veterans Administration is: (1) to those who visit tuberculous patients in the hospitals; (2) to the veterans themselves who are tuberculous but may be cross-infected; (3) to every member of the personnel working on tuberculosis services or coming in contact with tuberculous veterans in any way; and (4) to the general public, by reducing leaves of absence of contagious cases to an absolute minimum and making some provision for those who leave institutions against medical advice, as well as for those who refuse to enter institutions. Exceedingly close co-operation between the Vet-

erans Administration and the health officers of the country is imperative. At this moment it is only the official health officer who has the authority to enforce isolation of contagious cases of tuberculosis. Unless the health officer is alert and uses his power promptly there is considerable danger that there will be an appreciable increase in tuberculosis among the citizens of this country.

The procedures recommended for tuberculous veterans are equally applicable to tuberculous civilians. In both groups there are two important considerations: first, the protection of the public against contagion; and, second, adequate treatment of the tuberculous patient. On the whole such treatment is far more successful when the activities of the patient are rigidly restricted and all indicated treatment is administered until the disease is noncontagious and the individual's working capacity is restored.

Although no immunizing agent, such as BCG, has been proved sufficiently efficacious for general adoption, there is much that can be done to protect the personnel of hospitals and sanatoriums and all others concerned against the contagion of tuberculosis. Strict contagious disease technique, rigidly enforced, is capable of reducing the infection attack rate among personnel on tuberculosis services to almost that of the general population, as has been demonstrated at the Minneapolis General Hospital.

Unless a hospital or sanatorium is willing to afford every known protection to its personnel on tuberculosis services and to study methods of improving and offering greater protection, professional students should not be permitted on these services. Each member of the personnel of every classification should be informed of the contagiousness of the disease and their salaries should be definitely higher than those of personnel employed on noncontagious services. Indeed, their pay should be commensurate with the risk involved.

J. A. M.

## TUBERCULOSIS PREVALENCE REVEALED THROUGH AUTOPSIES

Pathologists, diagnosticians, and research workers in every field of scientific medicine agree that autopsy findings are among the most important data available to the practicing physician. It was the universal performance of necropsies in the hospitals of Vienna that built that city up to its reputation as the outstanding medical center for postgraduate study fifty years ago. When a case that had puzzled diagnosticians was *zu Grunde gegangen* the news quickly spread, and those interested might attend the post mortem, for, by an orderly arrangement of schedules, information concerning the time and tables assigned to bodies from the various *Abteilungen* were posted in the *Abduzier Zimmer* of the pathological building.

It was never considered sufficient simply to determine the immediate cause of death; every pathological finding, large or small, had to be recorded. That was how Weichselbaum learned to postulate that "*fast Jedermann hat Tuberkulose.*" As Hofrat Weichselbaum, still huge and erect in his eighties, devoted his time chiefly to a



laboratory across the corridor, Anton Ghon, after whom the Ghon tubercle was named, presided over the teaching of gross pathology based on the day's post-mortem findings at 5 P.M. Not only was he a wonderful teacher on such occasions; he will be remembered also for the courteous "Meine Achtung, Herr Kollege," with which he invariably greeted visiting physicians at any time of the day when they were inclined to drop in and see him at work.

Hospitals in this country receive a higher rating by inspection and accrediting committees if they show a large percentage of autopsies performed in their institutions. In obtaining consent for an autopsy it is poor practice to state that it is in the interest of science or that the cause of death was unknown; if the cause was actually unknown, then it is a coroner's case. Better far to suggest the possibility of finding something not directly a factor, the knowledge of which should be revealed for the benefit of the family and immediate associates for their future guidance. And, finally, we should like to make a plea for more refinement and dignity in post-mortem procedures. They need not be more gruesome than surgical operations in our hospitals.

A. E. H.

## ANNOUNCEMENTS

### Clinical Congress, American College of Surgeons

The American College of Surgeons announces that arrangements have been completed for its 32d Clinical Congress, to be held at the Waldorf-Astoria, New York, September 9-13, inclusive. This will be the first clinical congress since the meeting in Boston in 1941. Since that time 2744 surgeons have been received into fellowship in absentia. The formal initiation ceremonies are expected to be especially impressive this year because of the large number of new fellows admitted during the past four years.

Officers, regents, and governors have remained in office since 1941 because of the cancellation of annual meetings, and special interest will therefore attach to the installation of the officers-elect, headed by Dr. Irvin Abell as president. The presidential address will be given by Dr. W. Edward Gallie of Toronto.

Dr. Howard A. Patterson is chairman and Dr. Frank Glenn is secretary of the committee on local arrangements.

### Annual Meeting, American College of Chest Physicians

The 12th annual meeting of the American College of Chest Physicians will be held at the Sir Francis Drake Hotel, San Francisco, June 29-30 and July 1-2.

The next oral and written examinations for fellowship in the College will be held at San Francisco on June 29. Applicants who plan to take the examinations should communicate with the Executive Secretary at 500 North Dearborn St., Chicago 10, Illinois.

### Nine Clinics for Crippled Children Announced in Minnesota

Nine district clinics have been scheduled for this spring by the Crippled Children Services of the Minnesota Division of Social Welfare. These clinics, part of the services financed by the federal and state government, provide medical examination and recommendation for treatment for crippled children and young people under 21 years of age and vocational advice for those over 14. The clinic staff includes two orthopedic surgeons, a pediatrician, a vocational rehabilitation worker, a public health nurse, physical therapists, medical social workers, and public health nurses.

The schedule of the clinics follows. *St. Cloud, April 6*, serving Stearns, Benton, and Sherburne counties. *Austin, April 13*, serving Mower, Freeborn, Steele, and Dodge counties. *Thief River Falls, April 27*, serving Pennington, Marshall, Red Lake, Roseau, and Kittson counties. *Wadena, May 4*, serving Wadena, Todd, and Hubbard counties. *Moose Lake, May 11*, serving Aitkin, Carlton, Pine, Mille Lacs, Kanabec, Lake, and Cook counties. *Worthington, May 18*, serving Nobles, Jackson, Murray, Rock, Pipestone, and Cottonwood counties. *Grand Rapids, May 25*, serving Itasca, Koochiching, and Cass counties. *Morris, June 1*, serving Stevens, Pope, Douglas, Grant, Traverse, Bigstone, and Swift counties. *Detroit Lakes, June 8*, serving Becker, Clay, and Mahanomen counties.

### Army Medical Library Consultants Ask Aid of Medical Men

Hearings in support of a new Army Medical Library building, suspended during the war, will be resumed in April before the Budget and Congressional Committees. These hearings will determine whether a new building will be erected on Capitol Hill, at a cost of \$10 million, to house the greatest collection of medical books in the world. It is notable that Dr. William H. Welch called the Library and its index catalogue America's greatest contribution to medical knowledge.

The Library has been reorganized, and it is no longer possible to carry on in the present building, erected in 1887. The need for the new building has never been disputed, but the Association of Honorary Consultants to the Library, of which Dr. John F. Fulton of Yale University is president, fears that unless the medical profession rallies to the aid of the project the laws will not be amended to provide a proper building.

### Minneapolis Director of Venereal Disease Control Wanted

The Minneapolis Civil Service Commission announces an examination for the position of Director of Venereal Disease Control, for which applications will be accepted until April 30. The salary for the full-time position is \$5000. Appointment will be made on a permanent basis. The residence requirement is waived. A Master of Public Health degree or a Certificate of Public Health is required. For additional information and application blanks call at Room 109, City Hall.

## Book Reviews

*A Mirror for Cure-Takers*, edited by HAROLD HOLAND. Milwaukee: Wisconsin Anti-Tuberculosis Association, 1946. Pp. 184, illustrated. \$2.00.

This book, edited by Harold Holand, consists of a fine collection of writings (previously published in sanatorium magazines) of persons who, for the most part, have been treated in Wisconsin sanatoriums. It is dedicated to Dr. Hoyt E. Dearholt, who, from the beginning of this century, was a power in the control of tuberculosis, not only in Wisconsin, but throughout the nation. Many of his creations in tuberculosis control, such as the establishment of sanatoriums in Wisconsin, have continued since his death in 1939. He was the author of the famous quotation, "No home is safe from tuberculosis until all homes are safe." His greatness was recognized, and after his death the Mississippi Conference on Tuberculosis established a Dearholt Medal Award, which is awarded annually to the person who has done the most meritorious work in the field of tuberculosis.

The book contains articles by and about famous Wisconsin physicians who have contributed so much to our knowledge of the disease—Oscar Lotz, W. H. Oatway, R. D. Thompson, Earl E. Carpenter, and H. A. Anderson. Many other articles were written by former nonmedical patients, some of whom subsequently made outstanding accomplishments in various walks of life. One of the outstanding examples is Will Ross, who gives wholesome advice in articles entitled "The Meaning of Rest" and "The Cured and Half Cured." Almost forty years ago he was desperately ill with tuberculosis. He was compelled to devote several years of his life to the treatment of this disease. During the later part of his convalescence he began selling supplies to fellow patients, and then he opened a little supply store at the state sanatorium. Now Will Ross, Incorporated, is the largest hospital supply house in the Middle West. His unprecedented success in the business world never detracted from his interest in the control of tuberculosis. Not only has he greatly encouraged large numbers of persons suffering from this disease; he has also participated in the rehabilitation of a great many tuberculous individuals. His advice has been constantly sought, not only by the Wisconsin Anti-Tuberculosis Association, but also by great national organizations such as the National Tuberculosis Association. After he had served on a number of the most important committees of this organization, he was elected to its presidency in 1945. Throughout the entire history of this association he is the second layman to be elected to its presidency, Homer Folks of New York City having been the first, in 1912.

In this book much deserved recognition is given to Dr. T. L. Harrington, referred to as teacher, doctor, laugh-bringer, and friend, who began his crusade against tuberculosis in 1903, and only recently retired at the age of 75 years. Nevertheless, his interest and effectiveness in tuberculosis control continues. Only one year ago he contributed an excellent article to the *JOURNAL LANCET*.

Harold Holand, a former tuberculous patient and now the director of the research department of the Wisconsin Anti-Tuberculosis Association, has contributed effectively to tuberculosis control in Wisconsin. The editing of this book is a fine contribution. The selection of articles from the various sanatorium magazines required much labor and keen judgment, which resulted in a volume packed with authentic information, presented so entertainingly that the reader is disappointed that it is not longer, and desires to read it again and again. Although the book is intended primarily for distribution among Wisconsin sanatorium patients, it should be made available to all patients. Moreover, it can be read with great profit by all members of sanatorium personnel, as well as by all social workers, nurses, and physicians especially interested in tuberculosis. —J. A. M.

## Deaths

DR. ROBERT GLENN ALLISON, 58, radiologist in practice in Minneapolis since 1920, died March 20, 1946, at Northwestern Hospital, several hours after he became ill at his office. Interment was at York, South Carolina, his birthplace.

Dr. Allison was a graduate of the University of Maryland Medical School in 1912, and served as a captain with the Army Medical Corps in World War I. Before coming to Minneapolis he served on the staffs of Trudeau Sanatorium at Saranac Lake, New York, the Municipal Tuberculosis Sanatorium in Chicago, and Harper Hospital, Detroit. In addition to his private practice, Dr. Allison was clinical professor of radiology at the University of Minnesota.

DR. CHARLES EDWARD BLANKENHORN, 56, of Great Falls, Montana, died March 6, 1946, at Boise, following an illness of nearly three years. Dr. Blankenhorn was born in L'Anse, Michigan, April 3, 1889. Following two years at the University of Michigan, he attended Marquette University, in Milwaukee, and was graduated from the Medical School in 1913. He later studied in Rochester (New York), Milwaukee, Chicago, and in Europe. During World War I he was commissioned a first lieutenant and went overseas with the 16th ambulance corps, 2d division, and was invalided home in 1918.

Following some years of practice in Butte and Malta, Montana, Dr. Blankenhorn went to Great Falls, where he practised for twenty years. He was a member of the Montana State Medical Association and the Cascade County Medical Society.

DR. JAMES WATKINS FENNELL, 60, of Missoula, Montana, died February 23, 1946, at his home. Dr. Fennell was born February 18, 1886, in Seguin, Texas, of a line of physicians. His grandfather, Dr. Thomas Jefferson Fennell, served as a surgeon with the Confederate Army, and his father was a practising physician in Seguin.

Dr. Fennell had his medical training at Vanderbilt University, from which he was graduated in 1907. During World War I he served with the Johns Hopkins unit, and spent 22 months overseas. He held the rank of major and served in army posts in the states before being transferred to Honolulu. He made a government survey in Alaska and served on the medical staff of the University Hospital in Seattle before coming to Missoula in 1943 to serve on the medical staff of the Northern Pacific Hospital, the post he held at the time of his death.

DR. C. E. FRENCH, 82, Minneapolis, who formerly practised in Duluth, died March 2, 1946, at the Veterans Hospital, Minneapolis. He was a veteran of the Spanish-American War.



DR. STANLEY CLIFFORD MULHOLLAND, 52, of Santa Barbara, California, formerly of Minneapolis, died March 4, 1946. A graduate of the University of Minnesota Medical School in 1923, he was associated with the Physicians' Clinic of Fort Dodge, Iowa, until 1928, and then with the Billings Memorial Hospital, Chicago, and the Rees Staley Clinic, San Diego. He had been a resident of Santa Barbara for seven years.

DR. HAROLD EUGENE ROBERTSON, 67, of Rochester, Minnesota, senior consultant and former head of the section on pathologic anatomy of the Mayo Clinic, died March 8, 1946. Born at Waseca, Minnesota, October 8, 1878, he was graduated from Carleton College in 1899 and received his M.D. from the University of Pennsylvania in 1905, and had studied also at the University of Berlin and the University of Freiberg.

After his early work as an instructor at Albany and Harvard University and pathologist at Boston City Hospital, he became an instructor in pathology at the University of Minnesota in 1907, where he remained until 1921. Since that year he had been associated with the Mayo Clinic, and was also professor of pathology of the Mayo Foundation graduate school of the University.

DR. PATRICK MCHUGH WALKER, 70, of Los Angeles, died February 25, 1946, in that city. An early resident of Grafton and St. Thomas, North Dakota, he practised for a short time at Ellendale and at St. Thomas from 1901 to 1906. He was chief division surgeon for the Great Northern Railway for 13 years before he moved to Pasadena in 1914. Following some years of retirement, he resumed practice in Los Angeles and continued until a short time before his death. Dr. Walker attended Notre Dame University, McGill University, and the University of Edinburgh, and interned at Guy's Hospital, London.

## News Items

### NEWS FROM MINNESOTA

*University of Minnesota.* The thirteenth E. Starr Judd Lecture will be given at the University of Minnesota Monday evening, April 15, by Dr. Samuel C. Harvey, William H. Carmalt Professor of Surgery at Yale University. *Subject:* "The Healing of the Wound." The Judd annual lectureship in surgery was established by E. Starr Judd, an alumnus of the University of Minnesota Medical School, a few years before his death.

Dr. Ancel Keys, director of the laboratory of physiological chemistry, and his associates have recently presented before scientific groups the results of their research on starvation diets. Dr. Keys urges that the American people decide at once upon some course of action in feeding gravely undernourished peoples in many parts of the world, and declares that underfeeding of these peoples will result in political apathy and in-

ability to appreciate the difference between democratic and authoritarian forms of government. His research during the war shows that after partial starvation recovery of full health and working capacity is slow, even on relatively good diets.

A study of the present situation of more than 40,000 wartime medical officers now discharged has been made by the Northwestern National Life Insurance Company. As part of the study an analysis was made of the nearly 200 medical officers now taking postgraduate work in medicine at the University of Minnesota. It shows that the "typical" medical veteran-student is 32 years old, married, and father of one or two children; that he had completed seven years of advanced education and a year of internship before entering military service, and was in service three to five years. The report indicates also that the civilian shortage of physicians will continue for some time, owing to the number of returning doctors who are seeking further training before resuming practice.

Dr. Robert G. Green and Dr. John Bittner and their associates have reported before the American Association for Cancer Research the development of a serum that will prevent the development of breast cancer in mice otherwise prone to develop the disease.

Dr. Gaylord Anderson, who has returned to his post as director of the School of Public Health at the University, is of the opinion that the great volume of data on health and medical conditions throughout the world gathered by the medical intelligence service he directed will be of great value in promoting better health during peace.

Dr. Richard V. Ebert has been appointed associate professor of medicine, and will divide his time between teaching and research.

Dr. Ernest Carroll Faust, professor of parasitology at Tulane University, spoke before the Minnesota Pathological Society at the Medical School on March 19 on "Interpretations of Recent Research and Clinical Experience on Malaria."

Dr. J. Arthur Myers, speaking at the meeting of the Missouri Medical Association in St. Louis late in March, described the new drug streptomycin as offering new hope for tuberculosis sufferers and said that "we are apparently much closer to a satisfactory chemotherapeutic agent than ever before."

Medical social workers attending a conference at the University of Minnesota center for continuation study heard several talks on tuberculosis at their final meeting on March 16. Speakers included Dr. Gaylord W. Anderson, Dr. Ruth B. Taylor, Dr. E. S. Mariette, superintendent of Glen Lake Sanatorium, Dr. John L. McKelvey, professor of obstetrics and gynecology, who spoke on "Tuberculosis in Pregnancy," and Arthur T. Laird of Duluth, who spoke on "Tuberculosis in the Aged."

Speaking before the Institute on Rural Medicine, Dr. A. W. Adson of the Mayo Clinic gave it as his opinion that a government administered medical program would be expensive without any assurance of quality of service, and that a prepaid medical service operated by the doctors themselves would be more effective.

According to a survey conducted by the National Blue Cross Commission, Minnesota had fewer cases of pneumonia and influenza in the first two months of 1946 than other areas of comparable size in the nation. According to Dr. William A. O'Brien only 5.2 per cent of patients admitted to Minnesota during this period had pneumonia or influenza, as compared with a national average of 9.2 per cent.

.....

The Minnesota Academy of Medicine, meeting at the Town and Country Club, St. Paul, on March 13, adopted the Articles of Incorporation of the Academy and heard Dr. J. A. Lepak report on a case of multiple myeloma and Dr. Martin Nordland report on a case of cancer of the duodenum and a case of islet tumor of the pancreas.

.....

Speakers at the regional conference for public health nursing service held at Little Falls on March 29 included Dr. R. N. Barr, Dr. Vern D. Irwin, and Dr. Viktor Wilson.

Dr. E. S. Palmerton has resumed practice at the Gamble Clinic, Albert Lea, after 3½ years in the Army Medical Corps.

Dr. M. J. Grogan will become resident physician at Ceylon, which has been without a doctor since Dr. I. Fisher moved to St. Paul.

Nobles County is holding 11 immunization clinics, and Murray County one, during April. The clinics are primarily for school children.

Dr. Gordon Paulson, assigned to a large general hospital in Rome, talked by transatlantic telephone with his father, Dr. T. S. Paulson, of Fergus Falls, on March 2.

.....

*Prepaid medical service program for Minnesota.* Following passage of state legislation permitting the formation of such a service, a committee of 23 doctors met in Minneapolis March 1 to plan a nonprofit prepaid medical service program for Minnesota. The committee, appointed by the house of delegates of the Minnesota State Medical Association, has Dr. B. J. Branton of Willmar as chairman and Dr. M. W. Weaver, assistant dean, University of Minnesota Medical School, as secretary. The medical service will be extended in conjunction with existing prepaid hospital service plans, according to Dr. A. W. Adson of the Mayo Clinic, and will enable rural groups, employed groups, and individuals to have prepaid medical service. The plan will be submitted for the approval of the Minnesota State Medical Association at its annual meeting on May 20.

*The blind prefer medical treatment from physicians familiar to them.* The report of a survey group of the Minneapolis Council of Social Agencies who studied 210 sightless persons, ranging in age from 10 to 95, makes

a number of points concerning their preferences and characteristics. It was found that the sightless are reluctant to receive treatment from physicians with whom they are not acquainted, and hence to accept public medical care; that "an overwhelming majority . . . believe the possibility of improvement in their condition to be unlikely"; that the blind as a group are more subject to other ailments than the population as a whole, with only 57 persons, or 37.2 per cent, in average health or better. (It is noted that the majority of visually handicapped persons fall into the age group most likely to suffer chronic illness.) However, in spite of this increased susceptibility to illness, more than 90 per cent of the employed were found to have attendance records as good as or better than other employees.

*Medical social workers needed.* Minnesota social and medical agencies are conducting a campaign to aid in recruiting more candidates for medical social training. Such workers are needed by veterans' hospitals, clinics, and public and private hospitals, as well as by social agencies.

.....

*Cancer education and progress.* During March and April a poster and essay contest for Minnesota high school students is being held under the sponsorship of the Minnesota Cancer Society, of which Dr. William A. O'Brien is chairman, and the Women's Auxiliary of the Minnesota State Medical Association. State chairman of the contest is Mrs. Harold Wahlquist, 129 W. 48th Street, Minneapolis.

A two-day institute on cancer education was held in Duluth March 12-14. Dr. F. H. Magney of Duluth presided and Dr. W. A. O'Brien spoke on "The Nature of Cancer."

New members of the Board of Directors of the Minnesota Cancer Society include Dr. Charles Mayo, Rochester, Dr. Wilhelm Stenstrom, University of Minnesota, and Dr. Henry B. Clark, Sr., St. Paul.

The annual fund raising campaign of the Minnesota Cancer Society will be conducted during April. Five objectives have been set up by the society for the current year: examination centers, more modern X-ray equipment and more radium, more hospital provision for cancer patients, education of the public concerning the danger signals and necessity for early diagnosis and treatment of cancer, and visiting nurse service for cancer patients. The plan is to organize cancer detection centers in hospitals throughout the state to facilitate early diagnosis and treatment of the disease. Examinations would be given without charge at hospitals approved by the American College of Surgeons. The first centers would be set up in Minneapolis, St. Paul, and Duluth, according to the suggested plan. The Duluth center will be opened the second week in April at Miller Memorial Hospital, according to Dr. M. G. Fredricks, chairman of the committee on cancer of the St. Louis County Medical Society.

Minnesota's share of the \$12 million set as the nationwide goal by the American Cancer Society is \$224,000. Of the funds raised in Minnesota, 60 per cent will be



used for state projects and 40 per cent by the American Cancer Society for research. O. J. Arnold is the state chairman of the fund-raising campaign for Minnesota.

Dr. Dewey Edison Morehead is in Peru, where he will deliver a paper on "Surgery of the Acute Gall-bladder" before the College of Surgeons.

Graduates of the Medical School of the University of Minnesota in March included Hershel Boyd Cope and Frank McIntyre MacDonald of Virginia, Minnesota, and Robert V. Hodapp of Willmar, all of whom received the degree of Bachelor of Medicine.

**NEWS FROM MONTANA**

A five-county meeting was held at Bozeman in March to discuss the district hospital organization plan. Dr. Herbert Wagner of the U. S. Public Health Service was the principal speaker. Also present was Edwin Grafton, Helena, president of the Montana Hospital Association.

Dr. Anthony J. J. Rourke, physician superintendent of Stanford University Hospital, San Francisco, has been engaged by the Memorial Hospital Association of western Montana to conduct a hospital survey of Western Montana hospital needs.

Dr. H. L. Casebeer, Butte, was elected president of the Montana Academy of Otolaryngology at a meeting of the group held in Billings late in February. Dr. Fritz Hurd, Great Falls, was named secretary-treasurer. The principal talk at the annual meeting was given by Dr. J. Calvin Davis of the University of Nebraska.

Dr. F. L. Andrews of Great Falls has announced his retirement on March 1 after 28 years of practice as a physician and surgeon in that city. Dr. Andrews, a native of North Anson, Maine, studied at the University of Iowa and the Chicago College of Medicine and Surgery. Before coming to Great Falls Dr. Andrews was resident surgeon at St. Luke's Hospital, Cleveland, and surgeon with Evacuation Hospital No. 12 in France and Germany during World War I. During his first 18 years in Great Falls Dr. Andrews practised in partnership with Dr. Edward F. Keenan. Dr. and Mrs. Andrews will travel following his retirement.

Dr. B. K. Kilbourne, Helena, has been appointed executive officer of the Montana State Board of Health, succeeding Dr. W. F. Cogswell, who retires on April 1. Dr. Kilbourne came to Montana in 1935 as state epidemiologist.

The Livingston Clinic will be opened in Livingston on April 1, in the Garnier Building, by Dr. W. E. Harris, Dr. R. E. Walker, and Dr. W. Cloyd, all recently released from Army service. Dr. Harris has been appointed senior physician and surgeon for the Northern Pacific Railroad in Livingston, succeeding the late Dr. Paul L. Greene.

A special meeting of the House of Delegates of the Montana State Medical Association was held in Helena on March 10, to continue discussion of the organization

of the Montana Physicians' Service. Mr. Sam English of California has been engaged as executive director of the service.

*Resuming practice.* Dr. D. N. Monserrate will reopen private offices for the practice of medicine and surgery in Helena after service with the Army Medical Corps. Dr. F. W. Waniata has resumed practice in Great Falls with the North Montana Clinic after 26 months' service with the Army Medical Corps which took him to England, where he was in charge of general surgery at a general hospital. Dr. William Morrison has resumed his position as assistant chief surgeon at the Northern Pacific Hospital in Missoula after serving as a lieutenant commander in the Navy, during which he saw service in the Pacific. Dr. John F. McGregor has resumed practice with his father, Dr. Harry J. McGregor, and his brother, Dr. Robert J. McGregor, at their clinic in Great Falls, following nearly two years of service in the European Theater. He was a lieutenant colonel at the time of his release.

**NEWS FROM NORTH DAKOTA**

Dr. A. H. Reiswig of Wahpeton is attending a post-graduate course in surgery at George Washington University.

Dr. B. J. Branton of Willmar, Minnesota, chairman of the committee on prepaid medical care of the Minnesota State Medical Association, spoke March 21 at Minot on voluntary medical prepayment plans for low-income groups at a public meeting sponsored by the Northwestern District Medical Society.

Dr. J. J. Korwin of Williston spoke March 19 at a meeting of the Williams County Health Advisory Council, in celebration of the acquisition of an audiometer, paid for through the donations of many local groups.

Dr. Bruce Boynton is beginning practice in Park River in association with Dr. F. E. Weed. He is a graduate of the University of Minnesota Medical School and interned at St. Mary's Hospital, Duluth.

Dr. W. J. Houza has arrived in Mandan to practice medicine in association with Drs. Hetzler and Wheeler. Dr. Houza was overseas in the South Pacific for 20 months with the 4th Marine Division.

The North Dakota State Medical Center, to be established at the University of North Dakota, has received a contribution of \$10,000 from the Myra Foundation of Grand Forks, to be used in surveying the problem of the center and preparing plans and specifications for the final project. The contribution will enable the newly created center to employ a full-time director to present the project to the public and further its cause before the legislature and foundations and other groups or persons likely to aid in the advancement of the work.

Dr. Charles W. Burns of Winnipeg addressed the District Medical Society at Grand Forks on March 20, on "Diseases of the Large Intestine."

Dr. J. M. Muus has begun practice at the McVile Community Hospital, reopened in March. Dr. Muus,

a graduate of Temple University School of Medicine who interned at Henry Ford Hospital, has been discharged from the Army Medical Corps following two years of service, including 11 months in England with the 107th General Hospital. The *McVillie Journal* observes that the "community extends a friendly and neighborly hand in welcoming Dr. and Mrs. Muus."

. . . . .

Crowded conditions in St. Alexius Hospital, Bismarck, are depicted graphically in photographs published in the *Bismarck Tribune* of March 19, showing the hospital parlor converted into a maternity ward accommodating seven patients and children in the pediatrics department cared for in the hospital hall.

. . . . .

Hattie L. Clune, R.N., of Hibbing, Minnesota, has been appointed a special consultant in connection with the inspection of hospitals and maternity homes in North Dakota.

*New M.D.'s.* Robert Nelson Webster of Northwood, graduate of Washington University Medical School. Donald Strand, formerly of Mandan, graduate of Temple University School of Medicine.

#### NEWS FROM SOUTH DAKOTA

*Shortage of doctors in South Dakota continues.* Dr. Gilbert Cottam, superintendent of the State Board of Health, is of the opinion that the shortage of physicians in the state may continue for years. A map in his office, marked with pins to show the location of physicians, illustrates the situation. The 590,000 residents of the state are served by 342 physicians, one third of whom are over 65 years of age. Many are handicapped by physical ailments. The map shows also that the doctors are concentrated in the larger cities, and that hundreds of square miles of the rural areas are doctorless. Sioux Falls, Aberdeen, and Rapid City have 80 physicians, but many of them are specialists, with limited practice.

According to Dr. Cottam, the decrease in doctors began during the drought years and reached a climax during the war. Dr. Cottam points out that men just out of medical school are reluctant to locate in small towns for several reasons, among them the necessity of heavy expenditure to buy equipment available to them without cost in city medical centers. "Many," he remarks, "have had training in specialized fields, and for them the smaller places can offer no opportunity. Qualified general practitioners are needed most, and these are becoming scarce."

There is also a shortage of nurses and hospitals, but Dr. Cottam remarks that "to build a hospital in a community where there is no doctor will not necessarily attract one, because hospitals have closed in several communities and no doctors are available." He believes, however, that construction of new hospitals planned for more than a dozen communities in South Dakota in the near future will definitely reduce the hazard of improper medical care in the state. A state-wide survey of hospital needs is being made by the State Health Department and the State Health Committee. There are now 52 hospitals in the state, not including maternity homes.

Dr. Theodore Foster Riggs of Pierre has been honored with an honorary LL.D. degree by Beloit College in recognition of his role in bringing modern medical service to South Dakota's range country. Dr. Riggs, a graduate of Beloit College and Johns Hopkins University School of Medicine, began practice at Pierre in 1908 and is credited with modernizing St. Mary's Hospital there. He established the Pierre Clinic 25 years ago.

. . . . .

*Deadwood hospital project.* Dr. F. S. Howe, president-elect of the South Dakota Medical Association, spoke before the Deadwood Chamber of Commerce at the regular Tuesday meeting on March 5, concerning the work of the hospital committee and progress in the campaign to build a modern 100-bed hospital for Deadwood. Dr. Howe described the critical situation brought about by the lack of doctors and facilities throughout the state and said that the only solution is to concentrate facilities and available physicians in locations most convenient to the large number of people to be served. A committee of 25 members has been appointed to promote the project.

*Burke hospital project.* Reports on current progress in the new hospital building program were presented March 5 at the annual meeting of the Community Memorial Hospital, Inc.

. . . . .

Dr. Peter K. Steiner, formerly of Yankton, will be associated with Dr. F. C. Totten at Lemmon, beginning April 1.

Dr. Samuel Schultz of Philip has been asked by local businessmen to reconsider his decision to leave. Plans are being made to renew the campaign for contributions to the hospital fund.

Dr. John B. Janis, physician and surgeon of Cambridge Springs, Pennsylvania, plans to move to Hoven as staff physician of the local hospital.

Members of a committee promoting the cause of establishing the Clark County Memorial Hospital are visiting neighboring communities to give authentic information concerning the project. Some \$7,000, representing the donations of 46 persons, have been pledged.

Dr. E. T. Plowman, formerly of the Mesaba Clinic at Marble, Minnesota, has joined the staff of the Watson Clinic at Brookings, according to an announcement made by Dr. E. Sheldon Watson, head of the clinic.

Dr. C. S. Moran has begun medical practice in Mitchell in association with the Drs. Frank and Leonard Tobin.

Dr. Lloyd Cramer has been made chief medical officer at Battle Mountain Veterans Facility, succeeding Dr. F. W. Ogg, who has been assigned to a post in the Veterans Administration in Washington.

Dr. Maurice C. Rousseau is on terminal leave from the Army Medical Corps and plans to resume his practice in Watertown in association with Dr. H. Russell Brown.

Dr. W. A. Miller, son of W. C. Miller of Selby, has formed a new medical partnership at Aledo, Illinois, with Dr. L. E. Robinson, who recently returned after service with the Army Medical Corps, in which he held the rank of colonel.



### LATE NEWS ITEMS

The Minnesota state supervisor of old age assistance, John Poor, speaking before those attending a continuation course in medical social service at the university, stated that Minnesota has a liberal program for helping recipients of old age assistance to pay for medical care. The law adopted by the last legislature permits the state and county to pay jointly medical expenses in excess of the normal \$40 a month maximum. Payments for individual care vary from slightly over \$40 to as high as \$559 a month, with an average of \$65. The program has cost about \$72,000 a month to date.

.....

*Mayo Clinic.* Dr. Albert M. Snell of the teaching staff of the Mayo Foundation has been named chief of the gastro-enterology section and Dr. Ralph Gormley head of the orthopedic section of the professional services division of the Veterans Administration.

Dr. John L. Emmett, consultant in urology, spoke on "The Surgical Management of Cord Bladder" before the 10th Annual Meeting of the American Urological Association, Southeastern Section, held at Augusta, Georgia, in March.

Drs. H. W. Schmidt, Edward B. Tuohy, and Charles F. Stroebel of the Mayo Clinic staff have been released from Army service.

Dr. Charles Anderson of Duluth, recently discharged from the Army Medical Corps after four years of service, has joined the staff of the Shipman Hospital.

Dr. E. N. Milhaupt, eye, ear, nose, and throat specialist, formerly of Toledo, Milwaukee, and Minneapolis, will be associated in practice with Dr. W. T. Wenner in St. Cloud.

Dr. Stanley T. Kucera of the Northfield Hospital staff announces plans for a new building in Northfield, to include offices, apartments, and shops, as well as a large medical suite where he will be associated with Dr. A. M. Nielsen.

Dr. John E. Crewe, coroner of Olmsted County for 36 years, has announced his retirement, owing to illness.

Dr. Bertram Adams of Hibbing spoke on socialized medicine March 19 before the Hibbing Chamber of Commerce. He noted that the prepayment plan of medical care used on the iron range for many years has been successful and spoke with approval of the Michigan plan.

Dr. R. B. J. Schoch, St. Paul city health officer, has recommended immediate removal of the city health bureau to Ancker Hospital from its present quarters in the workhouse.

Dr. Arrah B. Evarts of Rochester spoke on "A Review of Early American Medicine" at a meeting of the Rochester chapter of the D.A.R. on March 15.

*County Officers Meeting.* Speakers at the meeting for officers of 34 county and district medical societies, held in Minneapolis March 2, included Dr. A. J. Chesley, Dr. A. W. Adson, Carl D. Hibbard, Dr. John R. Paine, Dr. Arthur W. Wells, and Dr. Richard B. Hullsiek. Medical care for returned servicemen, the

state hospital survey, and the organization of cancer detection centers were among the topics discussed.

Dr. C. L. Oppegaard of Crookston attended the county officers meeting of the Minnesota State Medical Association in Minneapolis on March 2 as representative of the Red River Valley Medical Society.

.....

Dr. A. J. Chesley, Secretary of the State Board of Health, and Miss Ann Nyquist, head of the Division of Public Health Nursing, spent two or three days in the Bemidji area early in March, checking on the results of mass chest X-raying carried on with the Hennepin County Mobile Unit and with the aid of donations of Bemidji civic groups. Since the survey closed 35 Indians have entered tuberculosis sanatoriums.

.....

Dr. Roland E. Nutting, Duluth, has been appointed state chairman of the American Academy of Pediatrics for Minnesota, succeeding Dr. Roger L. Kennedy of the Mayo Clinic.

Dr. Wallace E. Harrell, Rochester, discussed "Chemotherapy in Prevention and Treatment of Infection" before the Hennepin County Medical Society on March 4.

*VA needs more doctors.* There is an emergency need for many more doctors in Branch 8 of the Veterans Administration, according to E. R. Benke, deputy administrator. Of the five states comprising Branch 8—Minnesota, North and South Dakota, Iowa, and Nebraska—only Minnesota has a sufficient medical staff, thanks, the administrator noted, to the co-operation of the University of Minnesota and the Mayo Clinic.

.....

Dr. A. H. Wolf, formerly of Minneapolis, and recently discharged from the Army, has assumed the practice of Dr. C. M. Tierney at Harmony. Dr. Tierney, in terminating his service, "winds up forty years of faithful service to the people of this area," according to the *Harmony News*.

Clinics in which children could be inoculated against diphtheria were held in 59 public and parochial schools of Minneapolis during the week of March 11.

.....

New officers of the Montana State Board of Medical Examiners are Dr. J. H. Garberson, Miles City, President; Dr. P. E. Kane, Butte, Vice President, and Dr. O. G. Klein, Helena, Secretary (re-elected).

.....

The Southeastern Montana Medical Society met April 8 at Miles City, with 18 present. Samuel English, Executive Director of the Montana Physicians' Service, explained the organization of the service, which will provide prepaid medical care to Montana citizens. The following officers were elected: President, Dr. J. R. Thompson, Miles City; Vice President, Dr. R. D. Harper, Sidney; Secretary-Treasurer, Dr. Elna M. Howard, Miles City; delegates to State Association, Dr. J. H. Garberson, Dr. M. A. Shillington, and Dr. B. R. Tarbox.

.....

A testimonial dinner for Dr. W. F. Cogswell was held March 27 in Helena, Montana. Dr. W. F. Cogswell is retiring as secretary of the State Board of Health after 33 years of service.

The Minnesota Academy of Medicine held its regular meeting at the Town and Country Club, St. Paul, on April 10. Dinner was followed by an organizational meeting and election of members and a thesis paper by Dr. N. Logan Leven on the subject "Congenital Atresia of the Esophagus with Tracheo-esophageal Fistula—Surgical Treatment."

.....

The American Pharmaceutical Association has awarded the 1945 Ebert Prize to Dr. Paul Jannke of the University of Nebraska College of Pharmacy for his research on the sclerosing agent, sodium morrhuate. The investigations are expected to be of value in treating varicose veins. Dr. Jannke's experiments showed that the more nearly saturated fatty acids of cod-liver oil are the most satisfactory sclerosing agents. Presentation of the medal will be made at the 1946 convention in August.

.....

Dr. A. L. Lips and Dr. J. L. Verschure of the Netherlands have been visiting the United States to study recent medical advances, visit the most important medical centers, and purchase medical books, instruments, and equipment for Netherlands hospitals and doctors. Among the medical inventions developed in the Netherlands during the war years, in the face of technical obstacles and constant interference from the Germans, is an "artificial kidney" perfected by Dr. Kolff of Kampen. The device, which Dr. Lips and Dr. Verschure will demonstrate to medical audiences in the United States, drains and cleans toxic blood and returns it purified to the blood stream. Other Dutch physicians have perfected a glass cabinet in which metabolism tests are given without the use of uncomfortable breathing apparatus. Dr. Lips and Dr. Verschure, both specialists in internal diseases, are natives of Nijmegen and studied at Utrecht University.

.....

Dr. Harrison S. Collisi, formerly a colonel in the U. S. Army, has been named medical director of the Planned Parenthood Federation of America, succeeding the late Dr. Claude C. Pierce. Dr. Collisi, a graduate of the University of Michigan Medical School, was chief of staff of the Butterworth Hospital, Grand Rapids, before the war.

.....

An expansion program for the Chicago campus of Northwestern University which the university hopes to realize within the next 25 years has been announced. Broadest in scope among the new developments will be a medical center that will place major emphasis on research. Ten new buildings are envisaged which, together with equipment and endowment for fellowships, libraries, the publication of research, and a staff of medical investigators, will require a sum ranging from \$63 to \$95 million. The major project will be an Institute for Medical Research that will undertake investigation into the many unsolved problems of medicine, especially in the field of the degenerative diseases, such as heart ailments, cancer, high blood pressure, and kidney disorders, incident to adulthood and old age.

Dr. G. Foard McGinnes, medical director of the American Red Cross, has been named vice chairman in charge of the newly-established Office for Health Services. The new office will group together all Red Cross services relating to health and medical activities, including the office of the medical director, the nursing, nutrition, and disaster medical services, and first aid, water safety, and accident prevention. Before coming to Washington in October 1943 Dr. McGinnes had been medical director of the Red Cross midwestern area office in St. Louis.

## FURTHER ANNOUNCEMENTS

### Regional Conference on Industrial Health, Denver, June 4, 1946

The Council on Industrial Health of the American Medical Association announces a regional conference on industrial health to be held at the Shirley-Savoy Hotel in Denver, Colorado, on June 4. Medical men and community leaders from Colorado, Kansas, Montana, Nebraska, New Mexico, North Dakota, South Dakota, Utah, and Wyoming are expected to be present. Dr. A. J. Lanza and Dr. J. G. Townsend will preside. Panel discussions on "Industry Needs Medicine" and "Rehabilitation and Re-employment of the Veteran and Disabled Civilian" are scheduled.

### Refresher Course in Otolaryngology and Course in Broncho-Esophagology

The University of Illinois College of Medicine announces a one-week didactic and clinical refresher course in otolaryngology, to be held May 13-18, inclusive, and a special course in broncho-esophagology, to be given June 3-15, inclusive. For information address: Department of Otolaryngology, University of Illinois College of Medicine, 1853 West Polk Street, Chicago.

## POPULATION TRENDS

The Census Bureau reports that the population of the United States has risen to 140,000,000, an increase of 8,303,275 in the past five and a half years. In view of the wartime increase the Bureau, which had estimated earlier that the growth of population would cease about 1990, is considering whether the recent increase will have a permanent effect upon population growth in this country.

Comparative data show that for Russia the birth rate in the first nine months of 1945 increased over one third of the same period of 1944. The total population in 1939 (most recent census) was 183,736,286. Recent figures for France show a population of 40,300,000, a decrease of nearly one and a quarter millions since the war began in 1939. Recent figures from Germany indicate that the birth rate has dropped sharply and infant mortality has increased. In England a sample census of married women will soon be taken to determine the present population situation. Economic and social pressures, rather than a decline in general fertility, are believed to be the cause of the reduction in the birth rate.—Condensed from *Human Fertility*, December, 1945.



SIMPLIFIED MULTIVITAMIN ADMINISTRATION



Easily miscible with formula,  
milk, fruit juice and other  
foods without significantly  
affecting flavor.

**VI-PENTA DROPS** *Roche'*

HOFFMANN - LA ROCHE, INC., NUTLEY 10, N.J.

## Classified Advertisements

### PHYSICIAN WANTED

Wanted; A young or middle aged energetic doctor to locate in White River, S. Dak. This is an ideal location for a man that likes the range country; in the center of an area that does not have adequate medical service; opportunity to build up a splendid paying practice; assured of community backing; County Seat of Mellette County. Write or wire, C. J. Patnoe, President Commercial Club, White River, S. Dak.

### FOR SALE

Westinghouse 100 M.A. x-ray; automatic built-in bucky table. All new equipment used one year. A No. 1 outfit. Now in southern Minnesota. Address Box 832, in care of this office.

### ASSISTANCE AVAILABLE

Aznoe's, established in 1896, has available a number of well trained physicians (diplomates of the specialty boards, industrial physicians and surgeons, general practitioners, psychiatrists, tuberculosis specialists and residents). For histories, write Ann Woodward, Aznoe's-Woodward Medical Personnel Bureau, 30 North Michigan Ave., Chicago 2, Ill.

### FOR RENT

Attractive, modern ground floor office in Midway district between Twin Cities (Snelling Ave. near Minnehaha, St. Paul). Other half of building occupied by dentist. Water and automatic heat. Rental reasonable. Call NEstor 6710 or address Box 837, care of this office.

### PRACTICE FOR SALE

North Dakota physician retiring after 39 years in same town wishes to sell practice and office equipment. Only physician in presently booming town of 1350 located on main line of Northern Pacific. Extensive territory, good roads. Home suitable for office and residence also for sale. Address Box 838, care of this office.

### WANTED

More news from district medical society secretaries. If something of medical interest happens in your bailiwick; if you have a meeting; if you have personal items about yourself or fellow members that would be of interest; if you encounter any unusual development in clinical procedure or research; and, above all, if you have, listen to, or hear of a professional paper of excellence:—"write it in," in your own words. Our editorial people will do the rest.—(Ed. JOURNAL LANCET.)

## Advertisers' Announcements

### ALSIGEL and HYPERACIDITY

Alsigel, newly introduced antacid and adsorbent, is an aqueous suspension of aluminum hydroxide and magnesium trisilicate, in a bulk producing gel.

Into the gastrointestinal situation prodromal to ulcer, Alsigel introduces a compound of three powerful actions essential to symptomatic relief and the circumvention of ulcer. Not only is Alsigel antacid without disturbing peptic digestion, but to areas of ischemic mucosa or actual ulcer it is a soothing demulcent. Alsigel synchronizes the behavior of its two ingredients and obtains maximum gastrointestinal benefit without side effects.

Kunze & Beyersdorf, Inc., Milwaukee, will gladly forward literature and samples of Alsigel on request.

## Announcing . . .

A  
NEW  
AND  
ADEQUATE  
REPAIR SERVICE  
FOR  
PHYSICIANS  
AND  
HOSPITALS

13 years experience in the repair and replacement division of a large supplier, devoted to steam sterilization, cardiography, calorimeters, operating lights and tables, has given us special skills.

Inquire for quotations on repairs, replating, and renewing instruments and equipment.

No job too large, or too small.

LOUIS SEEKON  
Proprietor

## TWIN CITY HOSPITAL AND PHYSICIANS REPAIR SERVICE

322 South Sixth St.  
MINNEAPOLIS 15, MINN.

24 HOUR SERVICE

Phone AT. 4011

GR. 4474



# THE VALUE OF KNOX GELATINE IN PEPTIC ULCER MANAGEMENT

Many physicians are finding Knox Gelatine a practical aid in the frequent between-meal feedings that are so often desirable in the management of peptic ulcer.

Given at hourly intervals, Knox Gelatine provides a satisfactory control of the gastric secretions and brings relief from the painful symptoms.

Also, many physicians regularly prescribe the *Special Ulcer Diet* described in the Knox booklet, "Peptic Ulcer Dietary." This is a complete diet...bland, and liberal in calories and protein. We will be happy to send you as many copies as you wish.

For the free *Peptic Ulcer Dietary*...and any of the other dietaries listed here...address your request to Knox Gelatine, Box 403, Johnstown, N. Y.

## FREE!

Peptic Ulcer Dietary

Diabetic Diets

Knox Gelatine Drink

Infant Feeding

Feeding Sick Patients

Reducing Diets and Recipes

Protein Value of Plain, Unflavored Gelatine

## KNOX GELATINE

U. S. P.

PLAIN, UNFLAVORED GELATINE...ALL PROTEIN, NO SUGAR

*Knox Products Keep Pace Through Laboratory and Clinical Research*

## SHARP & DOHME ANNOUNCES FOUR RESEARCH GRANTS

Research grants, totalling \$14,400, to support clinical work in four university medical schools, are announced by Sharp & Dohme, Inc., Philadelphia. A grant of \$5,000 was made to the Department of Gynecology, Tulane University, New Orleans, La., in support of clinical research conducted by Dr. C. Gordon Johnson and a \$2,200 grant was directed to Columbia University, College of Physicians and Surgeons, New York City, in support of Dr. Erwin Brand's work on proteins and amino acids.

A grant of \$6,000 renewed for the University of Illinois, Urbana, Illinois, in support of the laboratory and clinical studies of Dr. M. H. Streicher. Also renewed was a \$1200 grant to the Mendel Research Fund, Yale University, New Haven, Conn., in support of clinical work conducted by the Department of Physiological Chemistry.

## COMMERCIAL SOLVENTS APPOINTS DR. SMITH

Lawrence W. Smith, M.D., well-known pathologist, is now associated with Commercial Solvents Corporation as Medical Director.

Previously, Dr. Smith was Professor of Pathology at Temple University School of Medicine and was Director of Laboratories at Temple University Hospital. He also worked extensively with the Lakeland Foundation on the development of therapeutic uses for chlorophyll and its derivatives in the cure of war wounds and burns.

Dr. Smith became instructor in pathology at Harvard University in 1920. In 1922 he went to the University of the Philippines at Manila as Professor of Pathology and Bacteriology. He returned to Harvard the following year as faculty instructor in pathology; he became Assistant Professor in 1926. In 1928 he joined the staff of Cornell University's Medical College, and was made Associate Professor in 1932.

## Influenza Virus Vaccine, Types A and B, Calcium Phosphate Adsorbed (Refined and Concentrated)

A new vaccine containing calcium phosphate-adsorbed virus has been obtained from the allantoic fluid of virus inoculated embryonated hens' eggs. Each cc. of the vaccine contains 0.5 cc. of type A and 0.5 cc. of type B virus inactivated with formalin. Its use is for prophylaxis against epidemic influenza due to types A and B influenza virus. It will be supplied in 5-cc. (five-dose) rubber-diaphragm-capped vials. The manufacturer is Parke, Davis & Company, Detroit 32, Michigan.

## DR. LARKUM WITH AMES COMPANY

The appointment of Newton W. Larkum, M.D., as Medical Director of Ames Company, Inc., has been announced by Charles F. Miles, Vice-President.

Dr. Larkum comes to the Ames Company, Inc., from the Army Medical Corps which he entered in May, 1941, as Major in the Sanitary Corps, and was transferred to the Medical Corps in May, 1942. He was promoted to Lt. Col. in October, 1942. Dr. Larkum was in the Division of Bacteriology May to November, 1941; Chief Division of Bacteriology, November 1941 to 1943; Chief of Laboratory Service, 100th General Hospital, November 1943 to June 1945; assigned as pathologist, Veterans Administration, Hines, Illinois, August 1945; and a graduate of School of Tropical Medicine, Army Medical School, March 1944.

The fields of research, teaching and administration have given him quite a varied line of experience before his army services. He is a graduate of Bates College; received his Ph.D. Degree at Yale University and his Medical Degree at the University of Virginia; is a Fellow of American Public Health Assn.; a Member of the Society of Experimental Biology and Medicine; and the Michigan Pathological Assn.

# Special Offer

## To the Medical Profession

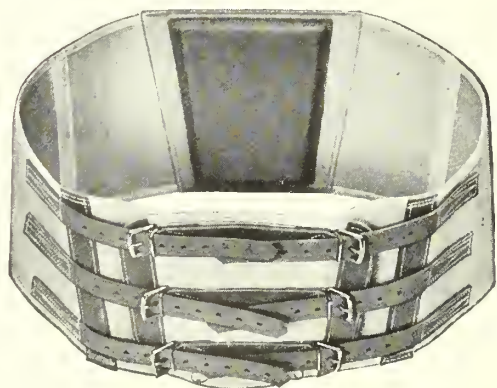
### SACRO-ILIAC BELT

#### Popular Type

A high grade Sacro-iliac Support made of Orthopedic Webbing—width 6" —well reinforced and

supplied with perineal straps. Take measurements around hip 3" below the Iliac Crest. Stock sizes: 30" to 44". Extra sizes on special order.

only  
**\$4.00**



Being supplied with fabric straps for the duration



TRUSSES — ABDOMINAL SUPPORTERS  
ELASTIC STOCKINGS

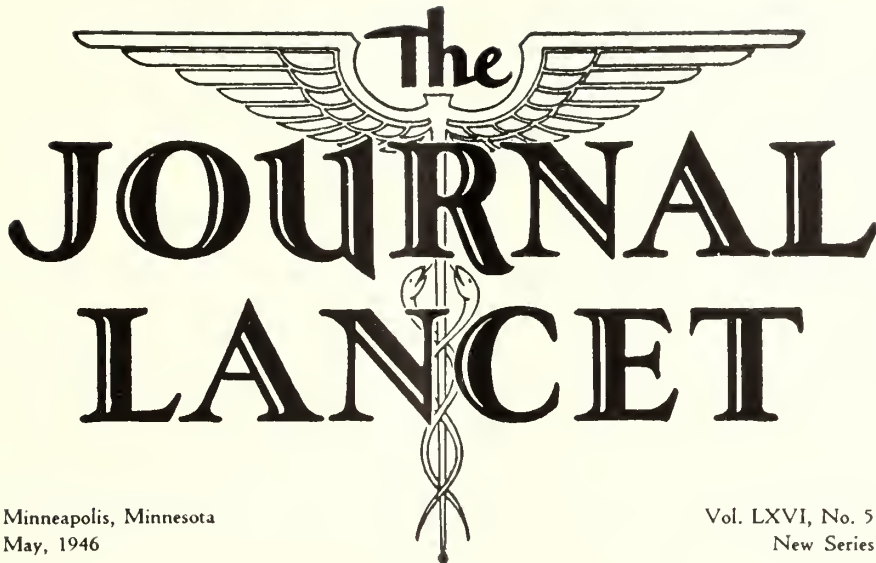
## C. F. ANDERSON CO., INC.

SURGICAL & HOSPITAL EQUIPMENT

Atlantic 3229

Minneapolis, Minn.





# The JOURNAL LANCET

Minneapolis, Minnesota  
May, 1946

Vol. LXVI, No. 5  
New Series

## SPECIAL PEDIATRICS NUMBER

Erling S. Platou, M.D., Editor

Dedicated to the memory of Dr. Chester A. Stewart,  
1890-1946

It is indeed fitting that the application of new developments in the field of child health should be keynoted in this issue of JOURNAL LANCET memorializing the life of Dr. Chester A. Stewart, for he took a keen interest in applying new knowledge and speculating on even greater possibilities in a wide field of medicine. Well grounded and always abreast of the times, he was able to bring to the student and practitioner a stimulating, practical, and comprehensive exposition of clinical pediatrics.

Dr. Stewart's constant interest in all aspects of the health of children seemed to broaden our vision of the field, which we now begin to understand more clearly. We may hope that with this greater understanding we shall be able to make greater use of preventive and therapeutic measures in promoting the health of children. The establishment and maintenance of the physical and mental well-being of this age group are perhaps the greatest contribution that can be made toward a future world at peace.

Special pediatrics numbers of the JOURNAL LANCET were inaugurated by Dr. Stewart and ably edited by him for many years. All of us concerned with this issue hope that it at least approaches the high standard of pediatrics literature with which he was identified. It is with profound respect that we dedicate this special number to his memory.

E.S.P.

# Chester Arthur Stewart--Physician, Teacher, Clinical Investigator, Organizer, and Friend of Man

## *A Personal Appreciation*

by

J. Arthur Myers, M.D.

ON NOVEMBER 6, 1890, an infant was born in Hannibal, Missouri, who was destined to contribute mightily to the welfare of infants and children everywhere. His parents, Robert Henry and Lorraine Sanner Stewart, named him Chester Arthur.

Hannibal, a small city nestled in the hills of Missouri on the banks of the Mississippi, had already been made famous by at least one of its residents, Mark Twain. It was a good place for a human mind to develop and to become conscious of the world. With his playmates Chester built rafts, fished, observed the river boats and the operations of the railroads, saw the horse and mule give way to motor-driven vehicles, watched the circus trains unload and followed along with the parade, took hikes over the surrounding countryside and became familiar with the flora and fauna, saw how human food is produced and distributed, participated in such games as baseball, and even did a little skating and coasting. These and a hundred other activities provided the boy with an education not obtainable from books.

Hannibal had a good school system where, in due time, Chester began his formal education. When he was fourteen years of age and in the eighth grade, his father died from rheumatic fever. Chester then assumed considerable responsibility for his brothers, Rollo and Benjamin, eleven and eight years old, respectively, as well as the support of his mother. At this early age he accepted any kind of work available outside of school hours; frequently he began delivering papers shortly after two in the morning.

While in high school Chester procured a clarinet and joined the Hannibal band, and at times he and other members engaged in Chautauqua work. Toward the end of a strenuous day of handling bags of cement in the freight yards, this high school boy decided he could probably contribute more to the world if his formal education were continued, and he decided to go to college, despite the fact that he must earn his way and aid the family at home.

He chose the University of Missouri, and on arrival in Columbia procured work as a waiter in a boarding club. This work, together with odd jobs, enabled him to matriculate and remain in school. As a clarinetist he was soon in demand in music circles, and this skill added greatly to his financial support.

In 1913, while a temporary instructor in anatomy at the University of Missouri, I met Chester Stewart, then a sophomore student in medicine. He was held in high regard by faculty and students alike, because of his scholastic attainments, his complete trustworthiness, and the fact that he was working his way through school. When I left Missouri in June 1914, Chester's plans were



DR. CHESTER A. STEWART

unknown to me. In September of that year, on arrival in Minneapolis, my family took a room near the campus while seeking permanent quarters. The following morning it was a delightful surprise to spy Chester and a young lady strolling by. We beckoned to them and learned that until a few days before the young lady had been Miss Dorothy Huffman of Nevada, Missouri. They also were looking for living quarters. This encounter was the beginning of a most beautiful and lasting family friendship.

Chester had accepted the Shevlin Fellowship at the University of Minnesota, under the directorship of the famous anatomist, C. M. Jackson. We were directed to the Institute of Anatomy, where Dr. Jackson assigned us as office partners. In the department we taught the various branches of anatomy, including gross dissection, histology, neurology, and embryology, in association with persons destined to become famous, such as Richard E. Scammon and A. T. Rasmussen. From the numerous research projects suggested by Dr. Jackson, Chester chose the subject of inanition, which involved a tremen-



dous amount of experimental investigation on white rats. Since Chester was so faithful and trustworthy, Dr. Jackson gave him full responsibility for the large animal colony, where other faculty members and students were conducting investigations. The extensive and intensive studies on the effects of inanition on the growth and development of various organs gave him a vantage point as knowledge of the vitamins unfolded, and when he later devoted so much time to the diets of infants and children. During 1917 he was instructor in anatomy.

Chester Stewart became highly qualified and prepared an excellent thesis entitled *Studies on the Effects of Inanition upon Growth in the Albino Rat*, and the degree of Doctor of Philosophy in Anatomy was conferred upon him in 1917. In 1918 he became instructor in pathology at the University of Minnesota and studied under the famous pathologists H. E. Robertson and E. T. Bell. Throughout the years Dr. Stewart took courses in the School of Medicine, and in 1919 he received the degree of Doctor of Medicine. At that time Dr. J. P. Sedgewick, Chief of the Department of Pediatrics, was of the opinion that Dr. Stewart's experimental work, together with his special knowledge of anatomy and pathology and his keen interest in the health and welfare of children, qualified him admirably for pediatrics. Dr. Sedgewick therefore invited him to take a fellowship. Since he had already been in school so long, Dr. Stewart gave this opportunity, as well as other positions that were offered him, special consideration. He finally accepted the fellowship, which took him to the Mayo Clinic for part of one year. There he profited greatly by working under the direction of the pediatrics staff. Dr. Sedgewick manifested a great deal of pride in Dr. Stewart's accomplishments. He was particularly pleased with the doctorate thesis entitled *The Vital Capacity of the Lungs of Children in Health and Disease*, and, as soon as the Ph.D. degree in pediatrics was granted to Dr. Stewart in 1921, recommended an appointment to an instructorship in pediatrics on a part-time basis.

Dr. Stewart then opened an office for the practice of pediatrics in Minneapolis. Like nearly all physicians who limit themselves to specialties, in the beginning he found time heavy on his hands. There were months when the income from his office was so small as to be discouraging, and on a few occasions he even mentioned abandoning his specialty for general practice in a rural community. Throughout this slack period he busied himself by working in clinics and public institutions, where he gained experience but derived little financial return. However, his fellow physicians and the few families who had consulted him had found him so thoroughly competent and trustworthy that they began referring others to him. When Dr. Frederick Schlutz discontinued practice, Dr. Stewart took over his office. This practice brought him in contact with many new families.

Dr. Stewart retained Miss Elizabeth Noel as office nurse and secretary. She continued in this position with Dr. Stewart until he left Minneapolis in 1941. He always recognized her fine qualities and thoroughly appreciated her loyalty, trustworthiness, and efficiency. She played a large role in the development of his practice.

Recently she said: "I always had the greatest confidence in and respect for Dr. Stewart, both as a physician and a friend. His sympathetic understanding and calm good judgment endeared him to a great many people. On numerous occasions mothers told me how much his thoughtfulness meant to them. One of his finest attributes was his attitude toward the poor. He was always most sympathetic toward them, and frequently went out of his way to help them."

During the years he practiced in Minneapolis (1922 to 1941), Dr. Stewart developed as fine a clientele as any pediatricist ever enjoyed in this city. He treated alike the children of the poor and the rich, the illiterate and the educated, and all intermediate groups. To him every ill child was worthy of the best medical care that he could provide. In the home and in the office he outlined in detail the course he expected each mother to carry out for her ill child, and woe to that mother who was careless or who for any reason failed to execute his orders. On all occasions he had the courage of his convictions. He never indulged in back-patting or flattery in order to gain or retain patients.

For many years Dr. Stewart and Dr. Erling Platou were in private practice together. Dr. Platou says:

"Close association for seventeen years with Chester Stewart revealed to me the qualities so much to be desired in a fine physician and teacher. Intellectual honesty, steadfastness, scrupulousness for detail, tolerance, and a sense of humor were some of his attributes.

"Many of us knew Dr. Stewart first as an instructor in histology and neuro-anatomy. After completing his doctorate in anatomy and later in pediatrics he entered practice in Minneapolis in 1923, and in the following year we became associated in practice.

"Despite his success as a practitioner and his leadership in medical councils, he persevered in his basic love for academic life. Early morning study, regular attendance at his out-patient teaching clinic at the university; even the tabulation of data between patient visits in office practice attested to his keen interest in basic work. His fine contributions to our knowledge of childhood tuberculosis were perhaps the outstanding result of such application.

"As full-time professor and head of the Department of Pediatrics at Louisiana State University Medical School he made an enviable record in the type of position he desired and so richly deserved."

In the hospitals Dr. Stewart was a favorite among the conscientious nurses on the pediatrics services because of his strict professional attitude, his vast store of information, the uncanniness he often displayed in diagnosis, and his fine success in treatment.

Those who knew Dr. Stewart best recognized in him a depth of kindness and sympathy which unquestionably contributed largely to his greatness. He so deeply sympathized with the parents of severely sick children and with the little patients themselves that his very expression portrayed to his closest friends the pain he experienced whenever one of them was seriously ill.

He was not a person to make a display of his goodness. Therefore few persons know that he frequented

toy shops and fruit and candy stores for gifts that might contribute to the happiness of little patients suffering from prolonged, chronic illnesses or fatal conditions. He delivered these gifts personally, and often spent long periods teaching children how to use new toys and to play new games.

He was particularly attracted to children with long, chronic illnesses and those crippled for life on the pediatrics service of the University Hospital—so much so that he devoted a great deal of time to the development of plans for their entertainment and education. He was instrumental in procuring the aid of Miss Dorothy Jones, who had so much to offer these children. She herself was severely handicapped physically by poliomyelitis, but through it all had manifested such a beautiful spirit in her desire to help others that she developed faculties which overshadowed her physical handicap. She possessed a personality that made her most attractive and had accumulated much information that she could transmit to others. Dr. Stewart thought that, with these fine qualifications, Dorothy Jones was the ideal person to be employed on a full-time basis to inspire, teach, and help rehabilitate crippled children. As recreation leader in the Department of Pediatrics she has become one of the most popular and useful persons in this field. Concerning him she recently said: "For ten years I was privileged to know Dr. Stewart in connection with his work when he was in charge of the Pediatric Out-Patient Clinic. I shall always remember his generous nature, his unusual sense of humor in all situations, and his consideration for everyone. I appreciated his genuine interest in matters with which I had to deal involving recreational activities for children. He will be greatly missed by the countless numbers for whom he has done many favors in his gracious manner."

He had a natural, keen sense of humor, which was probably enhanced by Mark Twain. They had spent their boyhood days at slightly different times in the vicinity of Hannibal, Missouri. Mark Twain died when Chester was twenty years old. The famous humorist had doubtless left a marked impression on the youth of Hannibal. As the years passed, Dr. Stewart acquired every available writing of Mark Twain. He read and reread them and believed they had done much to bolster the morale of the American public.

He never enjoyed or indulged in humor at the expense of others, but he had a long list of wholesome jokes on himself. A choice one began with a telephone conversation late at night when a Minnesota blizzard was raging. An emotional mother was insistent that he make a house call. After careful inquiry concerning the child's symptoms, he was convinced that the condition was not serious, and he recommended some simple procedures and offered to call in the morning. The mother maintained the child was far too ill for this course and must be seen by a physician at once. Fearing that he might have misinterpreted the symptoms, he decided to make the call. Since it was his first contact with the family, he inquired as to the address, which was approximately ten miles from his home. He could not hope to make the round trip in less than two or three hours. On his arrival the

child's condition did not seem serious. He arranged for the necessary care and told the mother he would return during the day and complete the details of the examination. The mother replied that this would not be necessary, because their regular pediatricist would not venture out in the storm at night but promised to call in the morning.

As a teacher, Dr. Stewart was unexcelled. Beginning in 1914, he taught continuously in the Medical School of the University of Minnesota until 1941. After entering the practice of medicine he never allowed the work of his private office to interfere with his university duties. In 1941 the University of Louisiana made him an extremely attractive offer as Head of the Department of Pediatrics. In addition to directing the activities of students, interns, residents, and regular staff members, there was the opportunity of teaching any or as many of the courses in pediatrics as he might desire. Moreover, there was time for research and writing. For weeks he pondered over this offer, sought the advice of his most intimate friends, and finally accepted the Louisiana post.

Throughout his years of teaching, first in anatomy, then in pathology, and finally in pediatrics, medical students loved him because of his sincerity and great devotion to them. They respected him because of his ability and the large fund of knowledge which he so willingly and effectively imparted to them. His clinics were frequented by students and by guest physicians from everywhere, and whenever possible nurses and social workers attended. They were fascinated by his practical psychology, which usually won the co-operation of the parents. Miss Ione Corliss, for many years Supervisor of Nurses in the Out-Patient Department of the University of Minnesota, recently said: "Dr. Stewart and his work in the Pediatric Out-Patient Department will long be remembered by those who were fortunate enough to have been associated with him. His clinics were characterized by outstanding organization, unique teaching, and intense interest in every problem confronting the child—his social and spiritual guidance as well as mental and physical well-being. His clinic room was crowded with staff, medical students, and student nurses eager to attend and profit by his unusual psychology in dealing with children and parents."

When Dr. Irvine McQuarrie became Chief of the Department of Pediatrics of the University of Minnesota in 1930, he promptly recognized Dr. Stewart's ability, loyalty, and fine co-operative spirit, and gave his utmost support to all Dr. Stewart's activities. Concerning him, Dr. McQuarrie says: "In the untimely passing of Dr. Chester Stewart the medical profession lost one of its most valuable and most loyal members. As practitioner, teacher, and clinical investigator he ranked high among American pediatricians. His genuine and abiding interest in the problem of tuberculosis in childhood, in particular, and his original contributions to our knowledge on that subject gained for him an enviable reputation, both in this country and abroad. His pre-eminence in the field was evidenced by his being invited to write the original chapter on tuberculosis in children for Brenemann's *Practice of Pediatrics* and by his being selected



to present some of his original contributions before the International Pediatrics Congress at Rome, Italy, in the year 1937.

"That his interests were not confined to studies in the clinic and laboratory is well known to all his numerous friends. They will always remember him for his zeal and sincerity in working for improved health conditions in his community through co-operation between practicing physicians and public agencies, both in Minnesota and Louisiana. While he approached every progressive cause in the spirit of a crusader, his sense of humor and a profound respect for the practical kept his course of action on an even keel.

"His departure has left a void in the medical faculty of the University of Louisiana which is almost paralyzing to that institution. All his Minnesota colleagues who were fortunate enough to know him intimately will likewise long continue to miss his stimulating influence and his reassuring smile. Our only consolation is that his friendship and his good works will always remain gratifying memories to enrich our daily lives."

Dr. Stewart was always loyal to the Medical School of the University of Minnesota and greatly respected the three deans under whom he worked, Lyon, Scammon, and Diehl. They, in turn, held him in high regard. Dean Diehl says: "I knew Chester Stewart over a long period of years, and have spent many pleasant moments reviewing our early associations. I remember him first as a most able instructor in anatomy, in which field he did his doctorate before entering Medical School. I am sure the medical students in the anatomy laboratory at that time agree that Dr. Stewart could have become an outstanding anatomist should he have chosen such a career instead of pediatrics. His next, equally successful, service was as instructor in pathology, where he remained for three years until his appointment in pediatrics in 1919. I shall not repeat his contributions in the final field of his choice; they are familiar to all his colleagues. I should like rather to emphasize his unique abilities as a scholar, scientist, and teacher in three important specialties of medicine. In all three he won the respect, esteem, and affection of students and colleagues. He was truly a scholar of wide academic interests, and a grand gentleman."

At the University of Louisiana Dr. Stewart also became a favorite among students and faculty members. He instituted new projects which were readily accepted for the benefit of the University and all concerned. Upon the announcement of his death the Medical School was closed for the day, and the faculty and student body came to pay tribute to him and to mourn the loss of a great teacher, co-worker, and friend. Miss Jurisich, his secretary, and Miss Boudreaux, department technician, said: "Although there are many who are able to pay fitting tribute to Dr. Chester A. Stewart with reference to his outstanding work in the field of pediatrics, we, his secretary and technician, would like to express our esteem for him as a man, an employer, and a friend. Through a close association we came to know Dr. Stewart as a man who possessed high personal and professional ideals, a man who at all times was ready

to serve any who called upon him for assistance, a man whose character and personality were founded on his innate qualities of loyalty and honesty. The medical world has been deprived of a truly great physician, but our loss was personal in that we lost a staunch and valued friend."

As a medical lecturer, Dr. Stewart was in great demand. He was frequently invited to participate in the programs of county, state, and national medical organizations. His material was always well organized, and his presentations were concise and appropriately illustrated.

As a medical writer, Dr. Stewart excelled. He possessed an abundance of native ability and was especially trained in this art by his first chief, Clarence M. Jackson. No one could have a better teacher. On one occasion he took special work in mathematics with particular reference to statistical analysis, in order that he might treat data statistically in his various publications. His first article was published in the *Biological Bulletin* in 1916, under the title "Growth of the Body and of the Various Organs of Young Albino Rats after Inanition for Various Periods." His last article appeared in the *New Orleans Medical and Surgical Journal* of January 1946, under the title "A Tuberculosis Survey of New Orleans." At the time of his death he was working on a chapter on tuberculosis for a book on infectious diseases, to be published by Dr. Roscoe Pullen. Altogether, Dr. Stewart published more than a hundred articles in journals, in addition to several chapters in books. He had been solicited by various publishers regarding the preparation of a book on the care and feeding of infants, a field in which he was exceedingly expert and to which he had contributed some innovations. He fully intended to write this book as soon as some of his more pressing work was finished. When the *JOURNAL LANCET* staff was reorganized in 1930 he was selected to represent pediatrics. He proved to be a most valuable member until his death, and for many years edited the special pediatrics number published each May.

Dr. Stewart wrote on numerous subjects, such as inanition, vital lung capacity, infant feeding, and various diseases of infants and children. Aside from infant feeding, the subject that lay closest to his heart was tuberculosis. In fact, approximately half his publications were on this disease. His interest in the subject was especially stimulated in 1921, when, with the organization of the medical staff of the Lymanhurst School for Tuberculous Children, he became the chief pediatrician. Of the various diseases, he recognized tuberculosis as the principal enemy of mankind, and he was firmly convinced that its control is dependent upon the protection of children against the primary attack and teaching them to avoid tubercle bacilli throughout life. At Lymanhurst he seized the splendid opportunity for examining, treating, preventing, and making follow-up observations on large numbers of children. His observations on tuberculosis led to conclusions that completely revolutionized some previous concepts on this subject. He regarded tuberculosis as an extremely contagious disease and taught that exposure to open cases is dangerous to children and

adults alike, and that it is hazardous to persons who have previously been infected, as well as to those who never before have taken the bacilli into their bodies. Therefore, he was a strong supporter of the adoption of rigid contagious disease technique in hospitals and sanatoriums in order to protect students of nursing and medicine against first infection and reinfection. He was the first to study carefully the tuberculous infection attack rate among both children and adults, and found that in the area where he worked, the rate was only about one per cent per year.

While chief of the medical staff of the Swedish Hospital in Minneapolis in 1932, he convinced the administration and the professional members that the entire personnel, as well as all patients admitted, should be tested with tuberculin, that all reactors should have X-ray inspection of the chest, and that those who presented shadows should have the etiology of their disease determined. Several previously unsuspected cases of tuberculosis were found, two of whom were from the full-time personnel of the institution. Dr. Stewart then encouraged periodic tuberculin testing of all student nurses, with the necessary subsequent phases of the examination. This procedure proved so valuable that it is now one of the main health activities among the students, with the result that not a single case of clinical tuberculosis has developed among them in several years.

At the University of Louisiana Dr. Stewart initiated a program of tuberculosis control among the students and faculty, both at Baton Rouge and New Orleans. This program consisted of first administering the tuberculin test, then making X-ray inspection of the chests of the reactors, with complete examination of those who presented shadows that might be due to tuberculosis. This ideal program is now in effect in that institution.

Pediatricists of the United States have been far more alert and have had a clearer vision of tuberculosis control than any other group of physicians. Among them Dr. Stewart was a leader. Indeed, he became almost as well known among the chest specialists and tuberculosis experts of this country as among the pediatricists. His articles were read and he was quoted everywhere. At the time of his death he was a member of the committees on tuberculosis of the American Academy of Pediatrics and the American School Health Association. He was a member of the Executive Committee of the Tuberculosis Association of New Orleans. He was First Vice-President and a member of the Board of Directors of the Louisiana Tuberculosis Association and a member of the Board of Directors of the National Tuberculosis Association. As a committee member he actively participated in the preparation of the manuscript entitled "Diagnostic Standards," published by the National Tuberculosis Association in 1940.

In medical organization Dr. Stewart was a master. He believed that all health activities should be directed by medical societies, which, in turn, should co-operate with allied groups, such as lay tuberculosis associations and official health departments. As a member of the Hennepin County Medical Society he did such effective work on various committees that he was elected to the

presidency in 1933-34. Under his leadership the Society had one of the most successful years in its history. On the recommendation of his county society he was elected to membership on the Council of the Minnesota State Medical Association in 1938, and held this position during the remainder of his stay in Minnesota. He was an extremely valuable member, introducing one innovation after another. Through his efforts the Committee on Tuberculosis of the State Medical Association was revived. He found time to meet with this committee regularly and some of its most outstanding activities, such as the Meeker County Project, were strongly supported by him. He expressed the opinion that the plan for accrediting counties on the basis of achievement in tuberculosis control might well be the beginning of a great nation-wide movement. In New Orleans he participated actively in local and state medical organizations.

While a student at the University of Missouri, Chester joined the Phi Beta Pi fraternity, and he remained a loyal member throughout his life. He took great pride in the C. M. Jackson lectureship established by the Minnesota chapter. How fitting it would be for the Phi Beta Pi chapters at Missouri, Minnesota, and Louisiana to create fellowships or lectureships to perpetuate the name and the accomplishments of another famous member, Chester Stewart.

From the time his brothers were small children, Chester took great interest in their welfare. He encouraged and supported them in every possible way. He lived to see both of them achieve success—Rollo as a splendid surgeon, and Benjamin as an outstanding florist, now president of the Minneapolis Florists' Association. Dr. Stewart's fine character was again displayed in the consideration he manifested for his mother. Until she died at the age of seventy-five years he did everything possible to insure her comfort and happiness. His sympathetic understanding and kindness in the declining years of her life were a joy to behold.

Throughout the years Mrs. Stewart maintained a keen interest in all Dr. Stewart's activities. She encouraged him in every undertaking, and he relied strongly on her judgment. Indeed, she is responsible in no small way for his numerous achievements. They provided everything possible for the welfare of their three children, who were well on their way to successful lives at the time of Dr. Stewart's departure—John had graduated from college and is established in business, William had graduated from medical school, and James was a student in veterinary medicine. In their mother and father they have a grand heritage.

For approximately one third of a century Dr. Stewart and I were most intimate friends. Probably no other physician knew him and understood him better than I. Together we camped, fished, took long trips, joined lay and scientific organizations, served on committees, taught the same courses, occupied the same office, prepared and published articles and chapters for medical journals and books, served on the same hospital staffs, argued and discussed our mutual problems and interests, and attended numerous medical meetings in various parts of the country. For twenty years we lunched together nearly



every working day, saw one another's patients in consultation; indeed, we did everything that close friends do together. On these precious experiences and remembrances I could write a large volume about Chester Stewart, every word of which would be in his favor. In his whole life I knew of nothing bad. If he made mistakes or did harm to anyone, it was never intentional. His life was one of constant constructive endeavor.

In a letter of February 2, 1946, Dr. Stewart invited me to be guest speaker at the annual meeting of the Louisiana State Tuberculosis Association, to be held early in May. The last sentence of his letter read, "I think your visit here will do my angina some good." This was the first time he had intimated to me that he was suffering from this condition, although we had

been together on several occasions one month earlier. My letter of acceptance was mailed on February 7, but the following morning at 4 o'clock he developed a severe attack and died from coronary occlusion six hours later. His death was untimely at fifty-six years. Retirement from Medical School activities would not have come for a dozen more years. Although his death was premature, he contributed more for the good of humanity in fifty-six years than most of us are capable of doing in a hundred. At the close of his life probably nothing would have been more pleasing to him than the simple, all-inclusive, and now frequently heard expression, "Well done!" The knowledge he gave the world can never die. Through the minds and hearts of others Chester Stewart will continue to live.

## Book Reviews

**Gastro-Enterology. Volume III: The Liver, Biliary Tract and Pancreas, and Secondary Gastro-Intestinal Disorders.** By HENRY L. BOCKUS, M.D. Philadelphia and London: W. B. Saunders Company, 1946. Pp. 1091, with 427 illustrations, some in color. Three volumes with separate desk index, \$35.00.

With the publication of the third volume of Bockus's *Gastro-Enterology*, a work that for many years will remain the definitive description and exposition of gastro-entero-colic and hepatobiliary diseases has been completed. This volume, to a greater extent than the other two, includes sections written by the author's colleagues of the Graduate School of Medicine of the University of Pennsylvania, but the Osler-Christian tradition is retained. That is, the conclusions and opinions are irradiated and mellowed by the experience and wisdom of the author and editor. For a universal treatise, such a presentation of the subject is valuable for the student and for practitioners with limited opportunities for observation of gastro-enterological diseases. But the text, with the references, is also sufficiently complete to satisfy the demands and augment the knowledge of the specialist.

The approach to all problems of diagnosis and therapy is sane and practical; the author has no foibles and advocates no fads.

The section concerned with the pancreas is informative and also provocative of further studies of pancreatic function and consequent improved acuity in the diagnosis of diseases of this enigmatic organ.

Manifestations in the gastro-enterologic system of diseases primary elsewhere and purely functional derangements are discussed adequately, albeit too briefly, in Section 11. Complete elucidation of such disturbances, which comprise about half of those confronting the gastro-enterologist, would require another volume.—J. B. C.

**Rehabilitation at Lake Tomahawk State Camp,** by HAROLD HOLLAND, Director, Research Department, Wisconsin Anti-Tuberculosis Association. National Tuberculosis Association, 1790 Broadway, New York, New York, 1945.

The rehabilitation of the tuberculous patient is an extremely important part of the tuberculosis control program. One of the early ventures in this field was at Lake Tomahawk State Camp in Wisconsin. In this book the author presents in a fascinating manner the history of development, the techniques employed, and the accomplishments of the camp.

A private sanatorium, River Pines, was opened at Stevens Point, Wisconsin, in 1906. During the next year the state sanatorium began to admit patients, and by the fall of 1912 Wisconsin had two private and four public sanatoriums, with a total bed capacity of approximately 300.

After the Wisconsin Anti-Tuberculosis Association came into being, it was observed that many of the patients discharged from the sanatoriums soon had reactivation of their disease. The idea was conceived of establishing a place where discharged sanatorium patients could be kept under close supervision while their working capacities were gradually restored. At first it was thought that patients who had been adequately treated in sanatoriums should be transferred to Lake Tomahawk State Camp, where they could devote their working time to restocking the forest. Thus the camp was established in 1915 for the dual purpose of rehabilitating patients and building up the forests. However, it was ruled that the state lacked constitutional authority to carry on a forest reserve program, and therefore other work had to be considered for the patients. At first it was a matter of trial and error, but a satisfactory rehabilitation program was slowly evolved, so that the Lake Tomahawk State Camp has become favorably known among tuberculosis workers throughout the world.

The author points out that during the twenty-four years of the existence of this camp up to 1939, 755 persons were treated and discharged alive. After carefully analyzing the data he says that the post-discharge statistics give considerable documentary testimony to the value of this rehabilitation program. The step now being developed consists of providing a more definite procedure for placement of graduates of this camp in suitable employment. The author gives much well-deserved credit to Mr. and Mrs. Frank A. Reich, builders and trustees of the camp since its opening.

Mr. Holland is to be congratulated on the preparation of this book because of its historical value, the fine manner in which he has discussed the pros and cons of rehabilitation, and the future program he proposes.—J.A.M.

**Clinical Electrocardiography,** by DAVID SCHERF, M.D., and LINN J. BOYD, M.D. 2d edition; Philadelphia: J. B. Lippincott Company, 1946. Pp. 268, illustrated, \$8.00.

The senior author of this book was a co-worker of Wenckebach in Vienna. In recent years he has been Associate Professor of Medicine at New York Medical College. This work reflects his excellent training in both the English and German cardiologic literature. The book is clinical to the extent that a great number of pathological conditions of significance to the electrocardiographer are considered, but the authors also discuss the physiological and experimental bases of many of their conclusions. The book compares favorably with other standard works on electrocardiography. It presents an epitome, well illustrated, of present knowledge of the subject.—R.B.

# The Challenge of Postwar Pediatrics

A. A. Weech, M.D.

Cincinnati, Ohio

SUFFERING, starvation, and despair for many people have been and for some time must continue to be the outcome of World War II. Such cataclysms have always been followed by change, sometimes retrogressive, sometimes forward moving, in its effect on civilization. The challenge to those who survived the debacle of this war is plain. By planning now can they block completely the type of change that spells regression, and from the lessons of war gather the momentum for progress? The best brains of the civilized world must consider carefully the means of making the answer "Yes." There are ramifications in economics, social security, education, sanitation, public health, and a score of other fields. Statesmen must draw the master plan, but the details belong to professional and intellectual groups in every walk of life. For this reason and from this point of view I have chosen to write on "the challenge of postwar pediatrics."

The broad outline of the challenge is clear. It embraces a wider horizon than routine calls to the homes of the sick. Shall the profession be so organized and so constituted that its members will continue and seek to expand their work in the field of preventive medicine? Through national, state, and municipal organizations can they be kept informed of relevant scientific discoveries and brought to comprehend their significance from the standpoint of application to the child? Is it too much to hope that, having comprehended, the profession will overcome inertia, not only in accepting an obligation for detailed work but also in creating within itself the means of leadership, so that co-ordinated opinions and experience can be utilized when the enterprise requires co-operation with industry, education, government, and other agencies outside the medical profession?

Some startling situations were revealed by physical examinations of the young men of the nation under the Selective Service Act. From the assembled data we can specify the points where preventive medicine has failed. We can do more. In the data themselves there is tangible evidence that many disqualifying physical defects had their origin in the years of childhood. Black<sup>1</sup> has plotted the percentage of selectees qualified for military service against the age of the selectees (Figure 1).<sup>\*</sup> The available points cover the range from 18 to 36 years and lie along a straight line. At 18 years 83 per cent were qualified, as opposed to only 30 per cent at 36 years. If the line is extrapolated to the younger period we must move to 12 years before reaching the age where essentially no boys have defects so marked as to disqualify for military service. Although there are legitimate ob-

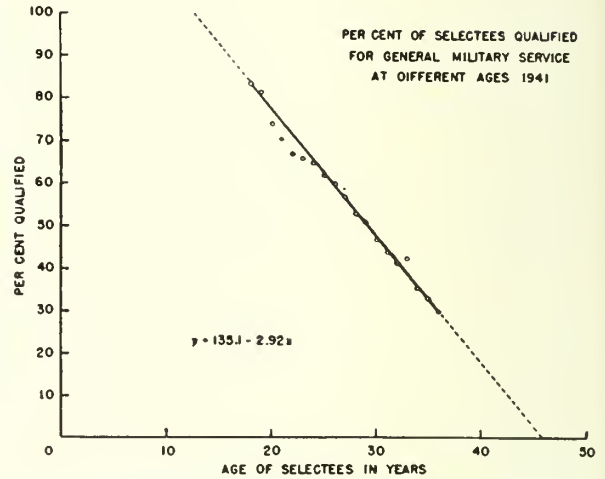


Fig. 1. Showing the percentage of selectees qualified for general military service at different ages in 1941. (After Black.)

jections to projecting this line to the 100 per cent qualified level, there is certainly no evidence to suggest universal qualification at any older age than 12 years. Remember, we are speaking of advanced defects sufficient to disqualify for a soldier's life. The seeds from which the defects grew must have been planted at even earlier ages. One phase of the postwar challenge is clearly enmeshed with the pediatric age.

Let us turn to the actual causes for rejection and the accumulated totals. Of 2,000,000 men examined in 1941, 900,000 were rejected for physical and mental disabilities.<sup>2</sup> Forty-five per cent of the young manhood of the nation with major defects! Although standards were subsequently altered so that some of those rejected found a place for service, it is no credit to the science of preventive medicine that the demand for manpower should have necessitated changing the standards.

At the top of the causes of rejection is dental caries. Of the total, 188,000, or between 9 and 10 per cent of the young men, failed to meet the dental requirements. Perhaps you may think that the standard was too high. It hardly seems so. For Class 1A a selectee must have "a minimum of three serviceable natural masticating teeth above and three below opposing and three serviceable natural incisors above and three below opposing. (Therefore, the minimum requirements consist of a total of six masticating teeth and six incisor teeth.) All of these teeth must be so opposed as to serve the purpose of incision and mastication. The term *masticating teeth* includes molar and bicuspid teeth, and the term *incisors* includes incisor and cuspid teeth." These stipulations are quoted from the United States War Department Mobilization Regulations MR 1-9, issued August 31, 1940. The large number of men unable to meet the

<sup>\*</sup>From the Children's Hospital and the Department of Pediatrics, University of Cincinnati College of Medicine.

<sup>2</sup>For the data that appear in Figure 1 I am indebted to an article by Lt. Comdr. Arthur Black of the United States Navy (see Bibliography).



requirement is the more startling in view of the generosity of these regulations.

Dental caries is certainly not exclusively a pediatric problem, but just as certainly the pediatrician is not justified in unloading all the responsibility for correction and prevention on the dentist. At present the only established way of controlling the spread of caries consists of periodic visits to the dentist, beginning at the age of two or three years and continuing throughout life. Many families are unable to meet the cost of regular dental supervision. For them there is need of subsidized care. But they probably constitute a smaller group of people than those who are able to bear the costs but fail to make the regular visits through procrastination and possibly through fear of the dentist's drill. With this latter group the pediatrician can help by patient persuasion and constant insistence that parents do not neglect one phase of a child's health while seeking advice about another.

We are not yet strong enough in our knowledge of other means of preventing caries to permit the parent to believe that periodic trips to the dentist can be avoided. There are nevertheless clear signs that the spread of caries can be influenced by systemic factors. Since the control of these factors enters the domain of pediatric practice, serious consideration is needed of ways of making the control effective.

There is no longer room to doubt that the tendency of teeth to decay is affected by nutritional factors. Authorities are not agreed, however, on the relative prophylactic importance of the different dietary essentials. Although research in this direction needs to be continued, the need for more work does not remove the responsibility of giving the child the chance to benefit from all that is now known of the completely balanced diet. The observations of Boyd<sup>3</sup> in Iowa argue strongly that such diets can arrest the progress of caries. Children subject to rigid control of diet because of diabetes exhibited a greatly lowered caries rate in comparison with children whose diets were not so carefully supervised.

The application of this knowledge in daily practice is not easy. The eating habits of the seemingly healthy child cannot be regarded as something requiring rigid military discipline. Parental strain and childhood rebellion against such a course would soon lead to emotional disturbances in the home too great to justify a discipline that is accepted willingly when a disease like diabetes furnishes the motive.

Fortunately, another way is open, a way too seldom used. I refer to the dietetic analysis of carefully prepared records of what the normal and wisely disciplined child is choosing to eat at home, at school, and at the corner soda fountain. Data are now available that make it possible to appraise the analysis from the standpoint of most of the known food essentials. The appraisal becomes the basis for advising substitutes and alterations that allow the child a maximum of freedom with respect to his own choice of food. It is frankly admitted that the time required for calculating the components of freely-chosen diets may prevent the busy practitioner

from using this method routinely. The difficulties constitute the challenge. And perhaps the expanding number of well-trained dietitians can help us meet the challenge.

I have purposely mentioned nutrition first among the systemic factors affecting the incidence of caries because a wisely selected diet has more to commend it from the health standpoint than merely the prevention of caries. The time may be near, however, when substantial progress in the fight against tooth decay will be accomplished by the relatively simple procedure of adding fluorides to municipal water supplies. By means of studies in carefully selected communities Dean and his associates<sup>4</sup> have demonstrated a remarkable inverse relationship between caries experience and the level of fluorine in the water supply. The relationship holds throughout ranges of concentration that are too low to produce mottling of the enamel or other toxic manifestations. The effect of fluorine in inhibiting the development of caries in rats maintained on a caries-producing diet suggests strongly that the relationship observed in human beings is neither fortuitous nor the result of some associated unknown factor.

It is imperative that we be familiar with the evidence rapidly accumulating in this field. Individually we must weigh the evidence thoughtfully, in order that, collectively, we shall be ready to assume the role of leadership when we are convinced that the time for action is at hand. Personally, I am persuaded that enough data have already accumulated to justify several carefully conducted surveys of the effect of adding nontoxic amounts of sodium fluoride to city water. Plans for such surveys have already been prepared by Ast<sup>5</sup> of the New York State Department of Health and published in the United States Public Health Reports.

I have wondered whether as individual pediatricians we should not do more than this. The amount of fluorine in the water of most American municipalities is far below the level that inhibits caries. Water from Cincinnati, Pittsburgh, and Chicago is reported as showing a trace. Water from New York City contains one part in a hundred million. Water from Cleveland, Indianapolis, and Detroit shows one part in ten million. Available evidence indicates that the amount needed to exert a substantial effect on tooth decay is in the neighborhood of one part per million.

The question at once arises, "Can the risk of caries be reduced by adding daily equivalent amounts of sodium fluoride to the orange juice or milk of individual children during the span of years when the crowns of the permanent teeth are being laid down?" Although the time may not have arrived when a supplement of this kind can be recommended as a desirable universal measure, there is nevertheless ample evidence to justify suitably controlled experimental observations on limited groups of children. For the caries-fluorine hypothesis already has more to commend it than has been assembled in behalf of the time-honored toothbrush.

Enough, then, of dental caries and the challenge it presents to postwar pediatrics. The experience of Selective Service indicates that 4.8 per cent of the young

men of the country were disqualified by cardiovascular diseases. The group includes defects from several etiologic agents, but among them rheumatic disease is by far the most important. Rheumatic fever is now killing more children of school age, i.e., 5 to 14 years, in the United States than any other disease.<sup>6</sup> You are all familiar with the story. The disease is characterized by a tendency to recurrences over many years. Each attack means months of bed care. The case fatality before maturity is certainly not less than 20 per cent. Here indeed is a challenge to pediatricians ready to occupy their thoughts with the problems of preventive medicine.

It is true that we know of no sure way to prevent a first attack of rheumatic fever. However, the deaths from rheumatic disease are for the most part the result of recurrences, and here there is the opportunity for prophylaxis. Observations by Coburn and Moore<sup>7</sup> and by Thomas and France<sup>8</sup> have recently been corroborated in meticulous studies by Kuttner and Reyersbach<sup>9</sup> at Irvington House in New York. These studies show not only that recurrences of rheumatic activity are invariably ushered in by infections with group A hemolytic streptococci, but also that the incidence of streptococcal infection can be greatly lowered by giving small daily doses of sulfanilamide throughout the season of the year when respiratory infections are prevalent.

The data collected by Kuttner will serve to illustrate the effectiveness of this form of prophylaxis. Among 108 rheumatic children who received daily doses of sulfanilamide through two successive winters there were only two streptococcal infections, and only one of these was associated with a recrudescence of rheumatic activity. In contrast, among 104 rheumatic children in the control group there were 48 streptococcal infections, associated with 23 recurrences of rheumatic activity. Statistically this result is overwhelmingly significant. Prophylactic sulfanilamide does exhibit an important action in preventing recurrences of acute rheumatic disease. But we must note that Kuttner found that 15 per cent of her rheumatic subjects could not be kept on the drug because of toxic reactions. The challenge to those who will use this method therefore involves the responsibility for alertness in looking for signs of toxic response. The responsibility will not be eliminated even if the number of untoward reactions is reduced when newer drugs, like sulfadiazine and sulfamerazine, are substituted for sulfanilamide.

I have stated that we know of no sure way to prevent a first attack of rheumatic fever. But we do know that the malady is far more frequent in the underprivileged classes than among the well-to-do. We do not yet know the full explanation. Perhaps the major factor is overcrowding, with consequent enhanced liability to streptococcal infection. Perhaps other and more easily correctable factors are at work. At all events, Coburn and Moore<sup>10</sup> have recently published the results of an investigation which arrests attention by suggesting that nutrition may be an important factor in determining susceptibility to rheumatic disease. In one phase of this work Coburn was led to collect and analyze the dietary records of 50 rheumatic children. Of these children,

TABLE 1  
Diet and Recurrent Activity in Rheumatic Subjects  
(Data of A. F. Coburn and L. V. Moore)

| Vitamin A and Protein in Diet | Less Susceptible Subjects | More Susceptible Subjects | Total |
|-------------------------------|---------------------------|---------------------------|-------|
| Above median in both items    | 13                        | 3                         | 16    |
| Below median in both items    | 2                         | 14                        | 16    |
| Total                         | 15                        | 17                        | 32    |

Chi-square (after Yates's correction) = 12.5. P = 0.0005.

25 had suffered at least one severe attack of rheumatism with cardiac involvement early in life, but they had been free from attacks for many years, and the other 25 had experienced repeated attacks over the intervening years. All the patients were under regular observation in the out-patient clinic, and all were free from active disease at the time the dietary records were obtained. The records were subsequently analyzed to determine what the diets provided in calories and protein, in calcium, phosphorus, and iron, and in vitamins A, B, C, D, and G. Significant associations were found between susceptibility to recurrent attacks and a number of the dietary essentials.

Diets low in one essential were so frequently low in several essentials as to preclude evaluation of the relative importance of single factors. The data in Table 1, which show the association between susceptibility and combined dietary deficits in protein and vitamin A, are illustrative only, and not intended to convey the impression that these factors are either more or less important than other factors. Estimates of the dietary level of each constituent on the basis of published standards are not used in this part of Coburn's analysis. Rather, the different amounts actually ingested by the 50 children were divided at the median amount, so that half the children taking a smaller amount of the constituent could be separated from the other half who took a larger amount. On this basis there were 32 children who were above or below the median levels with respect to both protein and vitamin A. The table shows that among 16 rheumatic children with relatively high intake of these essentials only three exhibited recurrent activity. In contrast, among the 16 rheumatic children with relatively low intakes 14 had experienced repeated attacks.

These observations are important, not only because they point the way to another avenue of attack against the scourge of rheumatic fever, but also because they provide one more example of good to be derived from an intelligently planned diet.

The Selective Service tabulation reveals that nearly 3 per cent of the nation's registrants were rejected for nervous and mental disorders. The diagnoses include various types of behavior disturbances, alcoholism and drug addiction, stuttering, stammering, habit spasms, and enuresis. Many of these disorders might have been prevented if the victims had had access at an early age to wise psychiatric guidance. Here indeed is the field that presents the supreme challenge to postwar pediatrics. The problems reach deeply into the causes of un-



happy homes and emotionally unstable or often merely bewildered parents and children. The minor disturbances are vastly more numerous, and, in terms of total effect in disturbing the happiness of homes, more important than the relatively few disorders that were severe enough and had persisted long enough to disqualify for Selective Service.

The problem is so large and the need so great that there is ample room for help from many points of contact between society and the home—from the kindergarten and school, from child guidance clinics, from social workers and visiting nurses, as well as from the pediatrician and consulting psychiatrist. Throughout these groups there is the need for mutual understanding. The pediatrician especially is faced squarely with the obligation of initiative in seeking the means of co-operative effort. For he cannot honorably continue as the counselor of distressed families while remaining in ignorance of objectives and technics emanating from psychiatry, whether or not he ultimately disagrees with some points of view and some methods of approach.

The path along which we can approach the goal is already becoming clear. Able young physicians who have received a thorough training in pediatrics must be encouraged to study psychiatry under the best psychiatric teachers. They must familiarize themselves with the organization of the best child guidance clinics and the methods used in operating them. They must then—at least for some years to come—be willing to return as teachers to the children's hospitals and university departments where pediatricians are being trained and where clinical conferences are held for the benefit of physicians practising in the community. In this way the pediatric psychiatrist will become the important means of creating the psychiatrically-minded pediatrician equipped with trained insight into the significance of the emotional environment of his patients. The wisdom of this method of approach to the problems of pediatric psychiatry has already been demonstrated. The Commonwealth Foundation in New York City has accepted a share of the challenge by providing a number of scholarships for the support of pediatricians interested in obtaining psychiatric training.

These suggested means whereby one may reasonably look ahead to better management of the emotional behavior disturbances of childhood are directed toward preventing the progress of a disorder as soon as it becomes apparent. To a certain extent the pediatrician charged with the care of a child from the neonatal period is in a position to offer prophylaxis. But many pediatricians will feel, as I do, that personal guidance by individual physicians is not enough to cope with the magnitude of the problem. Is it not possible that prophylaxis in the form of preparation for the emotional strains of motherhood can be begun during the high

school and college age? Must we not soon recognize in our educational institutions that impulses arising in the hypothalamus are just as important as those coming from the cortex in determining the actions and character of human beings? May we not hope that the time is near when our adolescent children not only will be taught the importance of suppressing uncontrolled emotional outbursts but will also be given an insight into the nature of the elemental impulses and reactions that in varying degree are the experience of all men and women? These are matters that deserve grave thought. Positive action lies in a field outside the domain of pediatrics. Nevertheless, the pediatrician is concerned because his contact with the emotional strains within many homes has given him firsthand knowledge of conditions as they are and created a responsibility he has no right to ignore.

#### CONCLUSION

The picture I have painted of postwar pediatrics, of the challenge and the opportunity it presents to postwar pediatricians, is one that not only recognizes the need for service to individual patients but also embraces a concept of greater good to be accomplished through leadership and co-operation with all human agencies concerned with the rearing of healthier and happier children.

The specific illustrations of opportunities that lie ahead may not be the best that could have been selected. Certainly they constitute no more than illustrations, and are in no sense a complete program. But they have served to stress two points which together are the backbone of the thesis. First: postwar pediatrics, even more than prewar pediatrics, must accept the challenge of preventive medicine. Second: to do so with greatest efficiency it must seek to work with, not to argue against, leaders in other fields that exist to prepare the child for the responsibilities of citizenship and to protect him against exposures that can undermine his physical health.

#### BIBLIOGRAPHY

1. Black, A. P.: *Mil. Surgeon*, 91, 619, 1942.
2. Rountree, Col. L. G.: *New York J. Dent.*, 12, 100, 1942.
3. Boyd, J. D.: *J. Am. Dent. Assoc.*, 30, 670, 1943.
4. Dean, H. T.: *Pub. Health Rep.*, 53, 1443, 1938. — Dean, H. T., Jay, P., Arnold, F. A., McClure, F. J., and Elvove, E.: *Pub. Health Rep.*, 54, 862, 1939. — Dean, H. T., Jay, P., Arnold, F. A., and Elvove, E.: *Pub. Health Rep.*, 56, 365, 761, 1941. — Arnold, F. A., Dean, H. T., and Elvove, E.: *Pub. Health Rep.*, 57, 773, 1942.
5. Ast, D. B.: *Pub. Health Rep.*, 58, 857, 1943.
6. Huse, B.: *The Child*, 7, 158, 1943.
7. Coburn, A. F., and Moore, L. V.: *J. Clin. Investigation*, 18, 147, 1939; *M. Clin. North America*, 24, 633, 1940; *J.A.M.A.*, 117, 176, 1941.
8. Thomas, C. B., and France, R.: *Bull. Johns Hopkins Hosp.*, 64, 67, 1939. — Thomas, C. B., France, R., and Reichsman, F.: *J.A.M.A.*, 116, 551, 1941.
9. Kuttner, A. G., and Reyersbach, G.: *J. Clin. Investigation*, 22, 77, 1943.
10. Coburn, A. F., and Moore, L. V.: *Am. J. Dis. Child.*, 65, 744, 1943.

# The Celiac Syndrome

Richard B. Tudor, M.D., and Erling S. Platou, M.D.

Minneapolis

ANYONE interested in the celiac syndrome cannot but be impressed by the great advances made in our knowledge of it during the last three years. Work done by Blackfan, May, McCreary, Andersen, Farber, and many others has done much to clarify this problem.<sup>1-5</sup>

We have been particularly interested in the celiac syndrome during the last three years because of the number of patients seen with the complaint of steatorrhea. This report deals with 21 children on whom we were able to do all necessary diagnostic tests, and to treat them and follow the course of the disease. We have not included several children whom we observed but upon whom we were unable to complete tests. It is our desire to confine the present discussion to the diagnostic and treatment procedures.

Table 1 shows that of the 21 patients upon whom we were able to perform all diagnostic tests four had fibrocystic disease and 17 had idiopathic celiac disease. In one patient of the idiopathic type steatorrhea was due to allergy and in one to starch intolerance; in the remaining 15 the cause was not found. These 15 patients form the chief basis of this presentation.

TABLE 1  
Types of Cases of Celiac Syndrome Treated

| Type                            | Number of Cases |
|---------------------------------|-----------------|
| Fibrocystic diseases .....      | 4               |
| Idiopathic celiac disease ..... | 17              |
| Fat intolerance .....           | 15              |
| Starch intolerance .....        | 1               |
| Allergic .....                  | 1               |
| Total .....                     | 17              |
|                                 | 21              |

TABLE 2  
Symptomatology of the Celiac Syndrome

| Types             | Symptoms                                                                                                                  |
|-------------------|---------------------------------------------------------------------------------------------------------------------------|
| Fibrocystic ..... | Chronic upper respiratory infection (usually)<br>Steatorrhea (occasionally)                                               |
| Allergic .....    | Eczema, asthma                                                                                                            |
| Idiopathic .....  | Steatorrhea                                                                                                               |
| All types .....   | Failure to gain on adequate diet<br>Loss of muscle tone<br>Anemia<br>Irritability<br>Deficiency states (vitamins A and D) |

In Table 2 are listed the most common symptoms in each type. Of the four children with fibrocystic disease two presented as a chief complaint chronic upper respiratory infection, beginning practically from birth. In two of these four children steatorrhea as well as respiratory infection was present.

From the Department of Pediatrics, University of Minnesota Medical School.

The child with steatorrhea due to allergy had severe eczema almost from the time of birth, and was critically ill on several occasions with a combination of eczema, steatorrhea, and dehydration. She developed asthma at the age of three years. The other 16 children had as their chief complaint steatorrhea only, varying from moderate to severe degree.

All children had the following physical signs: failure to gain weight on an adequate diet, loss of muscle tone, irritability, mild to moderate anemia, and vitamin A and D deficiencies (Table 2).

TABLE 3  
Laboratory Aids to Diagnosis of Celiac Syndrome

|                                            |
|--------------------------------------------|
| Test of stool fat                          |
| Vitamin A absorption curve                 |
| Fasting carotene test                      |
| Sugar tolerance curve                      |
| Pancreatic enzyme studies                  |
| History and skin tests for allergy         |
| X-rays of chest and gastrointestinal tract |

In Table 3 are listed all the laboratory aids to diagnosis. As most patients with the celiac syndrome have steatorrhea it follows that their stools contain more fat than normal. For children under the age of six years total stool excretion of more than 50 grams wet weight or 15 grams dried weight is beyond the limits of normal.<sup>6</sup> It is assumed that the child tested is receiving a normal diet. In only one instance did we do a quantitative stool examination, for this is a time-consuming laboratory method that is unnecessary and seldom done. Dr. Dorothy Andersen has developed a simple method of doing a qualitative stool fat which correlates well with quantitative methods.<sup>7</sup> The procedure consists in examining under the low-power objective a small amount of stool into which a few drops of sudan IV have been dropped. More than 4-5 droplets of fat per low-power field indicate an excess of fat in the stool (3 plus or more). This simple test is therefore relatively diagnostic of deficient fat metabolism.

Vitamin A absorption is a fairly accurate index of fat absorption from the small intestine.<sup>8,9</sup> This test consists in determining the amount of vitamin A in a fasting sample of venous blood, giving 50,000 units of vitamin A by mouth, and following this in three hours with another vitamin A determination on venous blood.\* In a normal individual the curve should rise 150 to 200 micrograms at the end of three hours. It should be recognized that vitamin A absorption is a nonspecific test and that the results are impaired in cretinism, jaundice, ulcerative colitis, malnutrition, and pneumonia, as well as in cases of steatorrhea. We have evaluated our results in the light of this fact.

\*The vitamin A absorption testing in our cases was done by Dr. Ziegler at the University of Minnesota.



While a vitamin A curve is being done, carotene or pro vitamin A is also determined. A low fasting level is believed by some to be diagnostic, though this has not proved to be true in our cases.

Sugar tolerance curves in these patients are usually flat, revealing a deficient absorption of carbohydrate from the small intestine. The results in this test and the preceding tests, i.e., vitamin A and carotene, are probably due to some defect inherent in the intestinal mucosa.

Dr. Andersen has shown that in fibrocystic disease pancreatic trypsin and lipase are always markedly reduced or absent, and amylase is reduced or normal.<sup>10</sup> In idiopathic celiac disease there are usually no changes in the pancreatic enzymes, except in case of starch intolerance, where amylase is reduced. Dr. Andersen showed further that the determination of pancreatic trypsin alone is diagnostic in fibrocystic disease. Dr. Andersen's method for determining the amount of trypsin in the duodenal juice is so simple that it should be done in every case of steatorrhea.<sup>11</sup>

In some cases fibrocystic disease may not be suspected until pancreatic trypsin has been determined. A duodenal tube is passed in the morning, following a 12- to 16-hour fast. It is best to do this under fluoroscopy. When the tip of the tube is in the ascending or transverse portion of the duodenum, some duodenal juice will usually run out and can be collected. One should discard all but alkaline juice. In fibrocystic disease gentle suction on a syringe is usually necessary to withdraw some of the juice, for it is small in amount and sticky. The method of determining trypsin takes about half an hour to set up and requires no special laboratory training.<sup>11</sup>

In our series of patients only a few show the typical X-ray findings said to be present in gastrointestinal serial films; that is, areas of spasm alternating with areas of hypomotility, and the wide dilatation of many bowel loops, the so-called segmentation or "puddling." We believe that this is so because so few of our patients have had far advanced celiac disease. It is a simple matter to combine radiography with the removal of pancreatic juice. After sufficient juice is removed the barium can be injected through the tube and X-rays can be taken.

As all children with fibrocystic disease sooner or later develop chronic respiratory infection, chest X-rays may reveal pathology varying from markedly increased vascular markings to lobular pneumonia or bronchiectasis.

In any patient in whom allergy is suspected, history and skin tests are of course of great importance.

We believe that no single test, with the exception of the determination of stool fat and pancreatic trypsin, is necessarily diagnostic of the celiac syndrome. However, the other tests offer confirmatory evidence and aid in the differential diagnosis between the celiac syndrome and other conditions. We have used the tests in this way to give us a better understanding of each patient and to suggest proper treatment. Our results, we believe, justify our methods of arriving at a diagnosis.

Table 4 shows the results of the various tests on two patients, one with fibrocystic disease and one with idiopathic celiac disease.

TABLE 4  
Results of Tests on Two Patients with Celiac Syndrome

| Test                              | Patient NQ<br>(2 months):<br>fibrocystic<br>disease                                  | Patient EB<br>(12 months):<br>idiopathic celiac<br>disease |
|-----------------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------------|
| Sugar tolerance<br>(mg. per cent) | Fasting: 65<br>2 hours: 100<br>3 hours: 75                                           | Fasting: 60<br>2 hours: 85<br>3 hours: 65                  |
| Vitamin A absorption (micrograms) | Fasting: 25<br>3 hours: 18                                                           | Fasting: 35<br>3 hours: 38                                 |
| Pancreatic trypsin                | None present                                                                         | 250 units per cc.                                          |
| Gastrointestinal series           | Normal                                                                               | Segmentation, puddling, and dilatation of small bowel      |
| Chest X-ray                       | Increased markings, lobular pneumonia on several occasions; beginning bronchiectasis | Normal                                                     |
| Weight gain                       | At 1 month:<br>8 pounds<br>At 24 months:<br>22 pounds                                | At 12 month:<br>15 pounds<br>At 18 months:<br>22 pounds    |
| Stool fat                         | Four plus                                                                            | Four plus                                                  |

#### TREATMENT OF IDIOPATHIC CELIAC DISEASE

Until 1942 treatment of idiopathic celiac disease was largely dietary, i.e., starch and fatty foods were eliminated and the child was given mainly a high-protein diet. Usually the protein of skimmed milk, egg whites, meat, fish, and chicken liver was used, together with bananas and calcium caseinate. The variety of the diet was gradually widened in three stages, so that by the end of six months of intensive treatment the transition to a normal diet was usually made. There were, however, many exacerbations, and the children and parents were irritable a great deal of the time.

In 1942 May, McCreary, and Blackfan<sup>3</sup> found that by giving alternate injections of crude liver extract and parenteral vitamin B complex every other day for about three weeks, and then continuing with oral vitamin B complex, they invariably obtained a definite improvement in the patients in three to six weeks. For convenience we have modified their treatment with respect to the materials used (Table 5).

TABLE 5  
Our Present Plan of Treatment of Celiac Disease

| Materials                                                           | Method                  |
|---------------------------------------------------------------------|-------------------------|
| Crude liver extract (1cc. = 2 units)                                | 1.5 cc. intramuscularly |
| Parenteral vitamin B complex                                        | Q.O.D.                  |
| Each ampul of the product used contained:                           | 2 cc. intramuscularly   |
| Thiamine hydrochloride (vitamin B <sub>1</sub> hydrochloride) ..... | Q.O.D.                  |
| Riboflavin .....                                                    | 10 mg.                  |
| Pyridoxine hydrochloride .....                                      | 5 mg.                   |
| Calcium pantothenate .....                                          | 5 mg.                   |
| Niacinamide .....                                                   | 50 mg.                  |

The parenteral use of crude liver extract and vitamin B complex seems to us a great step forward in the treatment of children with idiopathic celiac disease, as most of them can resume a normal diet within six weeks, and the cure is usually permanent. It has been our custom to offer a high-protein and low-fat and low-carbohydrate diet during the course of the injections, and for three

to six weeks thereafter. Oral synthetic, i.e., yeast-free, vitamin B complex gives the best results of any oral B preparation.

In this series of 15 patients with idiopathic celiac disease we have obtained good to excellent results in all patients. The children have gained weight and become more normal mentally, have had one to two normal formed stools per day, have been able to eat a normal diet, and in every way have developed like normal children. So far we have had no recurrences.

Gillman and Gillman<sup>12</sup> have recently described a series of patients with infantile pellagra who had many symptoms and signs similar to those found in idiopathic celiac disease. As a matter of fact, they suggest that celiac disease may be a variant of pellagra. They gave these patients 10 grams of powdered stomach (ventriculin) orally every day, together with 5 cc. of N/10 HCL. In their patients the diarrhea and steatorrhea ceased within two to three days. This treatment has interesting possibilities and opens up a new field for research in the causes and treatment of the disease.

#### TREATMENT OF FIBROCYSTIC DISEASE

The present treatment of fibrocystic disease is twofold; that is, it is directed against the defect in the pancreas and against pulmonary infection. The diet consists of about 180–200 calories per kilogram and is high in protein, i.e., about 7–8 grams per kilogram. The rest of the diet is composed mainly of carbohydrate, with fat kept at a minimum. Eight cc. of oral vitamin B complex per day are given. The deficiency in pancreatic enzymes is treated by giving the child 4–6 grams of pancreatin or pancreatic granules (about 1 level teaspoon per meal), mixed in cereal or banana. As these children may lose in the stools three to four times the amount of nitrogen they absorb, it should be replaced directly by offering pancreatin and calcium caseinate.

There is some slight amount of evidence to show that lipocaic deficiency may have something to do with the causation of fibrocystic disease. Browne and Thomas<sup>13</sup> recently treated an adult who had fatty hepatomegaly and pancreatic fibrosis with lipocaic. The diagnosis was proved at laparotomy. Over a period of 18 months the liver receded and the patient's general condition improved markedly.

The problem of the pulmonary infection has not yet been solved, but steps have been taken toward doing so. Since the usual organism is *Staphylococcus aureus*, the sulfa drugs are usually relatively ineffective. Penicillin is effective, although the best method of giving it is not yet known. Giving it intramuscularly will provide temporary improvement, but not permanent results. Dr. Andersen is at present giving penicillin in aerosol by nasal catheter. The long-term results are not yet known.

We have treated four patients with fibrocystic disease. One died at the age of three months (the diagnosis was made at autopsy). The other three are alive, and, though not in perfect health, are able to lead fairly normal lives. For exacerbations of their respiratory conditions we have given them penicillin intramuscularly.

#### CONCLUSIONS

Every child who presents any features of the celiac syndrome should be investigated completely. The most reliable test in the diagnosis of idiopathic celiac disease is the determination of stool fat. A simple method of doing this test is described. The most valuable single test in the diagnosis of fibrocystic disease is the determination of pancreatic trypsin in the duodenal juice.

In idiopathic celiac disease the pancreatic enzymes are normal. The treatment of choice is the daily alternate intramuscular injection of crude liver extract and vitamin B complex for three weeks, followed by oral synthetic yeast-free vitamin B complex, given daily until improvement occurs. A high-protein, low-fat, low-starch diet should be followed during the course of treatment. Ventriculin, i.e., powdered hog stomach, in doses of 10 grams a day orally, with 5 cc. of N/10 HCL orally per day, has been suggested recently as a new treatment for idiopathic celiac disease, by Gillman and Gillman, who report good results from treatment of a small number of patients with infantile pellagra, which may be a related condition.

In fibrocystic disease pancreatic trypsin is invariably markedly reduced or absent. Chronic pulmonary infection is characteristic of fibrocystic disease. Treatment is twofold. The diet should be high in protein and should contain added pancreatin to replace the missing trypsin. Large amounts of vitamins A, B, C, and D should also be given. The pulmonary infection can be treated with penicillin, both intramuscularly and intranasally in aerosol.

#### BIBLIOGRAPHY

1. Farber, S.: Pancreatic Insufficiency and the Celiac Syndrome. *New England J. Med.*, 229 (Oct. 28), 1943.
2. Andersen, D. H.: Cystic Fibrosis of the Pancreas and Its Relation to Celiac Disease. *Am. J. Dis. Child.*, 56, 344, 1938.
3. May, C. D., McCreary, J. F., and Blackfan, K. D.: Notes concerning the Cause and Treatment of Celiac Disease. *J. Pediat.*, 21, 289 (Sept.), 1942.
4. Ingelfinger, F. J., and Moss, R. E.: Motility of the Small Intestine in Sprue. *J. Clin. Investigation*, 22 (May), 1943.
5. Farber, S., Maddock, C., and Schwachman, H.: Pancreatic Function and Disease in Early Life. *J. Clin. Investigation*, 22 (Nov.), 1943.
6. Andersen, D. H.: Fecal Excretion in Congenital Pancreatic Deficiency. *Am. J. Dis. Child.*, 69, 221 (April), 1945.
7. Andersen, D. H.: Determination of Fat in Feces in Patients with the Celiac Syndrome. *Am. J. Dis. Child.*, 69, 141 (March), 1945.
8. May, C. D., and McCreary, J. F.: The Absorption of Vitamin A in Celiac Disease. *J. Pediat.*, 180, 200, 1941.
9. Pratt, E. L., and Fahey, K. R.: Clinical Adequacy of a Single Measurement of Vitamin A Absorption. *Am. J. Dis. Child.*, 68, 83 (Aug.), 1944.
10. Andersen, D. H.: Pancreatic Enzymes in the Duodenal Juice in the Celiac Syndrome. *Am. J. Dis. Child.*, 63, 643, 1942.
11. Andersen, D. H., and Early: Method of Assaying Trypsin Suitable for Routine Use in Diagnosis of Congenital Pancreatic Deficiency. *Am. J. Dis. Child.*, 63, 891, 1942.
12. Gillman, T., and Gillman, J.: Powdered Stomach in Treatment of Fatty Liver and Other Manifestations of Infantile Pellagra. *Arch. Int. Med.*, 76, 63 (Aug.), 1945.
13. Browne, F., and Thomas, W.: Fatty Hepatomegaly with Pancreatic Fibrosis Controlled by Lipocaic. *Am. J. Digest. Dis.*, 12, 250 (July), 1945.



# The Successful Treatment of Subacute Bacterial Endocarditis of Children with Penicillin

George B. Logan, M.D., and Haddow M. Keith, M.D.

Rochester, Minnesota

THE recent introduction of the use of penicillin in the treatment of subacute bacterial endocarditis has very favorably altered the prognosis of a previously almost hopeless disease.

In 1944 Loewe and his co-workers<sup>1</sup> reported their initial favorable results from the use of penicillin combined with heparin. A further report<sup>2</sup> of their work appeared a year later, as did the report of Dawson and Hunter.<sup>3</sup> Three children were included in these groups.

In the latter part of 1944 the first reports of successful treatment of subacute bacterial endocarditis of children with penicillin alone were published by Collins<sup>4</sup> and Pizzi and McCarthy.<sup>5</sup> Bloomfield<sup>6</sup> reported a series of cures as a result of treatment with penicillin alone, but his group of patients did not include children. Since the original preparation of this paper Flippin and his co-workers<sup>7</sup> have published a series of cases in which the disease was cured by penicillin alone. This group included three children. Goerner, Geiger, and Blake<sup>8</sup> have reported another series of cases in which two of the patients were children.

We wish to report four additional cases in which treatment was successful. Preliminary reports on the first two cases have been given by Herrell and Kennedy.<sup>9</sup>

## REPORT OF CASES

*Case 1.*—A nine-year-old white girl was registered at the Mayo Clinic in June 1944 because of fatigue and pallor of a few weeks' duration. Two years previously she had had a temperature of up to 101°F. for several days, associated with pain in the upper part of the abdomen and aching pains in the legs. She was put to bed for six weeks and then gradually allowed to get up and to return to school. The aches in the legs and low-grade fever continued. On one occasion, she became cyanotic in the mountains at an altitude of 10,000 feet. Her appetite was poor, but she was considered to have much energy until shortly before her admission.

She was a small, pale girl 48 inches (122 cm.) tall and weighing 39 pounds (17.7 kg.). The systolic blood pressure measured 100 mm. of mercury. The diastolic pressure was not definitely measurable. Her heart was slightly enlarged. A systolic murmur was present, maximal at the aortic area.

Four blood cultures were positive for *Streptococcus viridans*. *In vitro* this organism was inhibited in its growth by 0.01 unit of penicillin per cubic centimeter but not by 0.001 unit.

The patient was treated daily for 18 days with penicillin, approximately 150,000 units in isotonic saline solution, given by constant intravenous drip. A total of 2,740,000 units was administered. In addition two transfusions of 125 cc. of citrated whole blood were given.

Blood cultures 3, 11, 21, and 25 days after the start of treatment were negative.

Three months later her family physicians reported that her blood culture was still negative. Fourteen months after treatment was stopped her physician reported that she was getting along well but not gaining weight. Her last blood culture had been taken 12 months after the cessation of treatment and had been negative.

*Case 2.*—An eleven-year-old white girl was brought to the clinic in July 1944 because of congenital heart disease and fever. A heart murmur had been detected shortly after birth. Her activities had always been restricted because of cyanosis and dyspnea.

Nine months before her admission to the clinic periodic pain developed in both the upper and the lower part of the abdomen. The pain was noted also in the flanks and lower part of the thorax. It lasted one to two hours and came at weekly to monthly intervals.

The patient was an irritable and apprehensive girl, 53 inches (135 cm.) tall and weighing 56 pounds (25.4 kg.). The blood pressure measured 106 mm. of mercury systolic and 66 diastolic. The heart was enlarged both to the left and to the right. A to-and-fro murmur was present at the base. The electrocardiogram showed evidence of right axis deviation. The circulation time was five seconds (arm to tongue), indicating a venous arterial shunt.

The first blood culture was reported negative after 48 hours, but showed a growth of *Streptococcus viridans* in 72 hours. There were 40 colonies per cubic centimeter of blood. *In vitro* this organism showed growth in 0.01 unit of penicillin per cubic centimeter, but no growth in 0.1 unit per cubic centimeter.

Treatment with a continuous intravenous drip of penicillin in isotonic saline solution was begun and continued for 21 days. Approximately 90,000 units were given daily. A total of 1,900,000 units was administered.

On the day treatment was begun the blood culture was reported to be negative. The blood cultures were negative 14, 21, 24, and 31 days after the start of the treatment.

Within three months the patient was able to return to school part time. Thirteen months later her home physician reported that the girl's blood culture was still negative.

*Case 3.*—A nine-year-old white girl was brought to the clinic in February 1945 because of abdominal pain, rapid pulse, and vomiting.

Three years previously, in 1942, she had had scarlet fever, chickenpox, and measles in close succession. Since that time her physician had known that she had a heart murmur.

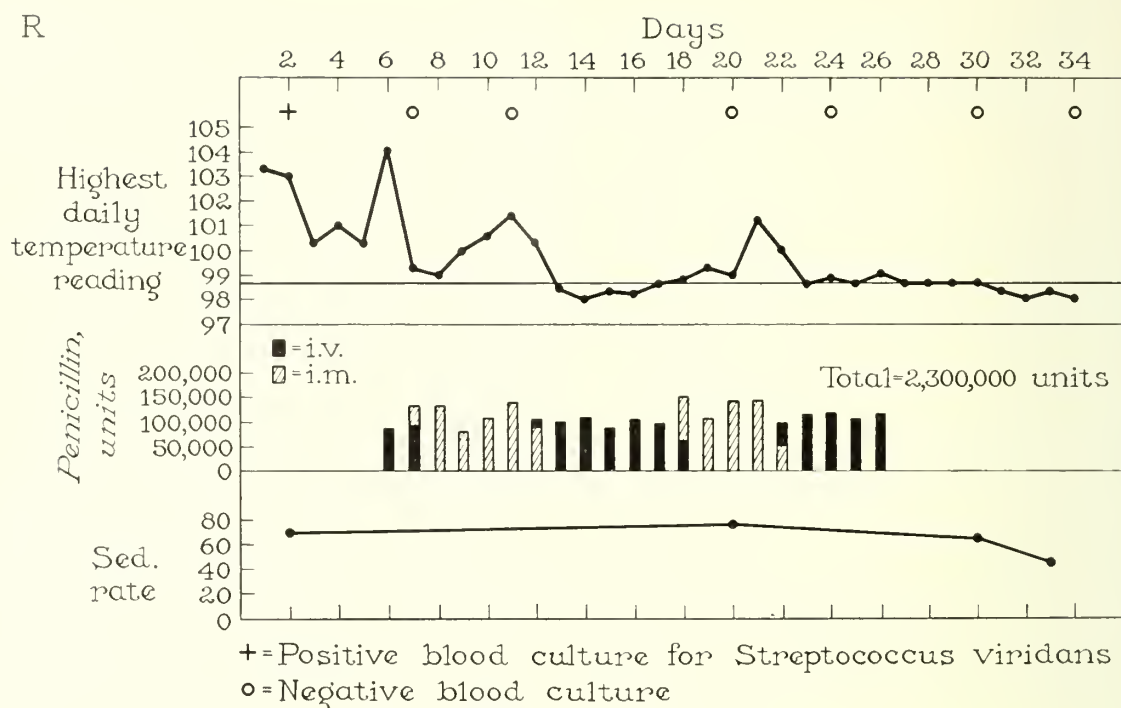


Fig. 1. Treatment and course of Case 3.

In November 1944 she had had a cold and a sinus infection, followed in three weeks by pain in the right elbow and shoulder. After that she had migratory arthritis involving the fingers, toes, hips, and elbows. Her temperature rose daily, at times to 104° F. She was kept in bed and given salicylates and codeine.

A few weeks prior to entry abdominal and precordial pain had been noted. At the time of admission she particularly complained of pain in the left upper quadrant of the abdomen. An attempt at digitalization had been unsuccessful.

The patient was a well-developed, well-nourished, very co-operative girl. The heart was enlarged to the left, and a loud, rough, widely transmitted systolic murmur was present at the apex. The edge of the spleen was palpable at the costal margin.

The hemoglobin measured 10.7 gm. per 100 cc. of blood. Erythrocytes numbered 4,320,000 and leukocytes 11,600 per cubic millimeter of blood.

The blood culture was positive for *Streptococcus viridans*; there were 100 colonies per cubic centimeter of blood. *In vitro* this organism was killed by 0.1 unit of penicillin per cubic centimeter, but not by 0.01 unit.

Administration of penicillin was begun, and 90,000 to 150,000 units per day were given (Fig. 1). Some of it was administered intravenously and some intramuscularly. A total of 2,300,000 units was given. The day following the start of treatment the patient had an embolus in the skin over the right eyebrow. Two weeks later she had emboli in the right knee and the toes of the right foot. Fifteen and 17 days after treatment was started she had episodes of very severe precordial pain.

Six months later her general health was good. The

cardiac murmur was present but her blood culture was negative and her sedimentation rate was normal.

*Case 4.*—An eleven-year-old white girl was brought to the clinic in May 1945 because of a sudden onset of right hemiplegia. It was difficult to obtain an accurate history. She had apparently been in good health until five weeks before entry, when she had had a chill and fever which lasted one day. Since that time she had had increasing fatigue. Three weeks previously pain in the right shoulder, frontal headaches, and pain in the left upper quadrant of the abdomen had developed. She was treated by a chiropractor with some temporary benefit. He discovered that she had a cardiac murmur. At this time her parents noted that in the afternoon she had a temperature of 102° to 102.6° F. In the three days prior to admission she had two or three brief spells of dizziness of about fifteen seconds each. On the day of entry, while she was drying dishes, she suddenly became dizzy and slumped to the floor. When she tried to get up she noted her inability to use her right arm or leg.

She was a pale, co-operative girl, who had a flaccid paralysis of her right side, except for the muscles of the forehead. The deep reflexes were increased on the right and the Babinski sign was positive on that side.

The heart did not appear to be enlarged. A loud, rough systolic murmur was present throughout the precordium, maximal at the apex. The spleen was palpable.

The patient had a number of involuntary urinations. The electro-encephalogram showed evidence of a lesion in the left motor temporal area. The cerebrospinal fluid was clear. The total protein was 45 mg. per 100 cc., and there were 8 lymphocytes per cubic millimeter of



fluid. The hemoglobin measured 12.1 gm. per 100 cc. of blood. Erythrocytes numbered 4,200,000 per cubic millimeter and leukocytes 11,400, of which 83 per cent were polymorphonuclear leukocytes. Roentgenograms of the thorax and skull were reported as normal. Examination of the ocular fundi was also reported as giving normal results.

The initial blood culture showed 30 colonies of *Streptococcus mitis* per cubic centimeter of blood. A second culture four days later showed 25 colonies of the same organism per cubic centimeter. No *in vitro* tests against penicillin were carried out.

An intravenous drip of penicillin in isotonic saline solution was started on the day the second blood culture was obtained. Fifty thousand to 200,000 units were administered daily. A total of 2,285,000 units was given in a 21-day period. The blood cultures on the 8th, 17th, 24th, and 38th day after the start of treatment were all negative.

Physical therapy, consisting chiefly of baking, massage, and passive motion, was started soon after admission. The patient showed a little improvement in the use of her right side before dismissal on the 44th hospital day.

Three months later her blood culture was negative. She was able to be up in a wheel chair. Progress in regaining the use of her right side was very slow.

#### COMMENT

As a result of our experience and that of others, we do not feel that heparin is a necessary adjuvant to penicillin in the treatment of patients having subacute bacterial endocarditis. In fact, some authors<sup>10</sup> have expressed the opinion that the use of heparin adds unwarranted risk to the treatment.

It is wise to carry out an *in vitro* test of the effect of penicillin on the organism encountered in each case. The reasons for doing so are obvious.

We arbitrarily started out to give intravenously to each of these patients 150,000 units of penicillin daily. Technical and personality factors forced some variations in this dosage. Thus, in Case 1 the patient received 2,740,000 units instead of 3,150,000; in Case 2, 1,900,000; in Case 3, 2,300,000; and in Case 4, 2,285,000 units. Apparently, under the conditions encountered in our cases these doses were adequate.

It is essential that the antibiotic agent be given continuously as an intravenous drip or at three-hour inter-

vals by the intramuscular route. Continuous intramuscular administration should be satisfactory as well. In Case 3 the latter method was used part of the time, but the apparatus employed was not satisfactory. It is also essential that penicillin be administered for a long enough period. Our three-week period was arbitrarily determined. Other successful reports have mentioned periods of only two weeks. Adequate dosage, continuous administration, and prolonged duration are the keynotes of treatment.

Bloomfield has written of the occurrence at times of emboli during treatment. We noted the occurrence of emboli two weeks after the start of treatment in Case 3. In that instance, at least, the three-week period of treatment was desirable.

The physician must remember that when he supervises the cure of subacute bacterial endocarditis he is still faced with the care of a cardiac invalid, and at times with that of a hemiplegic patient.

#### REFERENCES

1. Loewe, Leo, Rosenblatt, Philip, Greene, H. J., and Russell, Mortimer: Combined Penicillin and Heparin Therapy of Subacute Bacterial Endocarditis; Report of Seven Consecutive Successfully Treated Patients. *J.A.M.A.*, 124: 144 (Jan. 15), 1944.
2. Loewe, Leo: The Combined Use of Anti-Infectives and Anticoagulants in the Treatment of Subacute Bacterial Endocarditis. *Bull. New York Acad. Med.*, 21: 59 (Feb.), 1945.
3. Dawson, M. H., and Hunter, T. H.: The Treatment of Subacute Bacterial Endocarditis with Penicillin; Results in Twenty Cases. *J.A.M.A.*, 127: 129 (Jan. 20), 1945.
4. Collins, B. C.: Subacute Bacterial Endocarditis Treated with Penicillin. *J.A.M.A.*, 126:233 (Sept. 23), 1944.
5. Pizzi, F. W., and McCarthy, F. W.: Subacute Bacterial Endocarditis Successfully Treated with Penicillin. *U. S. Nav. M. Bull.*, 43: 1010 (Nov.), 1944.
6. Bloomfield, A. L., Armstrong, C. D., and Kirby, W. M. M.: The Treatment of Subacute Bacterial Endocarditis with Penicillin. *J. Clin. Investigation*, 24: 251 (May), 1945.
7. Flippin, H. F., Mayock, R. L., Murphy, F. D., and Wolferth, C. C.: Penicillin in the Treatment of Subacute Bacterial Endocarditis; a Preliminary Report on Twenty Cases Treated over One Year Ago. *J.A.M.A.*, 129: 841 (Nov. 24), 1945.
8. Goerner, J. R., Geiger, A. J., and Blake, F. G.: Treatment of Subacute Bacterial Endocarditis with Penicillin: Report of Cases Treated without Anticoagulant Agents. *Ann. Int. Med.*, 23: 491 (Oct.), 1945.
9. Herrell, W. E., and Kennedy, R. L. J.: Penicillin: Its Use in Pediatrics. *J. Pediat.*, 25:505 (Dec.), 1944.
10. Meads, Manson, Harris, H. W., and Finland, Maxwell: The Treatment of Bacterial Endocarditis with Penicillin; Experiences at the Boston City Hospital during 1944. *New England J. Med.*, 232: 463 (Apr. 26), 1945.

# The Use of General Anesthesia in the Treatment of Extensive Caries in Problem Children

Ralph T. Knight, M.D., Joseph T. Cohen, D.D.S., and M. M. Litow, D.D.S.

Minneapolis

PART I. THE ANESTHETIST'S PROBLEM, by RALPH T. KNIGHT, M.D.

ONE of the anesthetist's greatest problems is the selection and proper administration of anesthetics for children. A child's nervous system is much more irritable and unstable than that of an adult. A child's brain succumbs to relatively small doses of sedatives and anesthetics. The spinal reflexes and the reflexes of the brain stem are tremendously active and tremendously resistant to anesthetics, and the activity and resistance are relatively unpredictable. With many of our anesthetics doses large enough to quiet and control peripheral reflex activity are simply overwhelming to the child's brain.

Ether is a relatively weak anesthetic that requires high blood concentration to produce anesthesia, and it is therefore slow in action. However, its effect is long in duration and its maintenance relatively even and stable. For this reason it has remained the favorite anesthetic for children. Mechanical difficulties in administering other anesthetics to children have also discouraged their use. Veins are often small and easily injured. If one is depending upon the placement of the needle to maintain anesthesia and the vein is spoiled, one is confronted immediately with an embarrassing, even distressing, emergency.

The administration of gases to children has usually been considered unwise or impracticable, because children do not tolerate well the necessity for breathing through tubes with increased resistance. Most anesthetists have therefore fallen back on what seems the simpler method of open-drop administration of ether.

The arguments against the use of ether are: (1) it causes much more postanesthetic illness and prostration; (2) it tends to produce acidosis; (3) it does not lend itself well to all situations with relation to the mechanics of surgery.

The difficulties with other anesthetics, already mentioned, are more apparent than real and may be overcome with care and skill.

Because of the child's unstable nervous system anesthesia is, to say the least, touchy. Touch-and-go situations arise much more frequently in dealing with children than with adults. The risk is therefore greater. When deciding upon administering anesthesia for a procedure that will add to the patient's welfare but is perhaps not a necessity, one must evaluate the probable benefit against the possible risk. Tonsillectomy, for instance, though usually not an immediate necessity, in many cases distinctly promotes the child's welfare. It is considered by most to be a relatively minor surgical procedure. Nevertheless, the incidence of anesthetic accidents and even death is much higher in tonsillectomy than in any other surgery.

Dr. Cohen has pointed out the great value for the child's welfare in having extensive dental caries repaired. Such repairs are of such great value that they might even be considered a real necessity. He has also pointed out the great difficulty and even impossibility in many cases of performing such repairs with the patient conscious. The question then arises: shall the child be subjected to anesthesia, and is the relatively small anesthetic risk justifiable in relation to the need for the dental procedure? If so, certainly every precaution must be taken to minimize the risks.

The risks involved are (1) obstruction of the respiratory tract mechanically; (2) obstruction of the respiratory tract or soiling by the inhalation of secretions and debris; (3) respiratory depression or arrest due to the anesthetic; (4) the danger of flame or explosion.

Over a prolonged period of time, with the mouth propped open, the tongue often pushed back, and drilling, scraping, and chipping going on, it is a practical impossibility, by ordinary means, to avoid obstructing the airway and to prevent the entrance of debris into the glottis. By ordinary methods, also, any inhalation anesthetic will be present in the mouth, where sparks caused by static or friction may ignite it. All inhalation anesthetics except nitrous oxide and chloroform are inflammable, and neither of them is suitable for prolonged administration.

All the above risks may be practically eliminated by inserting an intratracheal tube, equipped with an inflatable cuff to make a gas-tight connection between the anesthesia machine and the trachea. The air with which the cuff is inflated is kept balanced with a manometer, and the pressure is maintained at 15 cm. of water, which is effective but safe. By this means gases such as ethylene and cyclopropane can be employed, with adequate oxygen, for a long period of time. They can be much more delicately controlled than ether.

This technique can be used effectively in children down to 3 years of age, and children who need extensive dental repair are seldom younger. With the tube in place the airway is always open, debris cannot enter, gas and vapor do not escape, and the other danger, that of respiratory depression, can always be cured by manual bag respiration. This method prevents accidents from overdose.

For oral surgery the tracheal tube is frequently inserted through the nose to put it entirely out of the way of the surgeon. However, children's noses are rather easily traumatized. In all the cases in this group the tube was therefore inserted orally, and Dr. Cohen found it possible to work very well with the tube in one corner



TABLE I  
MULTIPLE DENTAL RESTORATIONS UNDER GENERAL ANESTHESIA

| Date              | Name | Sex | Age  | Number of Fillings         | Anesthetic Kind                  | Duration (minutes) | Premedication     |                      | Reason for Choice | Results |
|-------------------|------|-----|------|----------------------------|----------------------------------|--------------------|-------------------|----------------------|-------------------|---------|
|                   |      |     |      |                            |                                  |                    | Morphine (grains) | Scopolamine (grains) |                   |         |
| 9/5/45            | LU   | F   | 2-11 | 21                         | Cyclopropane                     | 120                | 1/32              | 1/800                | Age               | Good    |
| 8/2/45            | SR   | F   | 3-1  | 13                         | Cyclopropane                     | 70                 | 1/32              | 1/800                | Age               | Good    |
| 3/13/45           | RL   | M   | 3-6  | 24                         | Cyclopropane-Nitrous Oxide       | 97                 | 1/32              | 1/800                | Age               | Good    |
| 9/6/44            | JP   | M   | 4-6  | 18                         | Cyclopropane                     | 95                 | 1/32              | 1/800                | Mental            | Good    |
| 1/10/45           | DA   | F   | 4-6  | 17                         | Cyclopropane                     | 123                | 1/32              | 1/800                | Mental            | Fair    |
| 5/5/45            | SF   | F   | 4-6  | 19                         | Cyclopropane                     | 130                | 1/24              | 1/800                | Age               | Good    |
| 8/9/45            | KA   | F   | 4-11 | 21                         | Cyclopropane-Nitrous Oxide       | 95                 | 1/32              | 1/800                | Age               | Good    |
| 8/9/45            | SA   | F   | 5-11 | 13                         | Cyclopropane-Nitrous Oxide       | 95                 | 1/32              | 1/800                | Age               | Good    |
| 5/21/45           | JH   | F   | 8-9  | 13                         | Cyclopropane                     | 95                 | 1/16              | 1/400                | Frightened        | Good    |
| 3/31/45           | CH   | F   | 9-3  | 7                          | Pentothal-Nitrous Oxide-Ethelene | 120                | 1/8               | 1/250                | Mental            | Good    |
| 3/7/45            | LC   | F   | 17-0 | 7<br>X-rays<br>Prophylaxis | Pentothal-Nitrous Oxide          | 80                 | 1/6               | 1/200                | Spastic           | Good    |
| AVERAGE . . . . . |      |     |      | 6-11                       | 15.7                             | 102                |                   |                      |                   |         |

of the mouth. All the work on one side of the mouth was finished, and then the tube was changed to the other corner so that the other side could be repaired. This method possibly caused a little inconvenience, but Dr. Cohen seemed to become well adjusted to it.

Table 1 gives the age, premedication, kind and duration of anesthetic used, and other details of each case in this group.

The anesthetic agents used were cyclopropane, ethylene, nitrous oxide, and pentothal. Cyclopropane was used in nine of the cases and was the agent chiefly relied upon. Three of the cyclopropane cases, after the anesthesia had been well established, were carried for a considerable part of the time with nitrous oxide, administered in such a way that at least 30 per cent oxygen was constantly in the respired atmosphere. In all these cases the nitrous oxide proved insufficient from time to time and had to be supplemented with small additions of cyclopropane.

The two oldest children, aged 9 and 17, were anesthetized with pentothal. The 9-year-old child then received 70 per cent nitrous oxide with 30 per cent oxygen, except for a short time when ethylene was substituted. This child received a total of only 250 milligrams of pentothal in two hours; the pentothal was used in very small quantities from time to time as needed to supplement the nitrous oxide or ethylene. The 17-year-old child received 70 per cent nitrous oxide with 30 per cent oxygen, and required a supplement of 750 mg. of pentothal over a period of one hour and twenty minutes. Both these children were intubated under the initial pentothal anesthesia.

Older children are much better candidates for pentothal than younger ones, for their brains are much less prostrated by it. With the nitrous oxide, and in one case ethylene for a short time, it was possible to use a minimum of pentothal, allowing the children to awaken

rapidly. With this combination it was possible in these two instances to avoid any explosive mixtures, except for a very short time in the one case.

All the other nine children, therefore, were subjected to an explosive anesthetic throughout the whole period. There is no way to avoid this risk except to administer the anesthetic by rectum. The only agents suitable for this method are avertin and ether-in-oil. Both produce prolonged anesthesia, with considerable depression following, and I believe increase the risk in other ways. The intratracheal tube is again our greatest defense against this risk.

Blood pressures and pulses were taken and recorded at five-minute intervals in all these patients. There was a tendency toward a slight rise in blood pressure. In four cases there were rises in systolic blood pressure of 10 to 30 mm. of mercury over the preanesthetic level. In four cases there were falls in systolic blood pressure ranging from 5 to 10 mm. of mercury. There was no significant change in any of the diastolic pressures. Most of them followed the systolic, but to a less degree. The pulses remained remarkably stable, and changed hardly at all from the preanesthetic rate.

Most of these children woke up very promptly upon the discontinuance of the anesthetic. They were kept in the hospital for an average of four hours until they could be taken home by the most convenient method. Nausea was at a minimum. In those children who were nauseated at all it was only for a few minutes after they awakened. A 4-year-old child who had extractions in addition to repairs inhaled some blood after removal of the intratracheal tube and had a period of acute stridor. I inserted a 16-gauge suction catheter under direct vision and sucked out what appeared to be all the inhaled material. The stridor was much relieved, but there was still some difficulty in breathing, and it appeared that some material had been inhaled into one of the bronchi.

Suction bronchoscopy was suggested, but the child seemed to be improving. He remained in the hospital two or three days, and was finally able to cough out the remaining material without further ill effect. This accident, which occurred while the child was still unconscious, emphasizes the need for careful packing and careful cleansing of the child's mouth and throat by both dentist and anesthetist.

All the patients received preanesthetic medication consisting of morphine and scopolamine. The dose ranged from 1/32 of a grain of morphine for the 3- and 4-year-olds to 1/8 grain for the 9-year-old and 1/6 grain for the 17-year-old. The scopolamine dose ranged from 1/800 to 1/200 of a grain.

These doses varied not only according to age, but also according to the size and vigor of the patient. For instance, the 5-year-old patient received 1/32 grain of morphine and 1/800 grain of scopolamine, while one of the 4½-year-olds received 1/24 grain morphine and 1/600 grain scopolamine. Children take morphine very well, in larger proportional doses than adults according to size. This drug makes the patient much more quiet and receptive to anesthesia and makes the anesthetic control much easier and safer. The scopolamine contributes to the hypnosis and stops the troublesome secretion of mucus in the respiratory tract and saliva in the mouth. Dr. Cohen has found premedication with scopolamine to be of great assistance to him in his dental work.

Scopolamine gives an occasional child an adverse reaction, but the chance is well worth taking in view of the great benefit received by all the patients. A belladonna rash in itself is of no consequence. However, if the pulse rate and body temperature are raised to any

marked degree the anesthesia should be postponed. The hypodermic must be given at least 45 minutes before starting anesthesia. If it has not been given sufficiently early the anesthesia should be delayed until 45 minutes have elapsed. If it can be learned that the hypodermic has not been given and there are not 45 minutes remaining, the medication should be delayed until a few minutes before starting the anesthesia and then should be administered intravenously.

A combination of pentothal, curare, and nitrous oxide has been used very successfully at the University of Minnesota in many types of surgery for older children and adults. It is possible that we may extend this method downward to the younger children, thus eliminating one of the appreciable hazards, which is that of explosion. A 7-year-old girl was given this combination for fixation of a fracture of the maxilla and debridement of lacerations of the face, and a 5-year-old girl for recession and resection of the muscles of the eye.

#### SUMMARY

Eleven children were given anesthesia for periods of one hour, ten minutes to two hours, ten minutes for extensive repair of dental caries. The anesthetics used were cyclopropane, ethylene, nitrous oxide, and pentothal sodium. The risks of respiratory obstruction, inhalation of foreign material, over-deep anesthesia, and explosion of inflammable anesthetics were minimized by the use of the intratracheal tube. All the patients were premedicated with morphine and scopolamine. It should be understood that with all the precautions applied there is still a definite, though slight, risk in the administration of any anesthetic for any purpose. This risk must be balanced against the necessity of, and the benefit to be derived from, the work that calls for the anesthesia.

## PART II. TREATMENT OF EXTENSIVE CARIES IN CHILDREN UNDER GENERAL ANESTHESIA,

by JOSEPH T. COHEN, D.D.S., and M. M. LITOW, D.D.S.

This is a report of the use of general anesthesia as an aid in restoring, in one sitting, many broken down and decayed teeth in young children. This method is now in the experimental stage and must be limited to carefully selected cases with numerous cavities. It should be advised only when the regular dental office routine is contraindicated because of lack of co-operation of the patient. This lack of co-operation may be due to an underdeveloped mentality or to the extreme youth of the patient.

Consultation with the child's physician is imperative before deciding in favor of this plan of procedure. Because the anesthetic will probably be maintained from one to two hours the child should be in good health and the respiratory organs and the heart must both function properly. The patient should be hospitalized the evening preceding the operation and premedicated at the proper time before the anesthetic is given.

Dr. Ralph Knight and we collaborated on 11 cases in the dental clinic at the University of Minnesota Hospital. There were 9 girls and 2 boys, ranging in age from 2 years, 11 months to 17 years; the average age

was 6 years, 11 months. Actually, 7 of the 11 children were 4 years of age or less. The number of cavities filled per child ranged from 7 to 24; the average was slightly over 15 fillings for each case. Dr. Knight administered the anesthetic while we gave the teeth and surrounding tissues whatever dental attention was deemed necessary.

In some cases it may be advisable to complete only the simple cavities and the painful portion of the difficult ones under the anesthetic. The incompleting cavities may be filled at a subsequent visit. All operative procedures must be undertaken with deep consideration for and gentleness to the surrounding tissues. All carious tooth substance must be thoroughly removed, the cavity dried and sterilized, and the restoration inserted as carefully as when no anesthetic is used.

Of the 11 cases operated on, only one developed into a problem. It was the second patient—a girl 4 years, 6 months of age, with 17 cavities to be filled and 2 teeth to be extracted. She apparently inhaled some blood, which lodged in her trachea and caused considerable irritation, coughing, and difficult breathing. She remained in the hospital several days until she eventually coughed



up the blood clot. Her condition then immediately improved, and she was dismissed and returned home. This experience taught us that when teeth are extracted it is wise to stop all bleeding before discontinuing the anesthetic. The remaining 10 cases left the hospital in the middle of the afternoon following the anesthetic.

#### CONCLUSIONS

The following precautions should be carefully observed and followed:

1. The cases should be carefully selected.
2. This method should be used only when other means are inadvisable.
3. Patients need a thorough physical examination.
4. All particles of excess filling material must be care-

fully and completely removed from the floor of the mouth before discontinuing the anesthetic.

The disadvantages encountered in this method are:

1. Need of hospitalization.
2. Prolonged anesthesia for young children.
3. The operator must work rapidly and under pressure.

The advantages are:

1. General anesthesia provides a means of dental care for some children who would otherwise be neglected.
2. It saves the time of the operator and saves many dental appointments for the patient.
3. Many difficult and painful dental operations can be completed in one operation.
4. It minimizes the child's fear of dental procedure.

---

### AMERICAN STUDENT HEALTH NEWS

Dr. Charles Shepard, former president of the American Student Health Association, and for many years active in student and public health, is convalescing from a recent operation at the National Naval Medical Center. His present address is 2002 Testle Street, Palo Alto, California.

Dr. Wilbur C. Smith has been appointed director of student health at the University of Wyoming, Laramie, Wyoming.

Dr. Florence Gilman has recently resigned from the staff of Smith College. Dr. Marion F. Booth has been appointed college physician to replace her.

Dr. A. A. Lyman, for many years director of student health at the University of Nebraska, has retired.

Dr. John H. Rathbone of the College of Physicians and Surgeons in New York, has been appointed director of student health and university physician at Colgate University.

Dr. B. A. Leddy, a graduate of Harvard Medical School in 1924, who has been on the staff of the student health department of Yale University for the last eighteen years, is available for a position on the staff of a university or college health service. His address is Department of Health, Yale University, New Haven, Connecticut.

# Mesenteric Cysts Causing Intestinal Obstruction in Infancy

## Report of Two Cases

L. G. Pray, M.D.

Fargo, North Dakota

**M**ESENTERIC cysts are relatively uncommon.<sup>1,2</sup> Their status has probably been clarified best by Ladd and Gross,<sup>3</sup> who also report eight cases from the Boston Infants' and Children's Hospital.

Although present during infancy, these cysts grow slowly and are usually not detected until later in the first decade. In the typical case a slowly enlarging, painless abdomen is the only complaint. In other cases there are recurring attacks of mild to moderate abdominal pain, which may be associated with vomiting; the abdominal pain lasts only a day or two, and recurs at infrequent intervals; there may be poor weight gain and loss of appetite. In rare instances there are symptoms of acute intestinal obstruction if the cyst exerts much pressure on the gut.

In some cases the diagnosis can be made preoperatively, but this is not always true. A mesenteric cyst may or may not be palpable through the abdominal wall, depending on its size and tenseness. X-ray films of the abdomen, with or without a barium meal, often but not always reveal a gasless shadow which displaces intestines into other parts of the abdomen. X-ray studies help to differentiate mesenteric cysts from omental cysts, in which the gasless shadow lies in front of the intestines instead of displacing them from their normal position.

In uncomplicated cases the cyst may be dissected out from the mesentery. As an alternative method of treatment the cyst may be marsupialized, but Ladd does not recommend this procedure. If the intestine is gangrenous, or the cyst is adherent to the intestine, excision of the cyst and adjacent intestine must be done and anastomosis performed.

Mesenteric cysts must be differentiated from enteric cysts (duplications). The duplication cannot be removed without destroying the blood supply and injuring the muscular coat of the adjacent segment of intestine; it is a thick-walled structure lying in the mesentery close to the bowel. Mesenteric cysts, on the other hand, have thin walls, which on microscopic examination are seen to consist of connective tissue, with a layer of flattened endothelial cells on the inner surface.

Mesenteric cysts are usually single and unilocular; they may become as large as a grapefruit, or even larger. They lie between the peritoneal leaves of the mesentery, and tend to have a dumbbell shape; they are usually not tensely filled. They probably arise from misplaced bits of lymphatic tissue. They grow slowly. They are most common in the mesentery of the jejunum or ileum, but may rarely appear in the transverse mesocolon and in the mesosigmoid. The cysts may be chylous or serous; the

chylous cysts usually arise from the mesentery of the jejunum, where the material draining from the intestinal tract contains a higher percentage of fat.

### REPORT OF CASES

*Case 1.* Baby K. S., St. L. No. 76916, aged eight weeks, was admitted to St. Luke's Hospital at 1:30 A.M. on April 2, 1945, because of persistent vomiting and recurrent attacks of pain and crying for the previous 22 hours, occurring about every 15 minutes since then. The vomitus had been bile stained, and for several hours prior to admission had been fecal in character; it was not projectile. There had been no bowel movements since the onset of symptoms. The baby was taken to the local doctor, who referred him to our care.

The infant was critically ill. The temperature was 104.4° F. rectally. The tissues were markedly dehydrated and malnourished; the eyes and anterior fontanel were sunken. The skin was pale. The abdomen was moderately distended. There was an abdominal mass slightly below and to the right of the umbilicus; on palpation it felt to be about the size of an orange, and was fairly firm in consistency and movable in the peritoneal cavity. Rectal examination revealed no abnormalities, and no mucus or blood was expelled following removal of the examining finger. The remainder of the physical examination was essentially normal, except for a moderate umbilical hernia.

The baby weighed 10 pounds at birth. He was breast fed at first, but was put on formula because of vomiting and failure to gain weight. He had gained no weight since birth. The vomiting was intermittent and not projectile. The mother was in good health. The father was also well except for chronic arthritis. There was one sibling, who was in good health.

The patient was immediately given an intravenous scalp vein infusion of 150 cc. of 5 per cent glucose in Ringer's solution. A blood count was done shortly afterward. Erythrocytes numbered 3,970,000, hemoglobin 11.4 grams, leukocytes 11,700, with the following differential: neutrophils 77, lymphocytes 18, and monocytes 5. X-ray films were taken of the large bowel following barium enema. They showed the cecum and ascending colon displaced by an extrinsic mass in the right abdomen (Figure 1).

The patient was given a preoperative injection of atropine sulphate 1/1000 grain, and was taken to the operating room at 3 A.M. Drop ether was the anesthetic used, as sparingly as possible, but in sufficient amount to keep the baby quiet during the entire operation, which lasted for 75 minutes. Lactate Ringer's solution was administered subcutaneously in the thighs during opera-

\*From the Fargo Clinic and St. Luke's Hospital.



tion. Adrenalin chloride 1:1000, 2 minims, was given once during the operation.

Dr. V. G. Borland carried out the surgical treatment. A right rectus incision was made in the lower abdomen. When the peritoneal cavity was opened a milky fluid escaped. On exploration several chylous cysts were found in the mesentery adjoining the upper ileum. The largest of these was 5 or 6 cm. in diameter, and compressed a segment of small intestine which was obviously gangrenous. This cyst bulged out on both sides of the mesentery and had the dumbbell shape characteristic of these lesions. The other cysts, four or five in number, were smaller, and lay close to the base of the mesentery. About 5 inches of small intestine were excised between forceps, together with a V-shaped portion of the mesentery which contained the cysts. The vessels of the mesentery were ligated with fine silk. A closed end-to-end anastomosis was then made; two rows of sutures were used, of which the inner was chromic 0000 catgut and the outer was interrupted sutures of silk. The site of the anastomosis was sprinkled with sulfanilamide crystals. The wound was then closed without drainage, with interrupted silk in the peritoneum and posterior and anterior sheaths and silk in the skin.

The postoperative condition was poor. The pulse was rapid and thready and the respirations rapid and shallow; the temperature was 97.2° F. rectally. The foot of the bed was elevated, and the bed was warmed with hot water bottles. Coramine, 3 minims, was given hypodermically shortly after the baby was returned from the operating room.

The baby's condition remained critical during the rest of the night. Subcutaneous lactate Ringer's solution was resumed after the baby had been back in his bed for about an hour. At 7:30 A.M., 3 hours and 15 minutes after completion of surgery, a scalp vein transfusion of 100 cc. of citrated blood was given. The abdomen was becoming distended, and so continuous nasal suction by the Wangensteen method was started.

It soon became evident that the condition of the patient was not improving. A ureteral catheter was inserted into an ankle vein, and fluid balance was maintained by continuous intravenous drip for the next 4½ days. The fluids given by this route consisted of glucose solution, Ringer's and lactate Ringer's solutions, normal saline solution, plasma, and citrated blood. Penicillin was added to the solutions in the amount of 50,000 units the first day and 20,000 units daily thereafter. Within three or four hours after the continuous drip was started the patient's color and general condition began to improve visibly; within 36 hours he appeared to be out of danger. The Wangensteen nasal suction was continued for over three days, when it was removed and formula feedings were begun cautiously. The following day, April 6, the catheter was removed from the ankle vein. Considerable swelling and redness of the leg and thigh had occurred by that time, but it promptly subsided after fluids by this route were discontinued.

The patient was discharged from the hospital on April 27 weighing 10 pounds, 11 ounces. When next



Fig. 1. Case 1. X-ray film of abdomen following barium enema, showing gasless shadow on the right with displacement of bowel to the left.

seen, on June 5, he weighed 14 pounds, 1 ounce, and was progressing normally in every way.

Case 2. Baby C. O., St. L. No. 78582, was born on March 29, 1945. Delivery was spontaneous. Birth weight was 8 pounds, 4 ounces. The mother had a normal pregnancy and labor. The mother and father were in good health. A sibling had died at three days of age as a result of a lumbar spina bifida with meningocele. The patient had a normal neonatal period. She was taken off the breast at one month of age and put on an evaporated milk formula.

I first saw the infant on May 29, 1945, when she was two months old. The mother stated that the baby had been well until the previous day, when she vomited several times and was constipated. On examination the baby did not appear ill. Her weight was 11 pounds, 8 ounces. The rectal temperature was 99.4° F. The body length was 23 inches. All physical findings were entirely normal except for a moderate umbilical hernia, which was strapped. There were no abdominal masses and no distention.

The infant did well until 18 days later, when she was again brought in because of colic, constipation, and vomiting for one day. Physical findings were again normal; the baby's color and nutrition were good.

On July 23, 1945, at a little under four months of age, the baby was seen because of high fever for two days and vomiting and diarrhea for one day. The intake had been poor for the previous month. The vomitus on the morning of admission to the hospital was bile stained. The erythrocytes numbered 3,510,000, hemoglobin 9.6 grams, leukocytes 16,550, neutrophils 56, lymphocytes 42, and monocytes 2. The urine showed a trace of albumin, but was otherwise negative. The infant looked pale and irritable and was somewhat undernourished and dehydrated. The rectal temperature was 101° F. The body weight was 11 pounds, 15 ounces. The abdomen was moderately distended; no masses were palpated; the small umbilical hernia was present. There was a coarse miliarial rash on both arms. The physical findings were otherwise negative.

The patient was given fluids subcutaneously; nourishment by mouth was withheld temporarily and then started cautiously in small amounts. X-ray examination of the abdomen on the day of admission revealed no evidence of intestinal obstruction. The baby continued vomiting and was maintained on parenteral fluids. Continuous nasal suction was employed. The temperature dropped to normal by the third hospital day.

X-ray examination of the stomach and small bowel was made on July 27, the fifth hospital day. It showed evidence of almost complete obstruction in the first loop of jejunum near the midline; there was no displacement of peritoneal contents, and the obstructing lesion was thought to be nontumefactive, probably a mesenteric band or adhesion.

Surgical treatment was carried out the following day. The baby was prepared by administration of fluids and a scalp vein transfusion of citrated blood. The stomach was lavaged preoperatively. Atropine, grains 1/1000, was given hypodermically. Drop ether anesthesia was used. Dr. N. Tronnes performed the operation, assisted by Dr. W. F. Baillie. When the peritoneal cavity was opened through an upper right rectus incision, jejunal coils came into view, some of which were dilated. Upon traction three large chylous cysts came into view; one was the size of an orange, and the other two were a little smaller; all three were firmly adherent to the jejunum. There were a number of enlarged mesenteric lymph glands in the adjacent region. A resection was done of 4 inches of gut, including the chylous cysts. A side-to-side anastomosis was made. The baby's condition was good at the completion of surgery, which lasted for 95 minutes from the time of starting the anesthesia.

Penicillin, 5000 units every three hours, was given for the next three days. Nasal suction was employed for three days postoperatively. A blood transfusion was given on the day following surgery, and again six days later. Parenteral fluids were administered daily until the baby was taking adequate amounts of fluids by mouth. By the fourth postoperative day the baby was taking nourishment fairly well, and her course thereafter was uneventful. Four days before discharge her erythrocyte count was 5,860,000 and her hemoglobin 15.6 grams.

She was discharged on the 29th hospital day, weighing 12 pounds, 2 ounces. Dr. Eleanor Iverson gave valuable assistance in the general care of this infant.

The baby was readmitted to the hospital on August 30, 1945, because of an upper respiratory infection with diarrhea. She responded well to treatment, and remained in the hospital only two days. She was last examined on December 4, 1945, at the age of eight months. She weighed 19 pounds, 1 ounce, and was 27 inches in length. All physical findings were normal. X-ray examination of the stomach and small bowel was made on January 22, 1946, because of a tendency to vomit occasionally. No evidence of obstruction was found.

#### DISCUSSION

In the two cases reported there are several factors of interest. The age of the patients, two months and four months, is considerably younger than is customary for mesenteric cysts to cause symptoms.

In one case the baby had had since birth symptoms indicating partial intestinal obstruction, which became acute 22 hours before admission. In the other case the infant had her first symptoms at two months of age, consisting of vomiting and constipation for one day; she had acute intestinal obstruction a little less than two months later, with poor weight gain in the interim. In one case it was possible to palpate a cystic abdominal mass; X-ray studies showed a gasless shadow in the right abdomen, with displacement of intestines to the left. In the other case no abdominal mass was palpated, and X-ray films did not show any displacement of the intestines.

Although mesenteric cysts are usually single, they were multiple in both of our cases. In both cases resection and anastomosis were necessary; in one case the gut was gangrenous, and in the other the cysts were adherent to the gut. In both cases the cysts were chylous, in spite of the fact that in one case the cysts arose from the mesentery of the upper ileum and not the jejunum.

It should be pointed out that both patients were in poor general condition prior to surgery. Generous administration of intravenous and subcutaneous fluids and transfusions of citrated blood and plasma were an essential part of treatment. It was felt that a continuous intravenous drip kept in place for 4½ days was a life-saving measure in one case.

#### SUMMARY

Two cases are reported of chylous mesenteric cysts causing acute intestinal obstruction in early infancy. Both infants responded favorably to general and surgical measures.

#### REFERENCES

1. Warfield, J. O., J.: A Study of Mesenteric Cysts with a Report of Two Recent Cases. *Ann. Surg.*, 96:329 (Sept.), 1932.
2. Loeb, M. J.: Mesenteric Cysts: Review of Literature, Genesis, and Classification. Report of a Case. *New York State J. Med.*, 41:1564 (Aug. 1), 1941.
3. Ladd, W. E., and Gross, R. E.: *Abdominal Surgery of Infancy and Childhood*. Philadelphia: W. B. Saunders Company, 1941.



# Mesenteric Cyst

## Report of a Case

Ralph E. Dyson, M.D.

Minot, North Dakota

THE 18-month old male infant whose case is here reported was first seen at the Northwest Clinic on August 7, 1945.

The history obtained from the mother was as follows: When the infant was one month old a right inguinal hernia was discovered. An unsuccessful attempt was made to reduce it and hold it with a truss. From the age of one year, the parents observed, the child had a very prominent abdomen.

On July 12, 1945, the right inguinal hernia was repaired surgically by the local doctor. When the hernia sac was opened several small basins of clear, straw-colored fluid were removed from the abdomen. Following the surgical procedure the abdomen seemed to enlarge more rapidly and became very tense. The patient had no vomiting, diarrhea, constipation, or urinary symptoms, and apparently no abdominal pain. He seemed to have some dyspnea and was uncomfortable when on his back and much preferred lying on his abdomen. The doctor was again consulted on August 7, when he made a diagnosis of ascites and referred the baby to the clinic for further study and treatment.

At the time of the initial examination at the clinic the infant's temperature was 99.2° rectally, the pulse 80, respirations 20, and weight 25 pounds, 14 ounces. The results of the examination were negative except for the abdomen, which was greatly enlarged.

On examination a mass was felt extending from the right costal arch downward to about two inches below the navel and about two inches to the left of the midline. The mass was firm, smooth, and not tender to palpation. There was no movement of the mass on palpation or with respirations. The percussion note was dull over the right flank and the entire mass, but resonant below and to the left of the mass. No shifting dullness was present, nor could a fluid wave be detected. The spleen was not palpable. Rectal examination was negative. The differential diagnosis was: (1) right kidney tumor; (2) retroperitoneal sarcoma; (3) mesenteric cyst; (4) teratoma.

Laboratory findings on admission to Trinity Hospital were: hemoglobin, 66 per cent; RBC, 4,080,000; WBC, 12,000; differential blood count: PMN'S, 68 per cent; lymphocytes, 24 per cent; monocytes, 2 per cent; and eosinophiles, 6 per cent. The urine was negative.

A flat X-ray film of the abdomen showed a large, opaque mass in the right side of the abdomen. There was displacement of the colon and small bowel toward the left and downward. An intravenous pyelogram showed both kidney pelves and calices to be well visualized. They appeared normal, as did the position of both kidneys. The ureters were fairly well visualized and appeared in normal position.

The following day a barium enema was given. There was some difficulty in getting the barium beyond the splenic flexure, but finally it advanced as far as the cecum. An anteroposterior film showed the transverse and ascending portions of the colon markedly displaced toward the left and downward. (See Figure 1.) The lateral film showed the descending colon in normal position. The transverse portion of the colon was displaced anteriorly and toward the left to a marked degree, so that it coincided with the splenic flexure and descending colon. The cecum was displaced downward into the pelvis. (See Figure 2.)

We believed that this preliminary study ruled out the possibility of a kidney or retroperitoneal tumor. The patient was scheduled for an abdominal exploratory operation by Dr. A. L. Cameron on August 11. The preoperative diagnosis was either a mesenteric cyst or a teratoma.

A small right rectus incision was made. Upon opening the peritoneal cavity we found a large cyst in the upper abdomen exposed to view. It was punctured and 900 cc. of clear, straw-colored fluid were removed by suction. Approximately 200 cc. of fluid escaped around the suction tube. Most of the cyst was then removed. It arose from the transverse mesocolon and projected anteriorly between the stomach and transverse colon, displacing the colon downward. The lower margin of the cyst was extensively attached to the transverse colon. The upper margin was attached to the greater curvature of the stomach and to the lower edge of the right lobe of the liver. All but a small remnant of the sac attached to the transverse mesocolon was removed.

Microscopic examination showed the cyst wall to consist entirely of dense, fibrous scar. No epithelial lining was demonstrated.

The patient had a smooth convalescent course. On the fourth postoperative day the hemoglobin was found to be 50 per cent and the red blood count 2,720,000. Because of this marked secondary anemia 300 cc. of citrated blood were given intravenously. The hemoglobin then rose to 96 per cent and the red blood count to 5,200,000. The infant was discharged on August 22, the 12th day after surgery.

### DISCUSSION

The following discussion is taken chiefly from the excellent chapter on "Omental Cysts and Mesenteric Cysts," by Ladd and Gross, in their book *Abdominal Surgery of Infancy and Childhood*.

*Etiology.* Mesenteric cysts may arise by obstruction of a lymphatic channel, but the absence of any demonstrable inflammatory or fibrosing lesion in the mesentery makes this theory improbable. A much more likely theory is that mesenteric cysts develop from congenitally misplaced bits of lymphatic tissue, which proliferate and

\*From the Northwest Clinic, Minot, North Dakota.



Fig. 1. A.P. film of the abdomen after barium enema, showing the ascending and transverse portions of the colon displaced to the left by a mesenteric cyst.



Fig. 2. Lateral film of the abdomen after barium enema, showing the ascending colon displaced anteriorly by a mesenteric cyst.

then accumulate fluid because there is no communication with the normal lymphatic channels.

*Pathology.* The most common site of these cysts is the mesentery of the jejunum or ileum, but occasionally they arise from the transverse mesocolon, as in our case, or in the mesosigmoid.

The cysts lie between the leaves of the mesentery and are situated anywhere from its base out to the enteric border. They are commonly of dumbbell shape, owing to projection from either surface of the mesentery, and sometimes partially surround the intestine in the form of a saddle. Such a saddle-shaped cyst may cause strangulation of the adjacent loop of intestine and obstruct it. The walls of the cysts are thin, and are rarely more than 2 mm. in thickness. Microscopic examination shows the cyst walls to consist of connective tissue. There is no muscular coat or mucosal lining. In some specimens a single layer of flattened endothelial cells can be seen on the inner surface.

The fluid content of the cysts may be of clear, colorless serous type or of milky or chylous type. Of eight cases reported by Ladd and Gross five had a serous and three a chylous fluid. The chylous cysts arose from the mesentery of the jejunum. Cysts arising from the mesentery of the large bowel, as in our case, usually contain serous fluid.

*Symptoms and Clinical Findings.* The symptoms may be grouped into three types. (1) Gradual enlargement of the abdomen, which is painless. This enlargement

may progress slowly for six months to a year or more before a doctor is consulted. (2) There may be recurring attacks of abdominal pain, at times associated with vomiting, anorexia, and poor gain in weight. (3) Occasionally the patient presents the picture of acute intestinal obstruction.

The physical findings, such as palpation of the cyst, depend upon tenseness and the size of the cyst. In most cases a fairly well-defined mass can be palpated. It is possible to shift the mass within the abdomen. It is more freely movable in the lateral direction than in the vertical. If the cyst is large a fluid wave may be detected.

*Roentgenologic Findings.* Films of the abdomen, with or without barium, often give valuable information, as the cyst will form a gasless shadow that displaces the intestine. Under fluoroscopic control the mobility of the mass can be demonstrated.

*Treatment.* The surgical treatment of mesenteric cysts may be handled in one of three ways, depending upon the conditions. (1) If there is an intestinal obstruction, with gangrenous bowel due to a saddle-shaped or dumbbell type of cyst, the procedure of choice is to excise the cyst and gangrenous bowel, following with a side-to-side anastomosis. (2) The cyst may be marsupialized, but few recommend this type of treatment. (3) The preferred surgical procedure, unless contraindicated by some complication, is to dissect the cyst from the mesentery. If this dissection is carefully carried out the blood supply to the adjacent gut will not be impaired.



# Treatment of Chronic Influenzal Meningitis: Heparin as an Adjuvant

E. S. Platou, M.D., R. W. Gibbs, M.D.,  
and Forrest H. Adams, M.D.  
Minneapolis

**M**ENINGITIS due to *Hemophilus influenzae* bacillus had until recently a case fatality rate close to 100 per cent, especially in children under two years of age. Today, owing to the work of Dr. Hattie E. Alexander and others, the disease can be controlled. In 1941 Alexander<sup>1</sup> pointed out that owing to advances in chemotherapy the immunological therapy, that is, the use of specific antibody, was being neglected.

"The amount of free specific carbohydrate from the *Hemophilus influenzae* bacillus present in the spinal fluid is an index to the severity of the infection, according to Alexander,<sup>1</sup> who also tells how much antibody is necessary. It was found that the spinal fluid sugar level correlated well with the severity of the infection; it was also found that the strength of antibody could be determined in milligrams of nitrogen. A correlation between the spinal fluid sugar levels and the amount of antibody required was then evolved, as shown in Table 1.

TABLE 1  
AMOUNT OF ANTIBODY REQUIRED FOR VARIOUS LEVELS OF SPINAL FLUID SUGAR

| Spinal fluid sugar<br>(mg. per cent) | Antibody nitrogen indicated<br>(mg.) |
|--------------------------------------|--------------------------------------|
| Less than 15                         | 100                                  |
| 15-25                                | 75                                   |
| 25-40                                | 50                                   |
| Over 40                              | 25                                   |

It was found that rabbit serum was superior to horse serum as a medium for antibody, owing, it is believed, to the smaller molecular size of the protein in rabbit serum. This smaller molecular size facilitates penetration of body tissues.

A method of determining antibody adequacy was found by checking the capsular swelling of the *Hemophilus influenzae* bacillus with the patient's serum. If there is swelling with a 1-10 dilution of the patient's serum, a surplus of antibody is considered to be present. This check is made one hour after antibody is injected.

Sulfadiazine has come to replace all other sulfonamides, with the exception of sulfamerizine, in treating influenza meningitis. The best results are obtained when a level of 20 mg. per cent is attained in the blood. Penicillin has been shown to be of no value. Streptomycin seems to be a specific antibiotic.

Even with these methods of treatment, early diagnosis is a big factor in recovery. The method employed is the finding of gram-negative rods or pleomorphic

diplococci on direct smear and capsular swelling, when the organisms are mixed with type-specific rabbit antiserum, type B. Confirmation is made by culturing the organisms in Levinthal broth. "The advanced stage of the disease and the presence of irreparable damage at the time therapy was started was responsible for the high death rate," according to Alexander.<sup>2</sup>

Early diagnosis is not always easy. "The patient's failure to manifest clear-cut signs of meningeal irritation until several days after onset when under seven months of age makes the diagnosis difficult."<sup>2</sup> We have found that in any of the various types of meningitis children under one year of age often have no signs of meningeal irritation until late in the disease. Unexplained fever, bulging fontanel, and irritability are symptoms sufficient to warrant a spinal puncture.

Chronic influenza meningitis still carries a high case fatality, especially in the very young. Alexander<sup>3</sup> uses the term "chronic" to "designate the clinical status of the patient rather than the disease." Those who have striking rigidity of the extremities as well as the trunk and show a preference for the opisthotonus position are considered to be in this group. They may also have other signs caused by damage to cerebral cells. These cases are believed to be due to late treatment or long-standing inadequate treatment.

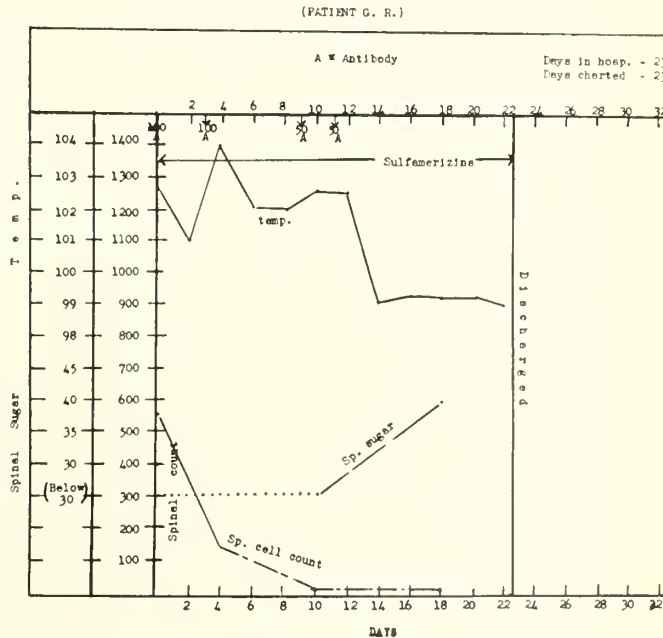


Fig. 1. Course of patient G. R.

The authors are grateful to Dr. Irvine McQuarrie for help in preparing this paper for publication.

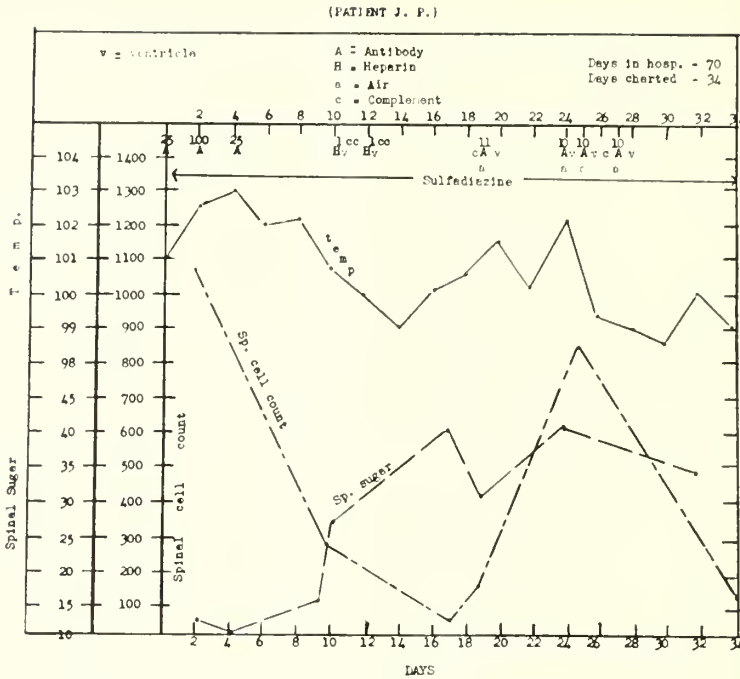


Fig. 2. Course of patient J. P. through main part of illness. Note: Heparin and air given via ventricles.

The three cases presented here meet the criteria of chronic influenzal meningitis. Intrathecal and intraventricular therapy was carried out with antibody. Heparin, air, and complement injection, as well as specific therapy as suggested by Alexander, were used. We believe the successful treatment of these cases to be of sufficient interest to warrant reporting them.

#### CASE REPORTS

*Case 1.* G. R., a two-year-old white male, was admitted on May 9, 1945, to the University of Minnesota Hospital. The child had become ill four weeks previous to admission. He had a sudden onset of diarrhea, vomiting, fever, muscular twitchings, stiff neck, and headache. His local doctor did a spinal tap, which revealed 12,000 cells. After treatment with one of the sulfas his spinal fluid was negative in two weeks. After he was home two days symptoms of diarrhea, vomiting, and fever recurred. The presence of *Hemophilus influenzae* bacilli (type B) was proved by culture. Sulfa was restarted and 50 mg. of type B anti-*Hemophilus* rabbit serum were given subcutaneously. His course continued downhill up to the time of his admission to the University Hospital.

Physical examination revealed a well-developed, poorly nourished boy who appeared chronically ill. His position was opisthotonic. He had a divergent squint and a slight exophthalmus. The fundi had blurring of the disc margins, and a 2 to 3 diopter choke was apparent. The throat was injected. A systolic murmur was heard at the apex. The reflexes were hyperactive, and there was an unsustained bilateral ankle clonus. The Brudzinski and Kernig signs were both positive.

The temperature was 102.8°; the hemoglobin, 8.6 grams; the white count 15,150, with 85 per cent neutrophils and 14 per cent lymphocytes. The urine was negative. A spinal tap showed a pressure of 34 mm. of mercury with 550 cells, of which 31 per cent were neutrophils and 69 per cent mononuclears. The protein was 76 mg. per cent and the sugar below 30 mg. per cent. No organisms were found on the smear or culture.

The patient received a total of 300 mg. of antibody over a period of 12 days and enough sulfamerazine to give a blood level of 19 to 20 mg. per cent. He became afebrile on June 22, 1945, and improved steadily to the time of discharge. The sulfa dosage was reduced three days before discharge.

On July 4, 1945, his progress appeared normal and he was in good health.

*Case 2.* J. P., a two-month-old white female, was admitted March 16, 1945, to the Minneapolis General Hospital. The child had been ill for 11 days. At the onset of illness she had the symptoms of a cold. She had been vomiting for four days and had had a fever for two days.

Physical examination revealed a well-developed, poorly nourished white female, who cried easily on being handled. The turgor was poor and the anterior fontanel was bulging slightly. The throat was inflamed and the cervical glands were palpable. Flexion of the spine caused crying. The Brudzinski and Kernig signs were positive. The rest of the physical examination was essentially negative.

The temperature was 101°; the hemoglobin, 61 per cent; the white count, 4500, with 19 per cent neutro-



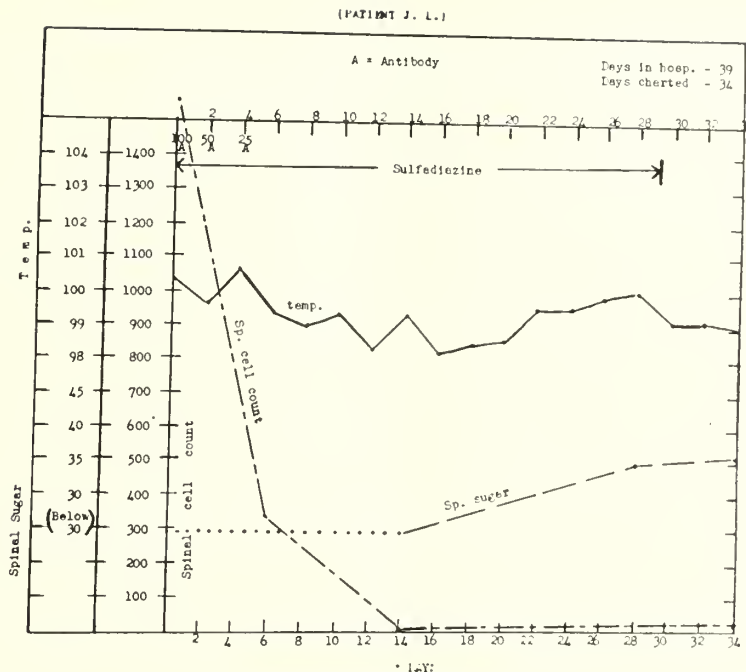


Fig. 3. Course of patient J. L.

philes and 75 per cent lymphocytes. The urine was negative. A spinal tap revealed white purulent material. There were 1087 cells, of which 84 per cent were neutrophils and 16 per cent monocytes. Pleomorphic gram-negative rods were seen on the smear, and later culture showed the presence of type B *Hemophilus influenzae* bacilli. An X-ray suggested beginning bronchopneumonia.

Penicillin was started and given intrathecally, but was stopped after 24 hours when the organism was known. Sulfadiazine was given in dosage of 3 grains per pound per day, which gave a level of about 12 mg. per cent in the blood. A total dosage of 244 mg. of antibody was given by vein, spinal canal, and ventricles over a period of 40 days. The child was given 1 cc. of heparin on the 11th and 12th days because of suspected block. The child had convulsions and assumed the opisthotonus position. No organisms were cultured after the third day. Spinal fluid was drained off each day and complement and air totaling 15 cc. were injected. The dosage of antibody was determined by the blood sugar and capsular swelling test.

A complication in her course was an agranulocytosis, which developed 30 days after admission, while she was on sulfadiazine. The sulfa was discontinued, and blood transfusions, crude liver, and iron were given. Her recovery was uneventful. Her extended hospital stay was for treatment of the agranulocytosis and because her lungs continued to show consolidation. No organism was cultured from the sputum.

The child was last seen on October 25, 1945. She appeared well, and her head was within normal limits in size. The mother thought she was somewhat less advanced than the other children.

Case 3. J. L., a two-year-old white male, was admitted July 16, 1945, to the University of Minnesota Hospital. He became ill four weeks previous to admission. The local doctor diagnosed the case as pneumonia and started the child on penicillin. The child became worse and was admitted to the local hospital, where his illness was diagnosed as acute meningitis. Penicillin was continued, and at the end of 10 days the child was discharged afebrile and in fair condition. In one week he developed fever and became irritable. His local doctor did a spinal tap and meningitis was again diagnosed. He was then brought to the University Hospital.

Physical examination revealed a chronically ill, poorly nourished child. There was a bilateral papilledema of one diopter. The Kernig and Brudzinski signs were positive. The rest of the physical examination was essentially negative.

The temperature was 101°; the hemoglobin, 11.2 grams; the white count, 25,550, with 68 per cent neutrophils and 28 per cent lymphocytes. The urine was negative. There were 1000 cells in the spinal fluid, of which 92 per cent were neutrophils and 8 per cent mononuclears. The protein was 76 mg. per cent and the sugar was below 30 mg. Smears showed gram-negative pleomorphic rods, which swelled when antibody was added. The liquid proved on culture to have type B *Hemophilus influenzae* bacilli.

The patient received a total of 100 mg. of antibody on admission. Penicillin was started four days after admission and given for six days. He received sulfadiazine, 2 grains per pound. His spinal fluid was negative for bacilli after July 18. He improved rapidly and was discharged August 7, 23 days after admission.

He was readmitted seven days later because of restlessness, stiff neck, fever, and vomiting. The physical

examination showed an acutely ill child. His fundi still showed a one diopter choke. The Brudzinski and Kernig signs were positive. The rest of the physical examination was negative.

The temperature was 100.4°; the hemoglobin, 12.5 grams; the white count, 18,200, with 61 per cent neutrophils and 36 per cent lymphocytes. The urine was negative. The spinal tap revealed 2400 cells, of which 83 per cent were neutrophils and 17 per cent mononuclears. The sugar was below 30 mg. per cent, and the protein was 165 mg. per cent. The fluid proved on culture to have type B *Hemophilus influenzae* bacilli.

He was put on sulfadiazine, 2 grains per pound, for 29 days. He received 175 mg. of antibody. He was discharged, completely recovered, on September 21, 1945, 39 days after admission.

#### DISCUSSION

The treatment of chronic meningitis due to *Hemophilus influenzae* bacillus is still experimental. The problems of exudate in the small avenues of communication of the foramina and the subdural spaces, lack of adequate concentration of antibody in these areas, and insufficiency of bacteriostasis may arise singly or in combination.

Poor drainage, disparity in the character of fluid from the ventricle and the spine, abnormally high protein

levels, and persistently low sugar levels are suggestive adjuncts in the presence of clinical signs of rigidity, tremor, opisthotonus, and positive cultures from the cerebrospinal fluid.

Intrathecal serum may furnish the desired concentration, but may also enhance the problem because of local antibody antigen reaction. Heparin may help liquefy exudate and air injected later may open the delicate pathways so that curative media may reach their goal. Recent studies suggest that streptomycin may complement or even supplant sulfonamides as a bacteriostatic agent against *Hemophilus influenzae*.

#### SUMMARY

The protocols presented here suggest that cases heretofore regarded as hopeless even under modern therapy deserve the most energetic treatment at our disposal.

Heparin given intrathecally in the acute stages of infantile meningitis is worthy of trial to avert chronicity, with its potentially serious or fatal sequelae.

#### REFERENCES

1. Alexander, Hattie E.: Treatment of Bacterial Meningitis. *New York Acad. Med.*, 17, 100 (Feb.), 1941.
2. Alexander, Hattie E., Ellis, Catherine, and Leidy, Grace: Treatment of Type-Specific *Hemophilus Influenzae* Infections in Infancy and Childhood. *J. Pediat.*, 20, 673 (June), 1942.
3. Alexander, Hattie E.: Treatment of Type B *Hemophilus Influenzae* Meningitis. *J. Pediat.*, 25, 517 (Dec.), 1944.

---

### ANNUAL MEETING, SOUTH DAKOTA STATE MEDICAL ASSOCIATION, ABERDEEN, JUNE 1-4

The program for the 1946 annual meeting of the South Dakota State Medical Association is virtually complete. Among the speakers, each outstanding in his field are:

Alton Ochsner, M.D., Surgeon, Tulane University Medical School, New Orleans; H. H. Bowing, M.D., Radiologist, Mayo Clinic, Rochester; J. R. McDonald, M.D., Pathologist, Mayo Clinic, Rochester; W. A. Oughterson, M.D., Medical Director, American Cancer Society, New York. (On Tuesday afternoon, June 4th, a symposium on cancer will be conducted, with these four distinguished speakers participating.)

A. B. Price, M.D., District Surgeon, U. S. Public Health Service, Kansas City.

A. W. Adson, M.D., Rochester, Member of the Council on Medical Service and Public Relations, A.M.A.

N. C. Gilbert, M.D., Internist, Northwestern University Medical School, Chicago.

T. P. Grauer, M.D., Urologist, Northwestern University Medical School, Chicago.

Walter C. Camp, M.D., Ophthalmologist, University of Minnesota Medical School, Minneapolis.

J. Harry Murphy, M.D., Pediatrician, Creighton University Medical School, Omaha.

Leonard A. Lang, M.D., Obstetrician-Gynecologist, University of Minnesota Medical School, Minneapolis.

Gordon R. Kamman, M.D., Psychiatrist, University of Minnesota Medical School, St. Paul.

Earl C. Elkins, M.D., Physiotherapist, Mayo Clinic, Rochester.

Kenneth G. Kohlstaedt, M.D., Internist, Indianapolis.

Wendell Hall, M.D., Internist, University of Minnesota Medical School, Minneapolis.

Kenneth A. Phelps, M.D., Otolaryngologist, University of Minnesota Medical School, Minneapolis.

Additional features of the meeting will be a banquet, a stag party, and a golf program.

Members are urged to communicate with hotel reservation chairman Dr. J. A. Eckrich, Aberdeen, South Dakota, regarding hotel accommodations.



# Direct Psychiatric Treatment of the Child

Hyman S. Lippman, M.D.

St. Paul

**B**Y DIRECT psychiatric treatment is meant the therapy that takes place in interviews between psychiatrist and child. Treatment of the child alone, without work with the parents, is uncommon. Limitation of this discussion to what happens in direct treatment alone is not in any way intended to detract from the importance of indirect treatment with the parents, school, and neighborhood which so vitally affect the child's life.

Psychiatric treatment work with the child will not be effective unless the child wants help and sees the need for it. In the neurotic child anxiety, so important a part of neurosis, will help to motivate him. It is therefore unwise to reassure the child early or use suggestion treatment that will eliminate anxiety. Through so doing one may lose a great ally in the treatment process. The neurotic child soon becomes aware that the therapist will help him master the anxiety. He, as well as the therapist, must appreciate that until the causes for anxiety can be located and eliminated, he will continue to suffer.

In treating delinquent children one does not have the aid of the factor of anxiety, and for that reason it is often difficult to keep a delinquent child in treatment. In the case of the delinquent child it is not the child who is anxious; instead, it is the parents or the community or the school.

There is a large group of delinquent children whose delinquencies result from emotional conflict. They are called neurotic delinquents. In many instances they suffer a great deal from anxiety, and to this extent they are amenable to treatment. Particularly is this true when a child has the feeling that his delinquency has gotten the best of him and that he has little control over his behavior.

Most of the good results from the direct treatment of a delinquent child come through the child's identification with the therapist. It is surprising in how many cases the delinquent child who comes in for psychiatric treatment has never previously developed a warm affectionate tie with any adult. If the therapist is patient, can overlook recurrences of delinquency during the period of treatment, and can retain his affection and respect for the child, the child may respond by finding it difficult to continue to be delinquent through a fear of hurting or displeasing the therapist.

There is a large group of children who suffer from defects of character. They have developed defense mechanisms as a result of which they become unpopular and unhappy. Most of these defense mechanisms are a cover for deeper anxiety, which may come to the surface through a series of interviews. These children are not willing to submit to treatment unless they are strongly urged to do so by their parents. It is of the utmost

importance, therefore, that the parents should not only be interested in treatment for their child, but also that they should sustain this interest. In this group of children with character defects are the bully, the chronic complainer, the egotist, the child who projects responsibility for his behavior onto others, the child with feelings of inferiority, and so forth.

The child psychiatrist able to deal directly with difficult children must know children well, especially their habits, interests, weaknesses, needs, and fears. He must understand that most children, and especially difficult ones, have definite prejudices against adults, whom they distrust and of whom they are suspicious. Most of their suffering and their need to develop defense mechanisms has come from stupidities, cruelties, neglect, and rejection from adults.

The child psychiatrist must be fond of children. If he is not, the child will recognize it quickly, and the child's distrust will be the greater. He must be sincere with them. Children recognize very quickly who is their friend and who is not. He must be able to recognize when he is not wanted or needed in a treatment program, so that he can withdraw from a treatment that is useless. He must not be disillusioned with the child, and it is important that the child should not at any time feel that the therapist believes his case to be hopeless.

He must be able to recognize the various forms that anxiety takes. It is not difficult to recognize the suffering of a child who has fears, phobias, or nightmares. It is often difficult to recognize that under the need to fight may be an anxiety of being overwhelmed; that under a severe anorexia may be a fear of being poisoned; that under a lack of interest in aggressive sports may be a fear of being hurt. It is only through knowing children intimately that the therapist learns to spot the large number of distorted forms anxiety can take.

One of the major contributions of psychoanalytic research is the recognition of the tremendous role that anxiety plays in the lives of individuals—by factors of an unconscious nature that are not apparent either to the individual who suffers or to the therapist. A knowledge of the psychology of the unconscious is indispensable to the therapist dealing with the problems of children. Not that the therapist must be an analyst; but he must know what unconscious factors are and how they affect behavior.

There are several methods of learning about the child's anxieties. Often this knowledge can be obtained through a history given by the mother, the teacher, or someone else who has had contact with the child. Anxieties can be recognized through various forms of play techniques, in which the child is subjected to play material and one can note avoidances, attacks, and reactions of fear to what he creates in the play or to suggestions made by the therapist that will help to bring out reactions. Some-

times the child's drawings will reveal anxiety. In the direct interview one can ask frankly about fears, indicating through questions that all children have fears. The child may speak frankly about his fears, or he may deny them overemphatically. His statements should not be contradicted, though they may be treated lightly—as though the child were trying to fool or joke with the therapist. The extent to which this procedure can be followed safely will vary with different children.

The use of dream material has been generally overlooked because it has been used largely by the analyst, who is trying to get at unconscious conflicts. If the therapist can get the child to talk about his dreams he may be rewarded with an abundance of significant material. The dreams may contain references of hostility toward a brother, sister, or parent; concern regarding school; fear of older boys; fear of sexual assault; fear of insanity; and preoccupation with sex.

Having told his dreams the child may, in response to suggestions from the therapist, go on discussing the subjects present in the dream—subjects that may never have come to light in the ordinary interview. It is interesting how often a child is willing to discuss fears that appeared in dreams when he would have been reluctant to discuss them otherwise. Children often deny that they dream, but when told that all children dream, or when asked specifically "What is the funniest or scariest dream you ever had?", they may start out by telling a dream and then telling many others.

There is little danger from using dreams in such a way to help in the recognition of current problems. Danger arises only when the therapist unwittingly makes interpretations of unconscious material that he may recognize in the dream. Interpretation of unconscious content is not the work of the child psychiatrist; it is the work of the child analyst.

Direct treatment work with young children of both sexes is often more successfully carried out by women therapists. The young child is closer to his mother, whom he identifies with a woman therapist, and has more confidence in her. Women have much greater patience in play techniques with younger children.

The child psychiatrist must be well acquainted with the problems of children in foster homes. He must understand the relation of the child to the foster home and to the child's own family, from whom he has been removed. He must know the many conflicts that arise in the relation between parents and foster parents and between both groups and the placement agency. He must also be aware of the problems that arise when a child is placed in an institution. He must have an understanding of educational problems as they are related to the school, the teacher, and the principal. He must be aware of the conflicts related to school failure. He must have a clear picture of the relationship between parents and children and between individual children and other members of their family.

At all times the child's right to withhold information must be respected. The forcing of material may increase rather than lessen suffering, especially in relation to anxieties. The ability to recognize when a child is being helped rather than threatened comes only from years of experience in treatment work with children. If treatment is not successful it should be discontinued and tried again later on.

Obviously there have been many omissions in this brief discussion of direct treatment work with children. The reader is referred to the rich literature on the subject in such periodicals as *The American Journal of Orthopsychiatry*, *Mental Hygiene*, *Psychiatry*, and *The Psychoanalytic Quarterly*. Important books on the subject have been published recently and are referred to in these periodicals.

---

#### AMERICAN RED CROSS APPOINTS NEW MEDICAL DIRECTOR

Dr. Courtney M. Smith has been appointed the new medical director of the American Red Cross, according to an announcement of the national headquarters. He succeeds G. Foard McGinnes, recently appointed vice chairman for health services.

Dr. Smith has served with the organization since 1944 as deputy medical director and director of disaster medical service. A graduate of the University of Oregon Medical School and Yale University, he entered public health work in Clackamas County and Portland, Oregon, after three years of private practice in Oregon City and Portland. He was then appointed health officer for the Territorial Department of Health in Alaska, with headquarters in Juneau. From April 1946 until his Red Cross appointment he was a medical officer in the Office of Civilian Defense.



# Giant-Cell Tumor of Bone in a Four-Month-Old Infant

William E. Proffitt, M.D., and Oswald S. Wyatt, M.D.

Minneapolis

IN 1892, while Dr. J. C. Bloodgood was working with Halsted on an excision of a so-called giant-cell sarcoma, Halsted called attention to the fact that Koenig in his *System of Surgery* had reported two cases of this type that had been cured by curettage and chemical cautery.

Bloodgood then began correspondence with the persons represented by the cases of sarcoma on record at Johns Hopkins Hospital. He noted one surprising fact: that all persons who had been diagnosed as suffering from giant-cell sarcoma answered him in a cheerful vein, but from those with other sarcomata he received no answer, because they were usually dead or dying. Bloodgood's memorable work,<sup>1</sup> published in 1910, reported his findings and a summary of 22 cases of giant-cell tumor of bone. From time to time he added more cases and reviewed his previous cases in the light of new observations.<sup>2,3</sup>

In this paper we shall attempt a review of the literature of giant-cell sarcoma to date, add a case in a very young infant, and attempt to draw some conclusions about this very confusing subject.

## REVIEW OF LITERATURE

Giant-cell tumors of bone are, by definition, very low-grade neoplastic processes, usually single, affecting mainly the epiphyses of the long bones, and running a progressive, prolonged course, but not metastasizing. Their microscopic pathology is a more or less vascular network of spindle-shaped or ovoid stromal cells and multinuclear giant cells.

These tumors were first recognized by Ambroïse Paré when he described benign tumors of the maxilla cured by curettage or repeated excision. Béclard (1827), Warren (1837), and Robin (1850) all described benign medullary tumors of bones with giant cells. Our first modern report of this condition was published by Nélaton (1863), who insisted that these tumors were benign. Nevertheless, until the publication of Bloodgood's reports the consensus of medical opinion and practice regarded these tumors as malignant and as belonging to the sarcoma group. Bloodgood insisted, and proved, that they were relatively benign, that the treatment being used was too radical, and that the name should be changed from "giant-cell sarcoma" to "giant-cell tumor of bone."

The etiology of these tumors is unknown. By some men trauma is thought to play a part. Others believe that such tumors represent an exaggeration of the normal process of ossification and bone growth, with resorption of calcified cartilage by new blood vessels and giant cells. Still others believe the process to be definitely malignant. It is a confusing array of data and evidence with which we are confronted, and the last words are yet to be said.

Giant-cell tumors occur equally in males and females and occur most frequently from 25 to 35 years of age. However, Davis<sup>5</sup> in Philadelphia (1903) reported one case in a 2½-year-old girl, and one case in a male aged 61 has been reported. The lower end of the radius, the upper end of the tibia, and the lower end of the femur are by far the most common sites of occurrence in the cases reported. None have been reported in the humerus or ribs. When a painless swelling of a bone occurs which, on X-ray, shows an asymmetrical swelling, usually at the epiphysis, with characteristic trabeculation, we should think of giant-cell tumor. However, the diagnosis is not conclusive until a biopsy and microscopic study can be made.

In the days before Bloodgood there was much better gross material to study, because of the treatment of giant-cell tumor by block excision, and so our present-day concept of the gross pathology of these lesions dates from the work of Paget, Nélaton, and Gross. There is a distended area in the epiphyseal end of the bone, with a thin shell of bone covered with a thickened periosteum. This thin bone shell is new bone that has replaced the old cortex, which was resorbed. All the substantia spongiosa is usually resorbed also. This lesion often invades the joint cartilage, but is almost always separated from the narrow cavity by a thin fibrous layer. In the late stages these tumors undergo necrosis, cystic degeneration, hemorrhage, and the formation of blood spaces.

There are thought to be four distinct types grossly, namely: (1) a solid tumor filling a bony shell; (2) a tumor filled with large and small cavities, containing blood and resembling a cavernous hemangioma; (3) a tumor resembling a hemorrhagic bone cyst; and (4) a tumor that perforates the bony shell and invades the soft tissues.

The microscopic pathology is that of stromal cells, which are vascularized and multinucleated giant cells with a few collagenous fibrils interspersed (Figure 1). These stromal cells are mononuclear, spindle shaped or ovoid, and resemble young connective tissue cells (fibroblasts). The nuclei are long and narrow and have a central nucleolus; there are few if any mitotic figures. The giant cells are multinuclear and usually 30–60 microns in diameter, but may be 100 microns or more.

The origin of these giant cells is questionable, but they are thought to be megakaryocytes, or osteoclasts, or collections of stromal cells by fusion, or puffed-up endothelial cells of the lining of the blood vessels.

Jaffe thinks that Bloodgood's claims for the benignity of these tumors are definitely false. He grades them into three classes on the basis of the activity of the stromal cells in the worst area of the tumor. Grade I is relatively benign, with uniform-sized stromal cells and rare mitotic figures. Grade II is of increasing malignancy or less benign appearance because of atypical stromal

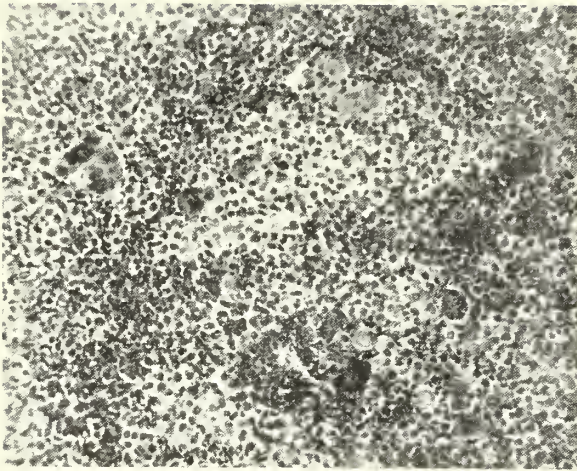


Fig. 1. Photomicrograph of giant-cell tumor of bone. (X170.)

cells, with great differences in size and shape, but still very few mitotic figures. Jaffe's grade III is frankly malignant. He states that this group is rare and has abundant, closely packed stromal cells with much whorling. Also, the nuclei are large and varied in both shape and location in the cell. The giant cells are small and squeezed together.

#### TREATMENT, PROGNOSIS, AND DIFFERENTIAL DIAGNOSIS

In spite of all the facts I have reviewed, the treatment still remains as Bloodgood outlined it: first, the lesion is curetted and chemical cautery is applied to the base. Then if the tumor recurs locally an excision or a local resection is done, with a bone graft to fill the defect. Radiation is used in conjunction with these procedures. As a last resort, if the tumor recurs we may have to amputate to save deformity and dysfunction.

The prognosis as to life is excellent, and many factors can influence the character and appearance of these lesions without changing their benign character. Many efforts have been made to prove that they metastasize, but Stone and Ewing<sup>25</sup> reviewed all alleged cases of metastasis up to 1922 and found none in which the metastasis showed the structure of giant-cell tumor of bone. Since 1922 Ewing has checked several new suspected cases with the same results. However, in 1926 Finch and Gleave<sup>8</sup> reported a case of a man, aged 49, who ten years after he first experienced symptoms in his knee, had a giant-cell tumor removed from the knee, and five years later died from pulmonary metastasis that microscopically appeared identical to his original giant-cell tumor.

The differential diagnosis includes osteolytic sarcoma, chondrosarcoma, metastatic carcinoma to bone, benign bone cyst, hemorrhagic bone cyst, multiple myeloma, xanthomatosis (especially Schüller-Christian's disease), fibrosarcoma, and osteitis fibrosa cystica.

In brief, giant-cell tumors are benign in nature; the general treatment has until recently been too radical; and

the only absolute diagnostic criterion is biopsy and microscopic study of the paraffin sections.

#### REPORT OF A CASE

Our case is that of a four-month-old white male infant, referred to us by Dr. E. F. Robb. The delivery of the child was uneventful and the baby had had pediatric care since birth. He was breast fed and was also given homicebrin and 50 mg. of vitamin C daily. He had an eczematoid eruption on cheeks and neck which responded to crude coal tar ointments.

When he was three months of age the mother noted a swelling in his left leg just below the knee. It was present for a short time but disappeared with application of heat. The swelling reappeared at about 3½ months of age, when we first saw the infant.

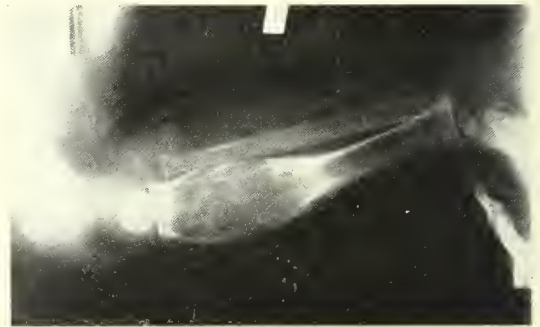


Fig. 2. X-ray of the left tibia of a four-month-old infant, showing osteolytic lesion.

The X-ray (Figure 2) showed an osteolytic lesion in the upper end of the left tibia; it appeared to be malignant. We explored this lesion and removed it by curettage and chemical cautery. We believed it to be a bone cyst or a giant-cell tumor. The leg was immobilized with a plaster cast. The pathological diagnosis was returned as giant-cell tumor of bone, benign. This diagnosis has been substantiated independently by three pathologists.

The child showed steady improvement until he was about six months of age, when he developed a severe diarrhea and almost expired. He is now over this illness and appears to be doing nicely. The site of the tumor is filling in with new bone.

#### BIBLIOGRAPHY

1. Bloodgood, J. C.: *Ann. Surg.*, 52, 145, 1910.
2. Bloodgood, J. C.: *Ann. Surg.*, 56, 210, 1912.
3. Bloodgood, J. C.: *Ann. Surg.*, 69, 345, 1919.
4. Coley, W. B.: *Am. J. Surg.*, 28, 768, 1935.
5. Davis, G. G.: *U. Penn. Bull.*, 18, 249 (Nov.), 1905.
6. Dyke, S. C.: *J. Path. & Bact.*, 34, 259, 1931.
7. Ewing, James: *Neoplastic Diseases*. 4th ed. rev., 1942.
8. Finch, E. F., and Gleave, H. H.: *J. Path. & Bact.*, 29, 399, 1926.
9. Geschickter, C. F., and Copeland, M. M.: *Arch. Surg.*, 19, 169, 1929.
10. Geschickter, C. F.: *J. Bone & Joint Surg.*, 17, 3, 550 (July), 1935.
11. Geschickter, C. F.: *Am. J. Roentgenol.*, 34, 1 (July), 1935.
12. Geschickter, C. F.: *Bone Tumors*. Boston: Christopher, 1936.
13. Geschickter, C. F.: *Surg. Clinics North America*, October, 1936.



14. Gross, S. W.: *Am. J. M. Sc.*, 78, 17, 1879.
15. Jaffe, H. L.: *Arch. Path.*, 30, 933, 1940.
16. Jaffe, H. L.: *Bull. New York Acad. Med.*, 16, 291, 1940.
17. Jenckel: *Deut. Zeitsch. f. Chir.*, 64, 66, 1902.
18. King, E. S. J.: *Brit. J. Surg.*, 20, 269, 1932.
19. Koenig: *System of Surgery*, 1894.
20. Kramer: *Arch. f. Klin. Chir.*, 66, 792, 1902.

21. Morton: *Brit. M. J.*, July 23, 1898.
22. Orr, J. W.: *J. Path. & Bact.*, 34, 265, 1931.
23. Stewart, F. W., Coley, B. L., and Farrow, J. H.: *Am. J. Path.*, 14, 515, 1938.
24. Stewart, M. J.: Report, International Conference on Cancer, p. 381. London: 1928.
25. Stone, W. S., and Ewing, J.: *Arch. Surg.*, 7, 280, 1923.
26. Virchow and Rindfleisch: *History of Pathology*, 1872.

## Book Reviews

**Skin Diseases in Children**, by GEORGE M. MACKEE, M.D., and ANTHONY C. CIPOLLARO, M.D. New York: Paul B. Hoeber, Inc., 1946. Pp. 448, illustrated, \$7.50.

Skin diseases in children occur frequently enough to give every practitioner a chance to treat them. Many of these conditions require an early diagnosis and treatment in order to save the child unnecessary suffering and the parents much displeasure. If the cutaneous diseases are recognized early and properly treated the response is usually satisfactory, for in the child there is a great tendency for healing to take place.

The authors of this book have done a good job of presenting practical points in the handling of skin diseases in children by simple classifications, good grouping, valuable brief descriptions, and discussions of the most essential features of therapy. The book has been well received in the past and will be more valuable in the future.

The eminent co-authors devote special sections to tubercular, eczematous and erythematous infections, diseases of the mouth, hair, and glands, and diseases due to physical agents, parasites, fungi, and pyogenic bacteria. There are also excellent contributed chapters: by Frances Pascher on allergic dermatoses, Eugene Traub on congenital anomalies, Nathan Sobel on contagious diseases, and Herman Beerman on syphilitic infections.—A.V.S.

**Intravenous Anesthesia**, by R. CHARLES ADAMS, M.D., C.M., M.S. (Anes.), Mayo Clinic, Rochester, Minnesota. New York: Paul B. Hoeber, Inc., 1944. Pp. 663, illustrated, \$12.

This volume came from the presses during the war. The author sensed significantly this handicap. Material that would have been included was unavailable in a completed form suitable for textbook use. Paper shortages, with fewer pages in the regular journals; travel restrictions, with fewer opportunities to present work; and the restricted nature of investigations, which left many manuscripts in laboratory files—all made the collection of material a mighty task.

The author did the job well. The conviction is clear that Dr. Adams intended to accumulate all the useful and interesting knowledge of the subject in the one volume devoted to it. In the present state of knowledge of anesthesia it is likely that books on the subject will follow this idea, rather than make attempts to put the entire subject between two covers.

*Intravenous Anesthesia* may serve as a model for similar volumes. With its beginning on historical considerations, it continues to techniques, and then treats separately the various new and old drugs given by vein for anesthesia. Of the more than 600 pages, 450 are correctly devoted to the barbiturates, and nearly 100 pages to pentothal sodium. An amazing feature of the book is the bibliography distributed to each chapter. More than 3000 references in all are used, not only for completeness but also for their bearing on the subject matter.

The author writes plainly but interestingly, and has drawn on his own wide experience in this field as well as that of his confrères at the Mayo Clinic for much of the material. The book is attractively published, with good illustrations, an easily readable type, and durable paper.

The book will serve the anesthesiologist well and will become a reference volume for anyone interested in the subject. It is complete to date of publication.—E.A.R.

**The Physiology of the Newborn Infant**, by CLEMENT A. SMITH, M.D. Springfield, Illinois: Charles C Thomas, 1945. Pp. 312, illustrated, \$5.50.

With the modern tendency to give the mother plenty of attention, the newly born infant is often permitted just to "get along." Fortunately, progress is usually good, but symptoms and signs indicating abnormal conditions do appear occasionally. In the past these conditions have been diagnosed and treated in a more or less traditional fashion, and no great effort has been made to investigate the underlying truths for the various forms of therapy.

Dr. Smith, who has a genuine interest in the newborn child, presents in his book a comprehensive review of the background for up-to-date care of the newborn infant. There are chapters on respiration, the circulatory system, the blood of the infant, metabolism and heat regulation, the digestive tract, fetal and neonatal nutrition, and other important features of the newborn period of life. The reader of the book cannot help but feel that he has received in a well-organized way a thorough basis for the better handling of the newborn child, whether it be routine care or the treatment of an abnormal condition or disease. For this reason the book is highly recommended to the student of medicine and the practitioner.—A.V.S.

**Science and Scientists in the Netherlands Indies**, edited by PIETER HONIG and FRANS VERDOORN. New York: G. E. Stechert and Board for the Netherlands Indies, 1945. Pp. 491, illustrated. \$4.00.

This meaty volume is a collection of some eighty items dealing with the sciences, past and present, in the Netherlands East Indies. Some are here published for the first time, others are reprinted. Of the group of eighty, five deal with medical research and education, two with veterinary science, and a short series with cinchona. Others concern varied aspects of astronomy, climatology, geology, botany, zoology, and education and scientific organizations, wherein the UNRRA already finds place. Within the fields of this reviewer's knowledge there could scarcely have been a better choice of authors. The list of institutions and scientific workers in the Indies, found in a supplement, is likely to be as useful as any part of the volume if political stability soon returns to the area.

Dr. I. Snapper of Mount Sinai Hospital, New York, in an article entitled "Medical Contributions from the Netherlands Indies," observes that despite the relatively small number of physicians working in the enormous area of the Indies (760,000 square miles, 3000 islands over a 3000-mile arc, 65,000,000 people), health was on a high standard for such an unhealthy climate. The death rate, 20 to 25 per thousand, is considered good for an Oriental population. Smallpox and cholera are said to be practically eradicated and plague well under control. The reader is impressed with the importance of the medical problems here facing Dutch and Indonesian medical men, for Java has the world's densest population (16,000 per square mile in central Java) and other parts of the Netherlands Indies have some of the world's worst jungle.

The text is in small type, but since the book is not likely to be used except for reference this is no fault. The binding is attractive and adequately substantial for a book having the weight of this volume. The coarse screening of many of the halftones prevents the book's being considered a good candidate for a position among the "best produced volumes of the year," as the publishers have wished in an accompanying advertisement.—R. T. HATT, Director, Cranbrook Institute of Science.

# Two Cases of Hemolytic Anemia with Leukemoid Reaction of the Myeloid Type

S. L. Arey, M.D.  
Minneapolis

A LEUKEMOID reaction is one in which the peripheral blood stream gives evidence of leukemia which is not substantiated by either the subsequent course or by necropsy findings. These reactions may occur in many varied conditions and may resemble either lymphatic or myelogenous leukemia. Leukemoid reactions of the lymphatic type are seen commonly in infectious mononucleosis and in pertussis. In this paper we shall be concerned only with the myeloid type of reaction.

## LITERATURE

Krumbhaar<sup>1</sup> classifies leukemoid reactions into "(a) those that present real difficulty in diagnosis from leukemia; and (b) those that have hematologic similarity only."

Heck and Hall<sup>2</sup> enumerate a number of conditions in which leukemoid reactions of the myeloid type may occur. Among these are: (1) active regeneration of the bone marrow (as in acute hemorrhage); (2) severe infections; (3) blood dyscrasias or reticulo-endothelial diseases (such as congenital hemolytic icterus); (4) diseases in which there is invasion and irritation of the bone marrow (as in metastatic carcinoma; and (5) chemical poisoning (as with mustard gas).

Downey, Major, and Noble<sup>3</sup> report four cases that showed leukemoid blood pictures of the myeloid type. Three of these cases occurred in the same family following the use of mercurial ointment. In these cases the blood picture was practically identical with that of chronic myelogenous leukemia.

Fitzhugh<sup>4</sup> lists the causes of leukemoid reactions as: (1) severe infection; (2) eosinophilic leukemoid reaction in trichiniasis and occasionally in Hodgkin's disease or tuberculosis of the glandular type; (3) noninfectious states, especially carcinoma with bone metastases. He also states that a monocytic type of reaction may be found in (1) neosarsphenamine therapy of syphilis; (2) in rapidly advancing tuberculosis; (3) during the early recovery phase of agranulocytic angina; and (4) in *Streptococcus viridans* septicemia.

Lederer<sup>5</sup> reports three cases in which there was a profound anemia and a leukemoid reaction. In one case the white blood count was 33,615 with 55 per cent polys, 0.5 per cent eosinophiles, 8 per cent monocytes, 24.5 per cent small lymphocytes, 2.5 per cent myelocytes, and 8 per cent metamyelocytes. He states that the "blood smear showed in small quantities every type of cell associated with myelogenous leukemia."

Castle and Minot<sup>6</sup> state that in acute hemolytic anemia of the Lederer type leukocytosis with immature myeloid cells is the rule, but leukopenia has been reported.

O'Donoghue and Witts<sup>7</sup> report that there is usually a leukocytosis in acute hemolytic anemias, and that the blood picture may closely resemble leukemia. In fact,

the symptomatology and the blood picture in acute leukemia and Lederer's anemia may be identical, with only the subsequent course determining the diagnosis. They feel that the cases cited in the literature as cures of leukemia probably belong to the latter group.

## CASE SUMMARIES

*Case 1.* This 12-year-old white male was seen June 14, 1942, with a history of vomiting and abdominal pain of one week's duration. There had been rather rapidly increasing pallor and a temperature elevation up to 100°. He had spent several winters in the tropics. He had always tended to have a low-grade anemia, according to his mother. He had an appendectomy in the spring of 1941 and in the fall of 1941 a possible rupture of the spleen, from which he recovered without recourse to surgery.

Physical examination showed a chronically ill child with a subicteric tint of the skin. His mucous membranes showed a marked pallor. There was a generalized lymphadenopathy. A systolic murmur was heard over the apex of the heart; it was interpreted as hemic in origin. The spleen was palpable two fingers below the costal margin.

The laboratory findings were as follows: Hgb., 22 per cent; RBC, 1,830,000; WBC, 20,400; polys, 57 per cent; lymphs, 14 per cent; monocytes, 2 per cent; metamyelocytes, 2 per cent; promyelocytes, 1 per cent; myelocytes, 19 per cent; normoblasts, 9 per 100 WBC counted; nucleated reds, 13 per 100 WBC counted; icterus index, 8.7; blood culture, sterile. *Fragility test:* Patient hemolysis, began .50 per cent saline; complete, .30 per cent saline. Control hemolysis, began .42 per cent saline; complete, .34 per cent saline.

*Pathologist's report:* "Reds are hypochromic, basophilic, and show large numbers of nucleated forms. Numerous microcytes are present. White cells and lymphocytes show no change. Myeloid cells show immaturity going back as far as promyelocytes. Impression: chronic myelogenous leukemia."

*Subsequent Course.* The child was given four transfusions of citrated blood and at the time of discharge from the hospital showed a marked improvement. On June 26, 1942, his hemoglobin was 60 per cent; WBC, 6300, with 46 per cent PMN's, 46 per cent lymphocytes, 4 per cent monocytes, 1 per cent eosinophiles, 1 per cent basophiles, and 1 per cent myelocytes. The nucleated reds had disappeared from the blood smear. He was given liver extract by injection and liver-iron preparations by mouth. He continued to be in fairly good health at home, although the spleen was always palpable.

In March 1943 laboratory findings were: Hgb., 68.2 per cent; RBC, 3,640,000; color index, .94; average



diameter of red cells, 7.2 microns. *Fragility test*: Patient hemolysis, began .50 per cent saline; complete, .40 per cent saline. Control hemolysis, began .46 per cent saline; complete, .34 per cent saline.

The blood smear showed no signs of immaturity in either red or white cells. The van den Bergh test was delayed. The icterus index was 9.4 units, and the stool showed 112 mg. a day of urobilinogen excreted.

Splenectomy was considered, but was never carried out. A recent report from the family physician stated that the boy's hemoglobin was around 70 per cent. He has been getting liver extract intramuscularly at weekly intervals. There has been no recurrence of the hemolytic crises.

*Final diagnosis*: Hemolytic icterus, acquired type.

*Case 2.* This 7-year-old female was seen in consultation with Dr. T. J. Devereaux on April 26, 1945. Her chief complaints were paleness for four days and vomiting for four days. Her parents, in retrospect, had noticed gradually increasing pallor for two weeks, but she had been able to attend school until six days before her admission. On April 20, 1945, she began to complain of headache and abdominal pain. She had several emeses. An elevated temperature was noted for the first time on the morning of admission.

Her past history was noncontributory, and her family history was negative except that a maternal grandmother had had some type of jaundice that persisted about one year during her twentieth year.

Physical examination showed an acutely ill, semicomatose, pale girl with a suggestion of an icteric tint of the skin. Temperature was 103°, pulse 140, respiration 28. A systolic murmur heard over the apex of the heart was hemic in origin. The tip of the spleen was barely palpable.

The laboratory findings were as follows: Hgb., 14 per cent; RBC, 1,140,000; WBC, 22,750; PMN's, 63 per cent; lymphs, 17 per cent; monocytes, 3 per cent; basophiles, 2 per cent; myelocytes, 6 per cent; juvenile, 6 per cent; promyelocytes, 2 per cent; stem cells, 2 per cent; icterus index, 18. *Fragility test*: Patient hemolysis, began .44 per cent saline; complete .38 per cent saline. Control hemolysis, began .42 per cent saline; complete .32 per cent saline.

*Blood morphology*: "Red blood cells show anisocytosis with some microcytosis; there are four normoblasts per 100 WBC and moderate to marked polychromasia with moderate hypochromasia. PMN's show immature stages of development from stem cells to mature forms. Immature forms are in relatively low percentage. Platelets are normal in number and morphology. Leukemoid reaction to be ruled out, but picture would support diagnosis of myelogenous leukemia."

The patient was given three transfusions of citrated blood and made a most dramatic improvement. The fever subsided and the signs of immaturity in the white cells disappeared. She was discharged from the hospital on May 4, 1945, with a hemoglobin of 58 per cent. The diagnosis at that time was acute hemolytic anemia, Lederer type. She remained at home for ten days and then was readmitted because of a return of symptoms. At this time her hemoglobin was 38 per cent, with 8550 WBC. Smears showed microcytosis and spherocytosis. The mean diameter of the red cells was 6.7 microns. The spleen was now definitely palpable two fingers below the costal margin. There was an increased fragility to hypotonic salt solution. The fecal urobilinogen was 601 mg. per day.

She was given repeated blood transfusions, and on May 21, 1945, splenectomy was done. She made an uneventful postoperative recovery and was discharged ten days later in excellent condition.

Section of the spleen showed "the follicles to be prominent. The pulp is markedly congested with large numbers of red cells. The picture is compatible with a congenital hemolytic icterus."

Studies were made of the parents and a younger brother. Fragility tests, blood smears, and measurements of the size of the red cells were all within normal limits.

The final diagnosis was hemolytic icterus, acquired type.

When last seen in August 1945, the patient's hemoglobin was 90 per cent and her RBC 4,600,000. There was a slight increase in fragility above normal. The blood smear still showed microcytosis and spherocytosis. The average mean diameter of the red cells was 6.8 microns.

#### SUMMARY

Two cases of hemolytic icterus, which during hemolytic crisis closely resembled myelogenous leukemia, are presented.

#### REFERENCES

1. Krumbhaar, E. B.: Leukemoid Blood Pictures in Various Clinical Conditions. *Am. J. M. Sc.*, 172, 519-33 (Oct.), 1926.
2. Heck, F. J., and Hall, B. E.: Leukemoid Reactions of the Myeloid Type. *J.A.M.A.*, 112, 95-101 (Jan. 14), 1939.
3. Downey, Hal, Major, S. G., and Noble, J. E.: Leukemoid Blood Pictures of the Myeloid Type. *Folia haemat.*, 41, 493-511 (July), 1930.
4. Fitzhugh, Thomas, Jr.: Leukemoid Blood Reactions. *Pennsylvania M. J.*, 35, 290-93 (Feb.), 1932.
5. Lederer, Max: A Form of Acute Hemolytic Anemia Probably of Infectious Origin. *Am. J. Med. Sc.*, 170, 500, 1925.
6. Castle, W. B., and Minot, G.: New York: Oxford Medicine, 2:624.
7. O'Donoghue, R. J. L., and Witts, L. J.: The Acute Hemolytic Anemia of Lederer. *Guy's Hosp. Reports*, 82, 440, 1932.

## MEET OUR CONTRIBUTORS . . .

NOTE. Most of the papers published in this issue were presented at the Fall meeting of the Northwestern Pediatric Society, held at White Pine Inn, Bayport, Minnesota, September 28, 1945.

DR. ERLING S. PLATOU, special editor of this issue, is a graduate of the University of Minnesota with the degrees of B.S., M.B., and M.D., and pursued graduate work for four years in New York, Boston, and Europe. Besides his private practice in pediatrics in Minneapolis, he is clinical professor of pediatrics at the University of Minnesota. He is past president of the Northwestern Pediatric Society and a member of the American Academy of Pediatrics, the American Board of Pediatrics, and Sigma Xi.

DR. JAY ARTHUR MYERS, who contributes the "personal appreciation" of Dr. Stewart, is the well-known Minneapolis physician.

DR. ALEXANDER ASHLEY WEECH of the Cincinnati Children's Hospital is a graduate of Johns Hopkins Medical School. He is professor of pediatrics, University of Cincinnati; medical director of the Children's Hospital and Pediatric Division of the Cincinnati General Hospital; and director of the Children's Hospital Research Foundation. He is a member of the Council, American Pediatric Society, and holds memberships in the Society for Pediatric Research, the American Academy of Pediatrics, the Society for Research in Child Development, the Society for Experimental Research and Development, and the Harvey Society.

DR. RICHARD BERESFORD TUDOR, clinical assistant in pediatrics at the University of Minnesota, is a graduate of the University with the degrees of A.B., M.B., and M.D. (1941), with graduate work in pediatrics at Duke University Hospital and Bellevue Hospital, New York City, on the New York University Service.

DR. GEORGE BRYAN LOGAN has been associated with the Mayo Clinic, where he is consultant in pediatrics, since 1937. He is a graduate of Harvard Medical School (1934), with graduate work at the Mayo Foundation (M.S. in Pediatrics, 1940). He is president of the Northwestern Pediatric Society and holds memberships in the American Academy of Pediatrics, the American Medical Association, and Sigma Xi.

DR. HADDOW MACDONNELL KEITH has been associated with the Mayo Clinic, where he is consultant in pediatrics, for eleven years. He is a graduate of the University of Toronto Medical School (M.B., 1924), with graduate work at Henry Ford Hospital, Detroit, the University of Rochester, the Montreal Neurologic Institute, and the Hospital for Nervous Diseases, London. He has been president of the Minnesota Mental Hygiene Society (1939-42), and vice-president of the Epilepsy League (1944-45). He is a member also of the American Academy of Pediatrics, Sigma Xi, the American Medical Association, the Northwestern Pediatric Society, the Canadian Society for the Study of

Diseases of Children, and the Central Society for Clinical Research. He was Traveling Fellow of the Montreal Neurological Institute in 1934-35.

DR. RALPH T. KNIGHT, clinical professor and director of the Division of Anesthesiology, University of Minnesota, is a graduate of the University of Minnesota Medical School (M.D., 1912), with graduate work in his specialty, anesthesiology, at the Mayo Foundation. He was vice-president of the American Society of Anesthesiologists in 1945 and a fellow of the American College of Surgeons.

DR. JOSEPH T. COHEN of Minneapolis, assistant clinical professor of pediatrics at the University of Minnesota, has done considerable research in his special field, children's dentistry. He is a member of the International Association of Dentistry for Children.

DR. M. M. LITOW, formerly associated with Dr. Cohen in the practice of dentistry, is now in California.

DR. LAURENCE G. PRAY of Fargo, North Dakota, is a graduate of the Washington University Medical School (1935), with graduate work at Johns Hopkins Hospital, the Babies' Hospital of New York, and the St. Louis Children's Hospital. He is a member of the Northwestern Pediatric Society, the American Academy of Pediatrics, and the North Dakota State Medical Association, and a Licentiate of the American Board of Pediatrics.

DR. RALPH EDWIN DYSON of the Northwest Clinic, Minot, North Dakota, has practiced there for 11 years. He is a graduate of the State University of Iowa Medical School (M.D., 1932), with graduate work at the University of Minnesota. He is state chairman of the American Academy of Pediatrics.

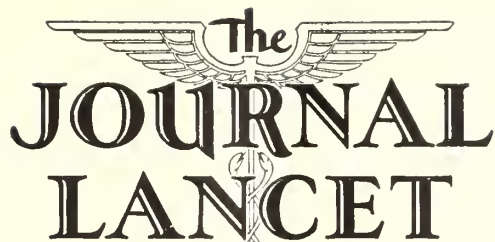
DR. ROBERT W. GIBBS, who holds a two-year residency at Minneapolis General Hospital, is a graduate of the University of Minnesota Medical School (B.A., M.B., M.D., 1943).

DR. FORREST H. ADAMS of the University of Minnesota Pediatrics Department is also a graduate of the University (M.B., M.D., M.S.). He has just entered the Navy and is located at the San Diego Naval Hospital.

DR. HYMAN S. LIPPMAN, director and psychiatrist of the Amherst H. Wilder Child Guidance Clinic, St. Paul, has practiced in the Twin Cities since 1923. He is a graduate of the University of Minnesota Medical School, with the degrees of M.D. and Ph.D. in Pediatrics, and studied also in New York and Vienna. He is president of the Minnesota Society of Neurology and Psychiatry and a member of the American Psychiatric Society, the American Orthopsychiatric Association, the American Psychoanalytic Society and the Chicago Psychoanalytic Society, as well as the American Medical Association and the Northwestern Pediatric Society and Sigma Xi.

(Continued on page 174)





# The JOURNAL LANCET

Serves the *Medical Profession of*  
MINNESOTA, NORTH DAKOTA, SOUTH DAKOTA AND MONTANA

Official Journal of the American Student Health Assn., Great Northern Railway Surgeons' Assn., Minneapolis Academy of Medicine, Montana State Medical Assn., North Dakota Society of Obstetrics and Gynecology, North Dakota State Medical Assn., Northwestern Pediatric Society, Sioux Valley Medical Assn., South Dakota Public Health Assn., South Dakota State Medical Assn.

## ADVISORY COUNCIL

### *North Dakota State Medical Assn.*

Dr. James F. Hanna, *Pres.*  
Dr. A. E. Spear, *Pres.-Elect*  
Dr. L. W. Larson, *Secy.*  
Dr. W. W. Wood, *Treas.*

### *North Dakota Society of Obstetrics and Gynecology*

Dr. E. H. Boerth, *Pres.*  
Dr. Paul Freise, *Vice Pres.*  
Dr. G. Wilson Hunter, *Secy.-Treas.*

### *Minneapolis Academy of Medicine*

Dr. Karl W. Anderson, *President*  
Dr. Russell W. Morse, *Vice Pres.*  
Dr. J. C. Miller, *Secretary*  
Dr. Ragnvald S. Ylvisaker, *Treasurer*  
Dr. Henry E. Hoffert, *Recorder*

### *South Dakota State Medical Assn.*

Dr. William Duncan, *Pres.*  
Dr. F. S. Howe, *Pres.-Elect*  
Dr. H. R. Brown, *Vice Pres.*  
Dr. Roland G. Mayer, *Secy.-Treas.*

### *South Dakota Public Health Assn.*

Dr. J. M. Butler, *Pres.*  
Dr. C. E. Sherwood, *Vice Pres.*  
Dr. Gilbert Cottam, *Secy.-Treas.*

### *Sioux Valley Medical Assn.*

Dr. D. S. Baughman, *Pres.*  
Dr. Will Donahoe, *Vice Pres.*  
Dr. R. H. McBride, *Secy.*  
Dr. Frank Winkler, *Treas.*

### *Montana State Medical Assn.*

Dr. S. A. Cooney, *Pres.*  
Dr. M. A. Shillington, *Pres.-Elect*  
Dr. R. F. Peterson, *Secy.-Treas.*

### *Northwestern Pediatric Society*

Dr. G. B. Logan, *Pres.*  
Dr. Geo. Kimmel, *Vice Pres.*  
Dr. Northrop Beach, *Secy.-Treas.*

### *Great Northern Railway Surgeons' Assn.*

Dr. W. W. Taylor, *Pres.*  
Dr. R. C. Webb, *Secy.-Treas.*

### *American Student Health Assn.*

Dr. Ralph I. Canuteson, *Pres.*  
Dr. Glenadine Snow, *Vice Pres.*  
Dr. G. T. Blydenburgh, *Secy.-Treas.*

## BOARD OF EDITORS

DR. J. A. MYERS, *Chairman*

Dr. J. O. Arnson  
Dr. A. B. Baker  
Dr. D. S. Baughman  
Dr. Ruth E. Boynton  
Dr. Gilbert Cottam  
Dr. H. S. Diehl  
Dr. L. G. Dunlap  
Dr. Ralph V. Ellis  
Dr. W. A. Fansler

Dr. A. R. Foss  
Dr. James M. Hayes  
Dr. A. E. Hedback  
Dr. E. D. Hitchcock  
Dr. R. E. Jernstrom  
Dr. A. Karsted  
Dr. L. W. Larson  
Dr. W. H. Long  
Dr. O. J. Mabee

Dr. J. C. McKinley  
Dr. Irvine McQuarrie  
Dr. Henry E. Michelson  
Dr. C. H. Nelson  
Dr. N. J. Nessa  
Dr. Martin Nordland  
Dr. J. C. Ohlmacher  
Dr. K. A. Phelps  
Dr. C. E. Sherwood

Dr. M. A. Shillington  
Dr. J. C. Shirley  
Dr. E. Lee Shrader  
Dr. E. J. Simons  
Dr. J. H. Simons  
Dr. S. A. Slater  
Dr. W. P. Smith  
Dr. S. E. Sweitzer

Dr. W. H. Thompson  
Dr. E. L. Tuohy  
Dr. M. B. Visscher  
Dr. O. H. Wangenstein  
Dr. S. Marx White  
Dr. H. M. N. Wynne  
Dr. Thomas Ziskin,  
*Secretary*

LANCET PUBLISHING CO., *Publishers*, 84 South Tenth Street, Minneapolis 2, Minnesota

MINNEAPOLIS, MINNESOTA, MAY, 1946

## DR. CHESTER ARTHUR STEWART AT LOUISIANA 1941-1946

Nature, by and large, is chary of her bounties. She is selective in the distribution of her gifts and bestows them sparingly. To one man she may give a keen scientific mind and a real love of research; to another, a deep consciousness of the social needs of his fellow men and the leadership to persuade others to meet these needs; to a third, the almost prophetic vision of the future which enables him to plan well; to still another, the priceless gift of a pleasing personality that captures the hearts of men; and to yet another, that rare gift of clear exposition which makes a man an unrivaled teacher, with the ability to expound scientific knowledge so clearly that he who runs may read and understand.

Among our acquaintances and friends we frequently meet men who exemplify one or another of these great qualities, but rarely do we find one who is endowed with

all of them. Dr. Chester Arthur Stewart was such a man, however. Nature was lavishly generous in giving him all these great virtues. His scholarly mind and his love of research were attested to by the many scientific papers he published in his chosen field, pediatrics. These papers numbered about eighty. He was singularly blessed also with a clear mind and a grasp of both final objectives and intervening details which made him a great administrator and organizer. To this, as a complement, was added his ability to get on with others, to lead them—not drive them—with a minimum of friction and a maximum of co-operation that confirmed his ability as a leader. His unflinching good humor, wit, and jolly temperament, coupled with his outstanding ability and his great humanity, endeared him to all the medical students, nurses, interns, residents, and faculty members with whom he was associated.

It was the good fortune of the medical world of New Orleans to have the privilege of associating with Dr.

Stewart for about five years. It was too short a period to have derived all the inspiration and help that this truly outstanding physician could have given us, yet long enough to have our outlook broadened and enriched to an extent that gave all with whom he came in contact a realization of the man's sterling qualities.

As a clinician, Dr. Stewart was unexcelled; to research problems he brought enthusiasm and critical faculties that made his work outstandingly dependable. His appraisal of the efforts of others in the field of investigation was almost infallible, and in the field of public health his work was as constructive and fruitful as in the clinical field.

At the time of his death Dr. Stewart served the School of Medicine of Louisiana State University in the dual capacity of director of the department of pediatrics and chief of the pediatrics unit of the university at the Charity Hospital of Louisiana at New Orleans. He gave generously of his time to the school, not only in his teaching and departmental administrative capacity, but also as a member of the Faculty Executive Committee. Here his great power of organization, administration, and planning for the future were of inestimable value. His death was an unexpected blow from which the school will not soon recover. The scientific community of the South has lost one of its outstanding figures, and clinical medicine one of its ablest men.

G. W. McCoy, M.D.

### SAVING THE CHILDREN

News about the welfare of children in a single recent issue of *The New York Times* offers cause for both despair and rejoicing.

Reporting on a tour of the liberated countries, Mary Craig McGeachy, director of welfare for UNRRA, said: "In Prague they gave tests and X-rays to 70,000 school children and found that 40 per cent showed signs of lung disorder. In Greece the incidence of tuberculosis increased four and one half times during the war years. In Yugoslavia the case rate and death rate doubled. In Italy the death rate rose two and one half times. In countries of the west, while the general figures are less startling, there are bad spots." It is no longer merely a question of providing food in special clinics for children and for vulnerable groups of the population, she said, but of whether even the able-bodied will survive the trial of the coming months.

In Boston, meanwhile, after a year and a half of study, plans have been announced for the creation of a medical center for children, with the Boston Children's Hospital as a nucleus and with affiliates throughout the country to extend aid to any child in need of its service. Plans are being made to provide for training increased numbers of physicians and nurses and for added medical research and care for adolescents. The hospital in the past has treated more than 60,000 children a year. The need for such a center is nowhere better illustrated than by the results of our selective service examinations, according to the president of the hospital, J. W. Farley. The hospital has a record of 77 years of service to children, and has pioneered in pediatrics, research, and treatment.

## Deaths

DR. J. H. HUNT, 84, pioneer physician of Glendive, Montana, died March 25 in that city. Dr. Hunt, who was born January 31, 1862, at Grant, Tennessee, came to Glendive in 1890. He is survived by his wife, a son and daughter, and a brother, Milford Hunt, of Patter-son, Wisconsin.

DR. GEORGE J. McHEFFEY, 41, of Butte, Montana, died March 19 in that city. He was a veterans of 22 months' overseas service with the Army Medical Corps, including 16 months in France as chief of the laboratory service of General Hospital 203. He was released with the rank of lieutenant colonel. Dr. McHeffey entered the service from Billings, where he was a pathologist. He was a graduate of the University of Michigan Medical School, interned at Murray Hospital, and studied pathology at the Mayo Clinic. He is survived by his wife, two daughters, and his mother.

DR. SAMUEL E. SCHWARTZ, 70, of Butte, Montana, died March 30 at Butte, after a lingering illness. He was born October 30, 1875, in New York City, and was a graduate of the Columbia University College of Physicians and Surgeons (M.D., 1896). He came to Montana in 1898 and received his Montana license the following year. He was an Army captain in World War I.

Dr. Schwartz had maintained offices in the Owsley Building in Butte for more than a third of a century. He was past president of the Silver Bow County Medical Society and the St. James Hospital medical staff, a fellow of the American Medical Association, and a member of the Montana State Medical Association. He was also active in civic and musical affairs in Butte.

DR. MARTIN DANIEL WESTLEY, 72, of Cooperstown, North Dakota, died March 28 in Minneapolis. Dr. Westley, who had practiced in Cooperstown for 42 years, was born in Stavanger, Norway, November 27, 1873. He was graduated from Jefferson Medical College, Philadelphia, in 1904, and came to Cooperstown the same year. He served 13 months during World War I and was discharged with the rank of captain; in World War II he served the draft boards by giving physical examinations. He was a member of the state committee on maternal and child welfare and for several terms was coroner of Griggs County.

He is survived by his wife, three sons and a daughter, a brother, and a sister.

DR. WILLIAM E. ROCHFORD, 86, died in Minneapolis April 3. A pioneer surgeon, he had served 50 years as chief surgeon for the Milwaukee Road, and had also been chief of staff of St. Barnabas and Northwestern hospitals. He had maintained his practice despite 30 years of blindness, and retired only in 1945.

Dr. Rochford was a charter member of the American College of Surgeons, a diplomate of the American Board of Surgery, and a member of the Western Surgical Board. He is survived by two daughters and three sons.



# Tuberculosis Among College Students

*Fifteenth Annual Report of the Tuberculosis Committee, American Student Health Association, for the Academic Year, 1944-45*

As we reflect upon the progress of our work in the past, and begin to think seriously of our increased responsibilities for the future, let us consider the results of our work for the last of the war years. Probably owing to the effect of total mobilization for total war, student health service has been somewhat curtailed during the past two or three years. But even in spite of the mobilization of our personnel and facilities for war, most colleges and universities have been able to maintain reasonably adequate health services, including programs for tuberculosis control, especially if such programs had already been in progress. Credit must certainly be given, in no small measure, to those who have been responsible for stimulating and maintaining interest in tuberculosis as a menace to student health.

## WE ARE ENCOURAGED . . . . .

Fewer replies were received to the 1944-45 questionnaire, sent to 885 colleges and universities, than in some of the prewar years. But among these 461 replies a new high of 312 colleges and universities reported some type of tuberculosis program.

Undoubtedly many factors have contributed to this increase. We should like to think it a result of the combined efforts of several related agencies, all striving for one ultimate goal, the elimination of tuberculosis. Evidence is accumulating that county and state anti-tuberculosis organizations are interesting themselves in our work. Many such organizations have colleges in their communities. They are no doubt aware that their local college is either making an excellent contribution to the cause of tuberculosis control, or is doing nothing in this respect. Repeated demonstration of the now trite fact that "tuberculosis is found where looked for" may be having its hoped for effect.

We welcome this interest on the part of both official and nonofficial agencies, and should like to see it increase. The most fruitful field for further progress in our work seems to be in the area of the smaller college. Many small colleges are not in a position to support their own student health service. They need encouragement and help, both of which could be furnished by organized anti-tuberculosis groups. Through mutual cooperation between colleges and tuberculosis associations, tuberculosis programs might be established on the campuses of many of our smaller colleges where no program is now in operation.

Further encouragement is obtained from the finding of 389 cases of tuberculosis at colleges having some type of tuberculosis program. And, with a feeling of real accomplishment, we are able to report 581 students, former cases of tuberculosis now arrested, returning to their college careers.

TABLE 1  
Colleges and Universities Sent Questionnaires, Replies Received, and Programs Reported for the Academic Year 1944-45, Classified by States, and a Comparison with Former Years

| Division and State        | Colleges sent Questionnaire | Replies Received | Programs Reported |
|---------------------------|-----------------------------|------------------|-------------------|
| <b>United States</b>      | <b>885</b>                  | <b>461</b>       | <b>312</b>        |
| <b>New England</b>        | <b>85</b>                   | <b>43</b>        | <b>36</b>         |
| Maine                     | 8                           | 4                | 3                 |
| New Hampshire             | 7                           | 2                | 2                 |
| Vermont                   | 9                           | 4                | 1                 |
| Massachusetts             | 43                          | 22               | 20                |
| Rhode Island              | 6                           | 3                | 3                 |
| Connecticut               | 12                          | 8                | 7                 |
| <b>Middle Atlantic</b>    | <b>150</b>                  | <b>80</b>        | <b>67</b>         |
| New York                  | 69                          | 37               | 32                |
| New Jersey                | 18                          | 13               | 12                |
| Pennsylvania              | 63                          | 30               | 23                |
| <b>East North Central</b> | <b>169</b>                  | <b>107</b>       | <b>80</b>         |
| Ohio                      | 46                          | 31               | 22                |
| Indiana                   | 27                          | 20               | 13                |
| Illinois                  | 44                          | 19               | 16                |
| Michigan                  | 25                          | 16               | 15                |
| Wisconsin                 | 27                          | 21               | 14                |
| <b>West North Central</b> | <b>127</b>                  | <b>86</b>        | <b>52</b>         |
| Minnesota                 | 22                          | 19               | 18                |
| Iowa                      | 26                          | 12               | 4                 |
| Missouri                  | 25                          | 17               | 6                 |
| North Dakota              | 9                           | 4                | 3                 |
| South Dakota              | 8                           | 4                | 2                 |
| Nebraska                  | 16                          | 15               | 6                 |
| Kansas                    | 21                          | 15               | 13                |
| <b>South Atlantic</b>     | <b>118</b>                  | <b>57</b>        | <b>32</b>         |
| Delaware                  | 1                           | —                | —                 |
| Maryland                  | 16                          | 5                | 4                 |
| District of Columbia      | 9                           | 3                | 2                 |
| Virginia                  | 18                          | 7                | 4                 |
| West Virginia             | 14                          | 11               | 5                 |
| North Carolina            | 22                          | 13               | 9                 |
| South Carolina            | 15                          | 9                | 5                 |
| Georgia                   | 16                          | 6                | 1                 |
| Florida                   | 7                           | 3                | 2                 |
| <b>East South Central</b> | <b>66</b>                   | <b>13</b>        | <b>6</b>          |
| Kentucky                  | 17                          | 3                | 2                 |
| Tennessee                 | 27                          | 5                | 1                 |
| Alabama                   | 13                          | 2                | 1                 |
| Mississippi               | 9                           | 3                | 2                 |
| <b>West South Central</b> | <b>73</b>                   | <b>27</b>        | <b>11</b>         |
| Arkansas                  | 11                          | 2                | 2                 |
| Louisiana                 | 13                          | 7                | 4                 |
| Oklahoma                  | 16                          | 7                | 3                 |
| Texas                     | 33                          | 11               | 2                 |
| <b>Mountain</b>           | <b>32</b>                   | <b>17</b>        | <b>8</b>          |
| Montana                   | 6                           | 3                | 2                 |
| Idaho                     | 3                           | 2                | —                 |
| Wyoming                   | 1                           | 1                | 1                 |
| Colorado                  | 9                           | 3                | 2                 |
| New Mexico                | 5                           | 2                | —                 |
| Arizona                   | 3                           | 3                | —                 |
| Utah                      | 4                           | 3                | 3                 |
| Nevada                    | 1                           | —                | —                 |
| <b>Pacific</b>            | <b>65</b>                   | <b>31</b>        | <b>20</b>         |
| Washington                | 16                          | 6                | 4                 |
| Oregon                    | 14                          | 7                | 5                 |
| California                | 35                          | 18               | 11                |
| <b>Grand Total</b>        |                             |                  |                   |
| 1945                      | 885                         | 461              | 312               |
| 1944                      | 886                         | 400              | 286               |
| 1943                      | 879                         | 398              | 267               |
| 1942                      | 860                         | 488              | 311               |
| 1941                      | 854                         | 483              | 304               |
| 1940                      | 877                         | 475              | 248               |

NOTE: Colleges and universities in all but two states replied to our questionnaire this year. Programs were reported in all but five states, a gain of one state over the preceding year. Since every state has at least one college we must work for 100 per cent representation of the United States.

TABLE 2

American Colleges and Universities which Answered the Questionnaire, Classified by Student Enrollment for the Years 1943-44 and 1944-45

| Student Enrollment                     | Number of Colleges 1944-45 | 1943-44 |
|----------------------------------------|----------------------------|---------|
| Total.....                             | 461                        | 400     |
| Colleges with:                         |                            |         |
| Fewer than 500 students .....          | 263                        | 234     |
| 500 but less than 1000 students .....  | 97                         | 72      |
| 1000 but less than 2000 students ..... | 41                         | 40      |
| 2000 but less than 3000 students ..... | 22                         | 25      |
| 3000 but less than 4000 students ..... | 14                         | 7       |
| 4000 but less than 5000 students ..... | 8                          | 4       |
| 5000 but less than 6000 students ..... | 16                         | 18      |

NOTE: Number of students enrolled in American colleges and universities co-operating in the tuberculosis survey for 1943-44 was 411,313; for 1944-45 the number enrolled was 468,016.

..... BUT NOT UNDULY OPTIMISTIC

Whatever feeling of encouragement we may obtain from the foregoing paragraphs, we must admit there is much room for improvement. Almost 50 per cent of colleges contacted still do not answer our questionnaire. Only about 35 per cent report a tuberculosis program. (Of those who replied, 68 per cent have a program.) Some of the replies could not be used for statistical purposes because they failed to include, or to elucidate upon, one or more of the items.

Reports from 149 colleges with no tuberculosis program again reveal the interesting fact that some tuberculosis is discovered even when not especially looked for (Table 3). However, considering that in colleges with no program only nine cases were discovered among 101,518 students (approximately nine cases per 100,000 students), as compared to the 389 cases found among 357,714 students attending colleges having some organized program of tuberculosis control (approximately 109 per 100,000), it is logical to assume that many students with undiscovered tuberculosis were attending those colleges having no program. Over twelve times as many cases were found in colleges where a program was in effect. Even in spite of the repeated demonstration of such a comparison, colleges continue to report "no need for tests" on their campuses.

THE TUBERCULIN TEST IS USED HERE

One hundred ninety-one colleges report the use of the tuberculin test, in some form, as part of their tuberculosis program. We believe that second only in importance to the actual finding of cases of tuberculosis is the determination of the extent of tuberculous infection. This can be done only by tuberculin testing, because the tuberculin test is the easiest and most certain method for demonstrating the presence of living tubercle bacilli in the body of an infected person. As long as we have tuberculin reactors we shall have cases of tuberculosis. The tuberculin test is therefore valuable as an index of our success in the control of this disease.

The committee has for some time recommended the use of Purified Protein Derivative (PPD), given in two doses by the method of Mantoux, as the ideal screening procedure. Nothing up to the present time has changed this decision. An intradermal method is preferred, because when tuberculin is thus injected the allergen will

TABLE 3

Cases of Tuberculosis Found in Colleges with Tuberculin Testing Programs, in Those with X-ray Programs only, and in Those with No Tuberculosis Programs, Classified by College Group and Disposition of Cases

| College group and disposition of cases                                         | Cases found in 175 colleges with tuberculin testing programs (enrollment 231,735) | Cases found in 121 colleges with X-ray programs only (enrollment 125,979) | Cases found in 149 colleges with no tuberculosis programs (enrollment 101,518) |
|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| Student body .....                                                             | 181                                                                               | 208                                                                       | 9                                                                              |
| Students who have withdrawn from college .....                                 | 108                                                                               | 73                                                                        | 10                                                                             |
| Believed to have entered sanatoriums .....                                     | 68                                                                                | 53                                                                        | 8                                                                              |
| Believed to be under treatment at home .....                                   | 36                                                                                | 20                                                                        | 2                                                                              |
| Treatment not reported .....                                                   | 4                                                                                 | —                                                                         | —                                                                              |
| Faculty, administrative staff, etc. ....                                       | 5                                                                                 | 47                                                                        | 1                                                                              |
| College food handlers .....                                                    | 4                                                                                 | 15                                                                        | 1                                                                              |
| Other college employees .....                                                  | 7                                                                                 | 21                                                                        | —                                                                              |
| Students now back in college with arrested disease, previously diagnosed ..... | 379                                                                               | 164                                                                       | 38                                                                             |

be placed in intimate contact with the tissues. Exact dosage is certain and results will be more uniform.

Reports from 175 colleges and universities with enrollment of 231,735 students could be used for the figures relating to students tested and reactors found. It should be noted that only 91,599 students were reported as having been tested. Our conclusion is that 140,136 students were not included in the tuberculosis programs of these colleges. Perhaps the majority of students not surveyed were in the upper classes, since many schools test only new students, while a few include one or more of the upper classes. The ideal is difficult of attainment, as all of us confronted with the problem well know. We shall continue to miss cases unless all students are tested, retested annually as long as they are nonreactors, and X-rayed annually whenever they are found to be reactors.

Inquiries continue to come in about the relative value of the Vollmer Patch Test. This method of testing seems to have as its main appeal the fact that it does not require the use of a needle. Certainly there is little evidence that it is as efficient. The percentage of reactors discovered by its use has been consistently less than found with our recommended testing procedure—PPD given in two doses by the Mantoux method. Some authorities believe that "significant" tuberculosis may be brought to light regardless of the method of testing. But as long as the committee contends that it has an important obligation to demonstrate the incidence of tuberculous infection (tuberculin reaction), it cannot endorse a method of testing that admittedly gives fewer reactors. If we are seeking only "significant" tuberculosis we have done nothing for the potential case of the person who harbors the germ in his body, or for the community where lives the person who transmitted this infection.

BUT SOME USE ONLY THE X-RAY

One hundred twenty-one colleges report the use of the X-ray alone as their method of choice for tuberculosis case finding. This is an increase of 37 over last year,



when 83 made this report. We do not wish to condemn this practice too severely, because, obviously, cases of tuberculosis are discovered when X-ray alone is used as the survey method. However, the committee believes that the following statements should be considered seriously, particularly if a college is contemplating a change from a tuberculin testing program to one using only the X-ray.

We have already called attention to one of these factors in discussing our obligation to demonstrate the incidence of tuberculous infection. X-ray cannot, with any degree of certainty, tell us who has and who has not been infected with the germ of tuberculosis. Many chest findings which in the past have been considered as evidence of "healed" or "calcified" tuberculous lesions have been shown to be due to causes entirely nontuberculous. Ascaris and coccidioidomycosis have been cited as causes of pulmonary calcifications. More recently *Histoplasma capsulatum* has been indicated as "probably the principal non-tuberculous cause of pulmonary calcifications."\* This finding may help to explain why so many people have been found to have pulmonary calcifications although they were nonreactors to tuberculin.

The X-ray tells us but one of two things. The chest is either clear and negative or normal or there is an abnormal finding. If a diagnosis of "normal chest" is made in a mass survey, the person to whom that chest belongs is forgotten. If the tuberculin test is used first, it offers an opportunity for the physician, even in the brief time it takes to read and record the result, to explain the significance of the result. Student health service, in addition to supplying medical aid to students, must justify itself as a function of the college or university by contributing to the education of students. Few health service procedures have a potential for health education comparable to the tuberculin test. There is far more incentive for repeated X-ray, we believe, with remembrance of a tuberculin reaction as a warning.

#### AND THE TECHNIQUES ARE DIVERSIFIED

A summary of the results obtained from the 1944-45 questionnaire brought to light many interesting findings. Some of these have been used in shaping the content of the foregoing discussion. In addition to what has already been said, we wish to call attention to the marked variation in techniques used by American colleges and universities in their tuberculosis control programs.

These variations may prove of value in the long-range study of optimum measures for an ideal program. Hundreds of colleges with total enrollment of thousands of students make an exceptional proving ground in this respect. Our aim is to keep before the American Student Health Association, and others, the trend of tuberculous infection among an appreciable segment of the age group that produces a large number of cases of this disease. By trying this and testing that, and by comparing the results of all methods with the method we have considered best, we may either change our ideal or further prove its worth.

TABLE 4  
Techniques Used in Survey Programs, Showing Number of Colleges Using Each Technique

| I. Colleges reporting tuberculin testing program                                                                                                                                                                                                                           |              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Testing Method:                                                                                                                                                                                                                                                            |              |
| Mantoux intradermal .....                                                                                                                                                                                                                                                  | 110 colleges |
| Vollmer patch test .....                                                                                                                                                                                                                                                   | 52 colleges  |
| Combination patch and Mantoux .....                                                                                                                                                                                                                                        | 5 colleges   |
| Combination of Mantoux and Corper .....                                                                                                                                                                                                                                    | 1 college    |
| Unspecified .....                                                                                                                                                                                                                                                          | 3 colleges   |
| Testing Material (exclusive of Vollmer):                                                                                                                                                                                                                                   |              |
| Purified Protein Derivative .....                                                                                                                                                                                                                                          | 54 colleges  |
| Old Tuberculin .....                                                                                                                                                                                                                                                       | 59 colleges  |
| Unspecified .....                                                                                                                                                                                                                                                          | 4 colleges   |
| Combination of PPD and OT .....                                                                                                                                                                                                                                            | 2 colleges   |
| Testing Dosage:                                                                                                                                                                                                                                                            |              |
| Two-dose technique .....                                                                                                                                                                                                                                                   | 33 colleges  |
| Single large dose .....                                                                                                                                                                                                                                                    | 8 colleges   |
| Single intermediate dose .....                                                                                                                                                                                                                                             | 32 colleges  |
| Single small dose .....                                                                                                                                                                                                                                                    | 12 colleges  |
| Single dose (strength not specified) .....                                                                                                                                                                                                                                 | 13 colleges  |
| Three-dose (U. of Calif. Med. School) .....                                                                                                                                                                                                                                | 1 college    |
| Combination of dosage .....                                                                                                                                                                                                                                                | 1 college    |
| Unspecified .....                                                                                                                                                                                                                                                          | 19 colleges  |
| Testing Routine:                                                                                                                                                                                                                                                           |              |
| All new students, negative reactors annually (or oftener) .....                                                                                                                                                                                                            | 62 colleges  |
| Freshmen and new students only .....                                                                                                                                                                                                                                       | 52 colleges  |
| All students .....                                                                                                                                                                                                                                                         | 10 colleges  |
| New students and seniors .....                                                                                                                                                                                                                                             | 12 colleges  |
| New students and negatively reacting seniors .....                                                                                                                                                                                                                         | 6 colleges   |
| Other testing routine* .....                                                                                                                                                                                                                                               | 15 colleges  |
| Unspecified .....                                                                                                                                                                                                                                                          | 14 colleges  |
| *Included nearly 15 different variations. One college even reported that all new students were both tested and X-rayed. (This could be the answer to the objection that nontuberculous chest pathology may be missed if only the chests of positive reactors are X-rayed.) |              |
| Routine for X-raying tuberculin reactors:                                                                                                                                                                                                                                  |              |
| Reactors filmed annually (or oftener) .....                                                                                                                                                                                                                                | 90 colleges  |
| Reactors filmed once only .....                                                                                                                                                                                                                                            | 48 colleges  |
| X-ray optional .....                                                                                                                                                                                                                                                       | 4 colleges   |
| Unspecified .....                                                                                                                                                                                                                                                          | 7 colleges   |
| Other X-ray routine* .....                                                                                                                                                                                                                                                 | 22 colleges  |
| *Six colleges report the use of the fluoroscope for their tuberculin reactors. We do not favor this practice because it leaves no permanent record for comparison.                                                                                                         |              |
| II. Colleges reporting X-ray program                                                                                                                                                                                                                                       |              |
| X-ray routines reported:                                                                                                                                                                                                                                                   |              |
| X-ray new students only .....                                                                                                                                                                                                                                              | 28 colleges  |
| X-ray all students .....                                                                                                                                                                                                                                                   | 20 colleges  |
| X-ray all students annually .....                                                                                                                                                                                                                                          | 15 colleges  |
| X-ray old students every two years .....                                                                                                                                                                                                                                   | 3 colleges   |
| X-ray new students and seniors .....                                                                                                                                                                                                                                       | 13 colleges  |
| X-ray optional for students .....                                                                                                                                                                                                                                          | 8 colleges   |
| Routine not reported .....                                                                                                                                                                                                                                                 | 30 colleges  |
| X-ray new students, optional for others .....                                                                                                                                                                                                                              | 2 colleges   |
| Fluoroscope used for screening process* .....                                                                                                                                                                                                                              | 2 colleges   |
| *One of these colleges X-rays students whose fluoroscopic findings are positive. (This procedure partially overcomes our objection to relying solely on the fluoroscope.)                                                                                                  |              |

We have already suggested that tuberculosis control work, especially when tuberculin testing is used, enhances the role of the health service as an educational function of the college or university. Ending the report of this committee for the year 1938-39 was the slogan "Educate the educators concerning tuberculosis." Education is a continuing process and that slogan must be proclaimed repeatedly. It should also be extended to include health service personnel, especially the directors of health service programs.

What we know about tuberculosis is not static, it is continuously changing. We now know, for instance, that the diagnosis of tuberculosis in its minimal stages—which is the best time to discover the disease for all concerned—does not depend on our eliciting a history of suggestive symptoms or of finding obvious physical signs on examination. Discovery depends on looking for this disease in apparently healthy people. It is best accomplished by tuberculin testing everyone and X-raying the

\*Carroll E. Palmer, M.D.: Public Health Reports, 60: 513 (May 11), 1945.

chests of reactors, repeating this process annually. Several schools X-ray reactors only if advised to do so by the college physician *or if desired by the reactor!* No—our job of health education is not complete if we end it with attempts to “educate the educators.”

NON-STUDENT PARTICIPATION NEEDS TO BE ENCOURAGED

A number of colleges, though not nearly enough, we think, are including non-student members of the campus community in their tuberculosis program. It has for some time been the opinion of this committee that if a program of tuberculosis control is attempted on any college campus it is a mistake to neglect anyone. Tuberculosis, a contagious disease, is found in all age groups and in all walks of life. We cannot hope to protect our students from tuberculous infection if we are not sure of the absence of this disease in their instructors; in the maid who cleans their rooms; in the house mother in the rooming house or dormitory; in the food handler who prepares or serves their food.

AND FINALLY . . . . .

The past findings of the Committee on Tuberculosis of the American Student Health Association have been observed and quoted by many other agencies interested in the control of tuberculosis. Our organization has set standards in the control of this disease, and remarkable results have been produced. In order to maintain our record and to improve it we must not slacken our efforts.

Enrollments have begun to increase, and predictions are that an unprecedented number of students will be entering our colleges and universities. Our present facilities will be taxed to the limit, and there is already talk of the necessity for establishing new colleges. Some of us may believe that the majority of these new students, and old ones returned, will already have their tuberculosis status determined. This is especially so regarding veterans who have had an X-ray on separation from the service. However, we must bear in mind that reports have been received of cases missed on separation from the service. Other veterans will develop tuberculosis as a result of exposure to the disease while in service. All new students, as well as former students who are now returning to our campuses, should enter on exactly the same basis the tuberculosis program of the college they

decide to attend. Ours is an all-out program of tuberculosis control.

We must not end this report without again thanking the National Tuberculosis Association for the time and effort they have contributed to make this survey and former ones successful and profitable. We should like especially to call attention to the appointment of Mr. Arthur H. Stiefel, Assistant in Health Education of the National Tuberculosis Association, to the special job of assisting your committee in any way possible.

Respectfully submitted,

COMMITTEE ON TUBERCULOSIS:

- PAUL B. CORNELY, M.D.
- J. P. RITENOUR, M.D.
- ORVILLE ROGERS, M.D.
- MAX L. DURFEE, M.D., *Chairman*

ADVISORY COMMITTEE:

- J. BURNS AMBERSON, M.D.
- ESMOND R. LONG, M.D.
- CHARLES E. LYGHT, M.D.
- J. A. MYERS, M.D.
- HENRY C. SWEANY, M.D.

. . . . .

*Membership of the Committee on Tuberculosis:*

- PAUL B. CORNELY, M.D.  
Howard University, Washington, D. C.
- J. P. RITENOUR, M.D.  
Pennsylvania State College, State College, Pennsylvania
- ORVILLE ROGERS, M.D.  
Yale University, New Haven, Connecticut
- MAX L. DURFEE, M.D., *Chairman*  
Iowa State Teachers College, Cedar Falls, Iowa

*Advisory Members:*

- J. BURNS AMBERSON, M.D.  
Bellevue Hospital, New York City
- ESMOND R. LONG, M.D.  
The Henry Phipps Institute, Philadelphia
- CHARLES E. LYGHT, M.D.  
National Tuberculosis Association, New York City
- J. A. MYERS, M.D.  
University of Minnesota, Minneapolis
- HENRY C. SWEANY, M.D.  
Municipal Sanatorium, Chicago

MEET OUR CONTRIBUTORS

(Continued from page 168)

DR. WILLIAM E. PROFFITT has practiced in Minneapolis for seven years, with two years out for military service. He is a graduate of the University of Minnesota (B.A., M.B., and M.D., 1939), with graduate work on the pediatric staff of Minneapolis General Hospital. He is secretary-treasurer of the St. Barnabas Hospital staff. He is a member of the “M” Club of the University of Minnesota for athletics.

DR. OSWALD S. WYATT, co-author of the article on giant-cell tumor of bone, practices in Minneapolis.

DR. STUART LANE AREY, who practices pediatrics in Minneapolis, is a graduate of the University of Minnesota (M.B., 1931, M.D., 1932), with graduate work at Children’s Memorial Hospital, Chicago. He is a member of the American Academy of Pediatrics, the Northwestern Pediatric Society, and the American Medical Association.



## News Items

### NEWS FROM MINNESOTA

Dr. Christopher Graham, for many years an associate of the Doctors Mayo, observed his 90th birthday on April 3, in Rochester, where, except for a few years, he has spent his entire life. Dr. Graham retired from medical practice several years ago and became a breeder of Holstein cattle, and at one time owned the world's champion milk producer. Dr. Graham, a graduate of the University of Minnesota, was a member of the first football team of the university in the fall of 1886, and was also the first intern at St. Mary's Hospital in Rochester.

.....

Dr. Kano Ikeda of the Charles T. Miller Hospital, St. Paul, addressed members of the Arrowhead Society of Medical Technologists on April 27.

Dr. E. G. Howard has resumed practice in Mapleton after service with the Navy.

Dr. R. W. Dowidat, physician and surgeon, has opened an office in Richfield. Formerly in Edina and more recently in service, he is the first physician to locate in Richfield.

Fourteen immunization clinics were held in Nobles County and Fulda during the week of April 5.

.....

Dr. Maurice B. Visscher of the University of Minnesota spoke on "Medicine and Contemporary Civilization" on April 10 at the university, as part of the symposium on Civilization in the United States.

Some fifty Minnesota physicians, mostly World War II veterans, began a 12-week course in surgery at the University of Minnesota on April 8.

Dr. A. V. Stoesser, associate professor of pediatrics at the University of Minnesota and chief of the pediatric service, Minneapolis General Hospital, spoke on "Allergy in Children" at the Pediatric Postgraduate Conference held April 15-20 at the University of Texas School of Medicine, Galveston.

.....

The 27th annual meeting of the Tuberculosis and Health Association of St. Louis County was held in Duluth April 16. Dr. Hilbert Mark of Minneapolis was guest speaker. Paul H. Van Hoven of Duluth was named president, Dr. William King, Eveleth, secretary, and Dr. Mario Fischer, treasurer.

Dr. A. M. Mulligan has resumed practice in Brainerd after five years in the Army. He will have offices with Dr. M. P. Gerber.

The house of delegates of the Minnesota State Medical Association will act on the proposed state-wide pre-paid medical care plan May 20, according to Rufus R. Rosell, secretary. At the meeting of the association in St. Paul, May 20-22, the planning and building of hospitals for future needs will receive attention. Dr. Viktor O. Wilson of the University of Minnesota is scheduled to report on the state-wide hospital survey.

The 16th annual meeting of the Southern Society of Clinical Surgeons was held at Rochester, April 16-18. The group visited the University Hospital, Minneapolis, April 19.

.....

The northern border community of Karlstad, which is taking heroic measures to attract a resident physician, has encountered difficulties in building a hospital and has postponed construction. However, Karlstad now offers to remodel an eight-room house, with office and a small hospital ward in addition to living quarters, to suit the convenience of the doctor accepting the position.

Dr. F. C. Anderson of Cloquet will take over the practice of Dr. Paul Swedenburg in Little Falls. He will be associated with Drs. R. V. Fait and Douglas L. Johnson.

The 1947 convention of the Central District Association of the American Association for Health, Physical Education, and Recreation will be held in Minneapolis.

Dr. Myron M. Weaver, assistant dean of the University of Minnesota Medical School, addressed the Women's Auxiliary of the St. Louis County Medical Society May 7 on "Medical Practice in the Changing Social Order."

Dr. Roy Diessner of Waconia, until recently a major in the Army Medical Corps, has reported to the Mayo Clinic to take up a three-year scholarship in internal medicine.

Dr. Arch H. Logan, staff member of the Mayo Clinic for more than 35 years, has retired from active practice.

Dr. Earl Wood, physician at the Mayo Foundation, will go to Europe in the company of another Foundation physician to make a study of scientific laboratories in Germany, Switzerland, Holland, and England, and to do research for the Army Air Corps.

Dr. John J. Bittner of the University of Minnesota has been elected vice president of the American Association for Cancer Research.

### NEWS FROM MONTANA

The JOURNAL LANCET is in receipt of an attractive booklet honoring Dr. W. F. Cogswell and commemorating his 33 years of distinguished service as executive secretary of the Montana State Board of Health. The dedication reads in part: "In the history of Montana and the Northwest there are many stories of pioneers. Most of these were pioneers of the land, but a few were pioneers in science and medicine. Dr. Cogswell was one of these. His great foresight was a driving factor in overcoming the prejudice against establishing a laboratory in the Bitter Root Valley to find the true nature of Rocky Mountain Spotted Fever and to contribute to its prevention and cure."

.....

Dr. C. E. Anderson writes from his office in the Medical Arts Building in Great Falls to correct a news item in our March issue. Far from retiring, Dr. Anderson remarks, he is busier than ever, and has recently taken an associate, Dr. James J. Bulger, a graduate of McGill University School of Medicine who was discharged from the Army as a captain early this year after three years of service.

Dr. J. W. Garberson of Miles City has been elected president of the Montana State Board of Medical Examiners, succeeding Dr. C. H. Nelson of Billings. Dr. P. E. Kane, Butte, was elected vice president, and Dr. Otto Klein of Helena was re-elected secretary.

A new clinic has been formed in Havre, in which Drs. Charles Houtz, Chester Lawson, D. S. MacKenzie, Jr., and David Almas are associated.

Dr. Joseph H. Brancamp has been appointed physician for the Butte Aerie No. 11, Fraternal Order of Eagles.

Dr. Robert F. Miller has opened an office in Columbia Falls, which had been without a resident physician for several months.

Dr. F. M. Knierim has resumed his eye, ear, nose, and throat practice in Glasgow.

Awards of merit for professional services contributed to the selective service program have been awarded in Helena to Drs. A. R. Foss, A. T. Haas, and L. W. Brewer of Missoula and Drs. B. A. Place and B. L. Pampel of the State Hospital at Warm Springs. The awards were presented by Governor Sam C. Ford.

#### NEWS FROM NORTH DAKOTA

A clinic for crippled children was held April 15 at Williston, with Dr. R. E. Dyson, pediatrician, Dr. J. C. Swanson, orthopedic surgeon, and Beatrice L. Fugina, physiotherapist, in attendance. The same group was in charge of a clinic held at Mandan on April 13. The annual orthopedic clinic for crippled children sponsored by the Elks Lodge and the Public Welfare Board was held at Dickinson May 4, with Dr. H. J. Fortin, orthopedic surgeon, Dr. B. A. Mazur, pediatrician, and Marie Bohnsack, physiotherapist, in attendance. These clinics are part of a series of ten being held in the state from April 13 to June 1.

.....

The Fargo Public Health Laboratory has been moved to a new location at 6 Roberts Street. Dr. E. M. Watson, city health officer, supervises the laboratory, which is in direct charge of Geraldine Clarey, medical technician, with James G. Coe as sanitarian. The laboratory tests milk and water for counties in the southeastern part of the state as well as for the city of Fargo.

The new North Dakota physicians' service has enrolled several hundred members since its inauguration March 4, according to Donald E. Eagles, executive director.

Dr. E. A. Canterbury addressed St. Michael's alumnae nurses at Grand Forks in March on techniques and conditions in Army hospitals overseas.

Drs. C. G. Johnson and Ted Keller of Rugby, both veterans, have been appointed by the Veterans Administration to give medical care to veterans in their community.

Dr. A. C. Orr of Bismarck has been appointed health officer for Burleigh County. He was formerly director of the state division of maternal and child hygiene.

Dr. Howard S. Cowley of Devils Lake, recently returned from Army service, has gone to Louisville, Kentucky, to study neurosurgery with Dr. R. Glen Spurling.

The proposed medical center at the University of North Dakota was discussed at a meeting held in Grand Forks on March 23. Dr. John H. Moore outlined the benefits of the center in relation to state-wide medicine, and John A. Page, director of the center, discussed aims, probable costs, and facilities.

Dr. M. W. Garrison has resumed practice in Minot following 3½ years with the Army Medical Corps, in which he held the rank of major.

J. Herbert Schriver, formerly of St. Cloud, Minnesota, has taken the post of X-ray technician at St. John's Hospital, Fargo, following 4½ years with Navy hospitals, chiefly in X-ray work.

#### NEWS FROM SOUTH DAKOTA

The Yankton District Medical Society met at Vermillion April 23 with about 40 present. Dr. Richard L. Egan of Creighton University School of Medicine spoke on "Thiouracil in the Management of Hyperthyroidism," and Professor Orin M. Lofthus of the School of Medicine at Vermillion on "Consideration of the Rh Factor and Its Relation to Erythroblastosis," with discussion by Dr. R. H. McBride of Sioux City, Iowa. Dr. William Duncan of Webster, president of the South Dakota State Medical Association, was a guest. Dr. E. J. Abts and Dr. C. B. McVay, both of Yankton, are new members.

Dr. Otto N. Raths, Jr., formerly of St. Paul, has begun practice in association with his father-in-law, Dr. F. C. De Vall, at the De Vall Hospital in Garretson. He served three years with the Army Medical Corps.

The Commercial Club of Tripp is endeavoring to secure a physician for the community.

Dr. Joseph Smith, recently discharged from the Army after service in both the European and Asiatic theaters, has come with his family from Indianapolis to Hot Springs to become chief of the neuropsychiatric service of the Battle Mountain Veterans Facility.

Dr. G. B. Sundquist, son of Mr. and Mrs. J. A. Sundquist of Mitchell, has completed his internship at Milwaukee County General Hospital, and has been commissioned a first lieutenant in the Army Medical Corps.

Dr. James L. Ryan, formerly of Sleepy Eye, Minnesota, and Dr. Mark Graeber of Aberdeen have located in Eureka. Dr. Roy Christie, who has practiced in Eureka since 1940, will locate somewhere in the Lake Michigan area.

St. Mary's Hospital, Pierre, has raised nearly enough funds by voluntary contribution to finance the purchase of an electrocardiograph.

Plans are completed to open the hospital at Philip as soon as necessary repairs have been made and a physician is found to locate there, according to Ernest Clements, new president of the hospital association.

Dr. O. S. Randall, executive director of the South Dakota Field Army of the American Cancer Society, has appointed Dr. W. F. Bollinger of Parkston, Dr. George E. Burman of Carthage, Dr. E. H. Grove of Arlington, Dr. C. E. Kemper of Viborg, and Dr. C. H. Delaney of Canton as educational directors to work with their county commanders of the Field Army.



## HOT OR COLD



W

hen patients are given Cal-C-Tose, the physician is assured of their cooperation because they actually enjoy taking vitamins in this palatable form. Either hot or cold, Cal-C-Tose makes a tempting beverage whose delicious chocolate flavor carries no suggestion of medication. Cal-C-Tose supplies generous amounts of vitamins A, B<sub>1</sub>, B<sub>2</sub>, C, and D, and dibasic calcium phosphate in a form acceptable even to fastidious patients. Available in 12-oz and 5-lb containers. . . .

HOFFMANN-LA ROCHE, INC. • ROCHE PARK • NUTLEY 10, NEW JERSEY

THE PLEASANT WAY TO TAKE VITAMINS

**CAL-C-TOSE** *Roche*

## Classified Advertisements

### ASSOCIATES WANTED

Thirty-four year old physician, with two years of general practice and over four years service, desires association with one or two doctors doing surgery. Licensed in North Dakota. Address Box 840, in care of this office.

### PRACTICE FOR SALE

North Dakota physician retiring after 39 years in same town wishes to sell practice and office equipment. Only physician in presently booming town of 1350 located on main line of Northern Pacific. Extensive territory, good roads. Home suitable for office and residence also for sale. Address Box 838, care of this office.

### ASSISTANCE AVAILABLE

Aznoe's, established in 1896, has available a number of well trained physicians (diplomates of the specialty boards, industrial physicians and surgeons, general practitioners, psychiatrists, tuberculosis specialists and residents). For histories write Ann Woodward, Aznoe's-Woodward Medical Personnel Bureau, 30 North Michigan Ave., Chicago 2, Illinois.

### LABORATORY TECHNICIAN WANTED

Wanted: A laboratory technician, preferably registered, to be an assistant in our general laboratory which serves twelve doctors in the Clinic. The position may be regarded as permanent. The pay will be satisfactorily arranged. Write Dakota Clinic, 702 First Avenue South, Fargo, North Dakota.

### PHYSICIAN WANTED

Physician for first-aid dispensary, John Morrell & Co. Contact Dr. S. A. Donahoe, Sioux Falls, South Dakota.

Doctor wanted to fill in as attending physician to special hospital in Minneapolis. Recent graduate. Discharged serviceman or other. Available six months or longer. Must have Minnesota registration. Good salary. Address Box 841, care of Journal Lancet.

## Advertisers' Announcements

### PEDIATRIC ANTIQUES ON TOUR

It has been well said that more progress has been made in pediatrics during the past three or four decades than in all previous time. As applied to the feeding part of pediatrics, the Mead Johnson Collection of Pediatric Antiques bears eloquent witness to the great strides made. Without such evidence, it would be difficult to imagine our own grandparents being fed from some of these odd-shaped utensils that defied thorough cleansing. To be sure, sterilization and pasteurization were not then in vogue. Not all babies received breast milk in abundance. In the days when wet nurses were common, some of these enterprising women literally did a wholesale business, managing to nurse three or four infants.

The baby's cereal of a century ago was simply stale bread lightly boiled in water, wine, or beer. Butter or sugar might be added, but the use of milk was regarded as fraught with danger. It was thought, according to Dr. T. G. H. Drake, that "Milk might bring on the watery gripes, or the infant might imbibe with the milk the evil passions and frisky habits of the animal supplying the milk."

The collection has been growing in size and scope and is of increasing interest for teaching purposes. The destruction of original sources during the war tends to add to the value of these objects. The collection now goes on an annual pilgrimage to colleges, hospitals, museums, libraries, and other institutions of learning. Arrangements may be made for "stopovers" upon application to the curator, Mead Johnson & Company, Evansville 21, Indiana.

*a doctor's  
prescription*

(38,400 grains fishing tackle,  
50,000 grains sporting togs.  
Blend with lake and sunshine.  
Take frequently throughout  
the summer and fall.)

If you have a prescription like this to fill — better drop in and see us. We don't supply the lake or the sunshine, but the other ingredients we have in number and quality. Our new supply of summer and fall sporting goods has just arrived. We would appreciate an opportunity to show it to you.

## JOHNSON-GOKEY SHOP

*Special Sporting Equipment*

525 Second Avenue South

Minneapolis, Minn.





**FAMOUS SWISS SCIENTISTS VISIT  
HOFFMANN-LA ROCHE**

Dr. Leopold Ruzicka, winner of the 1939 Nobel Prize in Chemistry, and Dr. Tadeus Reichstein, the first man to synthesize vitamin C, who are here to study American scientific developments, recently visited the Roche Research Laboratories of Hoffmann La Roche, Inc., pharmaceutical manufacturers of Nutley, N. J. Drs. Ruzicka and Reichstein will visit other leading research institutions and lecture before many scientific groups during their six to eight weeks' stay in the United States.

These two famous Swiss scientists are here at the invitation of the American-Swiss Foundation for Scientific Exchange—an organization founded to tie together again the scientific bonds of the two countries, severed during the war years, by fostering visits of scientists of one country to the other. The American Cancer Society also participated in the invitation to Drs. Ruzicka and Reichstein to visit our country because of their extensive knowledge of steroids—organic chemical substances which may play an important role in solving some of the mysteries of cancer.

**NEW SAFER MEDICATION WITH  
SULFONAMIDES**

The dangers of toxic reactions to the kidneys and crystal formation in the urine, frequently seen when sulfathiazole or sulfadiazine is administered, has been greatly reduced by the application of a recently discovered phenomenon that the total toxic and crystallizing properties of a combination of two sulfonamides would be no greater than the toxic and crystallizing properties of one of them in the combination.

Proven by clinical trial, this means that the incidence of kidney toxicity and urine crystal formation with a combination of sulfathiazole and sulfadiazine would be very much less than if an equivalent amount of sulfathiazole or sulfadiazine were administered singularly. At the same time, the clinical therapeutic results in all conditions amenable to sulfadiazine or sulfathiazole therapy is often higher with the combination.

Combinations of sulfathiazole and sulfadiazine, known as Combisul-TD are now produced by the Schering Corporation of Bloomfield, N. J. For the safer treatment of meningitis, Combisul-DM, a combination of sulfadiazine and sulfamerazine is likewise available.

**DISTRIBUTORS OF DIASPORALS**

The Doak Company for over 25 years has been specializing in dermatological and colloidal preparations. The promotion of their preparations has been strictly ethical and solely to the medical profession. The merit of this company's chemical formula will be proved by its clinical application. Samples on request. Doak Co., Inc., 2132 E. 9th St., Cleveland, Ohio.

**WYETH CUTS PRICE OF PENICILLIN  
TABLETS 50 PER CENT**

PHILADELPHIA, PA.—First benefit of Wyeth Incorporated's penicillin expansion program, announced early in 1946, has materialized in the form of a 50 per cent reduction in the price of its penicillin tablets, "Penioral", effective April 1, it was announced here today.

New net price for "Penioral" is now \$2.25 for 12 tablets—each containing 25,000 units. The new price brings the cost of penicillin in the more convenient tablet form down to the same price level as an equivalent number of units of injectible penicillin.

Result of the price reduction will be to make more penicillin in oral form available to a greater number, which is the overall policy objective of the Wyeth penicillin program.

**PHILCAPCO'S  
RHEUMANS**

|                        |     |
|------------------------|-----|
| Macrotin .....         | 1/4 |
| Phytolaccin .....      | 1/6 |
| Strontium Salicy ..... | 5   |

In rheumatism and gout it acts remarkably well, allaying the gastric irritability and promptly relieving the pain and fever. It improves digestion and corrects and prevents fermentation and flatulence.

*Samples and Literature on request*

A product of

**Philadelphia Capsule Co., Inc.**

Philadelphia, Penna.

**Dependable Estrogen Therapy  
with**

**Schiffelin  
BENZESTROL**  
(2, 4-di (p-hydroxyphenyl) .3-ethyl hexone)



Schiffelin BENZESTROL Tablets:  
Potencies of 0.5, 1.0, 2.0 and 5.0 mg.  
Bottles of 50, 100 and 1000.

Schiffelin BENZESTROL Solution:  
Potency of 5.0 mg. per cc. In 10 cc.  
Rubber Capped Multiple Dose Vials

Schiffelin BENZESTROL Vaginal Tablets:  
Potency of 0.5 mg. Bottles of 100

For the relief of menopausal symptoms, for senile vaginitis, for the suppression of lactation, and as a supplementary agent in the treatment of gonorrheal vaginitis in children, estrogen therapy has proved highly beneficial. A dependable means of administering such therapy may be found in Schiffelin BENZESTROL.

This synthetic estrogen has proved valuable in effecting more rapid and gratifying results where estrogen therapy is indicated.

Schiffelin BENZESTROL is available for oral, parenteral and local administration.

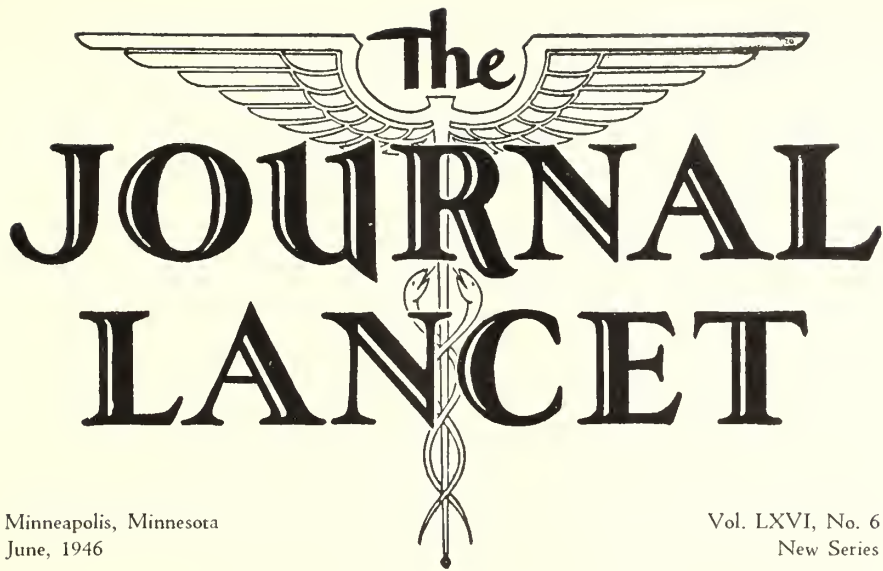
*Literature and Sample on Request*

**Schiffelin & Co.**

20 COOPER SQUARE, NEW YORK 3, N.Y.

Pharmaceutical and Research Laboratories





The  
JOURNAL  
LANCET

Minneapolis, Minnesota  
June, 1946

Vol. LXVI, No. 6  
New Series

## Perforation of Choledochus Cyst with Biliary Peritonitis

*Report of a Case Submitted to a Three-Stage Operation*

H. M. Blegen, M.D., F.A.C.S.

and

Esther L. Boyer, Ph.D., M.D.

Missoula, Montana

CONGENITAL cystic dilation of the common duct, otherwise known as choledochus cyst or diverticulum of the common duct, is a rare but interesting anomaly. Shallow, Eger, and Wagner<sup>3</sup> in a comprehensive review of the literature were able to find only 175 cases reported prior to 1943.

### ETIOLOGY

Although the etiology is as yet obscure, the condition is thought to result from a congenital weakness in the wall of the duct. Hutchins and Mansdorfer<sup>2</sup> point out the similarity between this condition and congenital hypertrophic pyloric stenosis. The localized nature of the dilation differentiates it from the diffuse dilation associated with common duct obstructions. In the majority of cases the distal end of the duct is normal, although in a few cases angulation, kinking, and stenosis have been described.

### PATHOLOGY

The cyst forms a retroperitoneal mass in the right upper quadrant of the abdomen below the liver, displacing the duodenum and pancreas anteriorly, the colon inferiorly, and the gallbladder laterally. The size of the mass may vary from that of a walnut to that of a full-term pregnant uterus, containing as much as eight liters

of biliary fluid. This fluid may be clear, white, or purulent, depending on the degree of stasis and infection. The wall of the cyst is thickened and composed of a tough, dense, fibrous connective tissue with no epithelial lining. It is covered with a vascular retroperitoneal connective tissue. Usually the gallbladder and the upper end of the common duct are normal in size, or only slightly dilated. Three openings are found within the cystic cavity: the entrance of the common duct above, the lower end of the common duct below, and the cystic duct on the right. Occasionally the hepatic ducts may enter the upper pole separately.

### SYMPTOMS

The signs and symptoms are usually minimal until the second or third decade of life. Of the reported cases, three fourths were under 25 years of age and four fifths were female. Pain was present in 59 per cent of the cases, jaundice in 70 per cent, and a palpable abdominal mass in 77 per cent. When this triad occurs in a young female a careful diagnosis should be made. Fever was absent in the majority of cases, but when present was a sign of infection within the cyst, hepatitis, cholangitis, or overlying peritonitis. In advanced cases the liver becomes cirrhotic, with associated ascites and splenomegalia.

### TREATMENT

Unless the anomaly is corrected by surgery almost all these individuals eventually die of biliary obstruction, infection, or their sequelae. In the reported cases the

The authors are indebted to Dr. A. R. Kintner and Dr. R. D. Weber for consultation and advice during the treatment of this case, and also to Mr. Bernard Hoffman of Montana State University, who prepared the illustrations.

mortality was 51 per cent. It is interesting to note that in those with the correct preoperative diagnosis the mortality was 30 per cent, in contrast to 62 per cent for those in which the true nature of the anomaly was not suspected. Table 1 summarizes the various surgical procedures performed in the 175 cases analyzed by Shallow, Eger, and Wagner.

TABLE 1  
Surgical Procedures in 175 Cases Analyzed by  
Shallow, Eger, and Wagner

| Operation                                                                                                                    | Cases | Deaths | Mortality<br>(Per Cent) |
|------------------------------------------------------------------------------------------------------------------------------|-------|--------|-------------------------|
| <i>Anastomosis without Resection of Cyst</i>                                                                                 |       |        |                         |
| Immediate anastomosis of cyst to<br>gastrointestinal tract<br>(one case also had gastroenterostomy<br>and enteroenterostomy) | 48    | 13     | 27                      |
| Immediate anastomosis of gallbladder<br>to gastrointestinal tract                                                            | 4     | 0      | 0                       |
| Elastic drain tube between cyst and<br>duodenum                                                                              | 1     | 1      | 100                     |
| Drainage of cyst followed by secondary<br>anastomosis of cyst to gastrointes-<br>tinal tract                                 | 23    | 7      | 30                      |
| <i>Anastomosis and Resection of Cyst</i>                                                                                     |       |        |                         |
| Cyst excised with primary anastomosis                                                                                        | 8     | 3      | 37                      |
| Cyst excised with secondary anastomosis                                                                                      | 2     | 1      | 50                      |
| Excision of cyst with drainage,<br>no anastomosis                                                                            | 10    | 9      | 90                      |
| Partial excision of cyst wall                                                                                                | 2     | 1      | 50                      |
| <i>Miscellaneous</i>                                                                                                         |       |        |                         |
| Aspiration                                                                                                                   | 5     | 5      | 100                     |
| Drainage of cyst, with or without<br>cholecystectomy                                                                         | 40    | 33     | 83                      |
| Marsupialization                                                                                                             | 4     | 4      | 100                     |
| Other procedures                                                                                                             | 6     | 4      | 66                      |
| No surgical treatment                                                                                                        | 22    | 21     | 95                      |
| Total                                                                                                                        | 175   |        |                         |

Aspiration, marsupialization, and simple drainage of the cyst are mentioned, only to be condemned. These procedures all carried a prohibitive mortality and were usually performed when the true nature of the anomaly was not suspected.

Best results were obtained by primary anastomosis of the cyst or gallbladder to the gastrointestinal tract. The only objection to this procedure is the presence of the dilated duct, which acts as a reservoir for infected bile and regurgitated intestinal material, with an ever-present danger of ascending biliary infection. Swartley<sup>4</sup> minimizes this danger and offers evidence to show that after anastomosis the cyst will decrease considerably in size.

The best procedure physiologically is one in which the cyst is excised and the upper end of the common duct anastomosed to the gastrointestinal tract. In the eight cases in which this operation was accomplished the mortality was 37 per cent. In view of the recent advances in the surgical technique of anastomosis between the biliary system and the gastrointestinal tract, as developed in the treatment of common duct strictures and in carcinoma of the head of the pancreas, there is reason to believe that such radical operations will be done in future with increasing frequency, with reasonable mortality and a decrease in morbidity.

Statistics indicate that in uncomplicated cases a one-stage operation is preferable. Multiple-stage procedures are reserved for cases in which complications have occurred or in which the operative risk is great. Multiple-stage operations usually consist of preliminary external drainage of the biliary tract, followed by secondary anastomosis performed at a later date. The mortality is high because of the increased technical difficulties in performing the anastomosis and also because of the difficulty in maintaining adequate nutrition in the presence of prolonged external drainage of bile.

The following case is of interest because spontaneous perforation of the cyst occurred, with generalized peritonitis which localized to form a huge right-sided biliary abscess. After drainage of the abscess an unsuccessful attempt was made to correct the anomaly by two-stage operation; this operation may be of value in treating certain selected cases where an immediate one-stage procedure is not feasible. The first stage consisted of external drainage of the hepatic duct with a T tube, partial excision of the cyst, and the utilization of the gallbladder in the formation of an external biliary fistula. The final stage consisted of an anastomosis between the gallbladder and the duodenum.

#### REPORT OF A CASE

The patient, a 17-year-old girl, had always been in excellent health before her present illness. Her past history was negative, except that in 1928, when she was 2 years old, her parents were informed by their family physician that the child had an enlarged liver. She first became ill on or about February 18, 1945, with mild abdominal cramps, nausea, and vomiting, followed by a slowly progressive jaundice. After the first two days of the illness she had no appreciable pain. The stools were clay colored and the urine dark. She had an intermittent fever ranging from 100° to 102°. A mass palpable in the right upper quadrant of the abdomen was thought to be an enlarged liver. Her parents had both had gastroenteritis the preceding week, and there had been several cases of catarrhal jaundice in the community. A diagnosis of catarrhal jaundice or infectious hepatitis was made and therapy was instituted.

After admission to the hospital on March 6 she gradually improved. Her temperature gradually dropped, ranging from 99° to 100°. Her serum bilirubin dropped from 21 to 16 mg., and the mass in the right upper abdomen was said to decrease somewhat in size. Between March 20 and March 27 she became progressively worse. Her temperature rose steadily to 105°, with a pulse of 140. She developed increasing abdominal pain, with marked abdominal distention and increased jaundice.

Physical examination on March 27 revealed her to be critically ill, with a temperature of 105°, pulse 140, and respiration 24. The skin was jaundiced 3 plus. The pupils were equal and reacted to light and accommodation. The tonsils had been removed. The teeth were in good condition. Examination of the neck and extremities was essentially negative. The lung fields were clear and the heart was essentially negative except for tachycardia. The abdomen was much distended, with shifting dullness in the flanks and tympani in the midportion



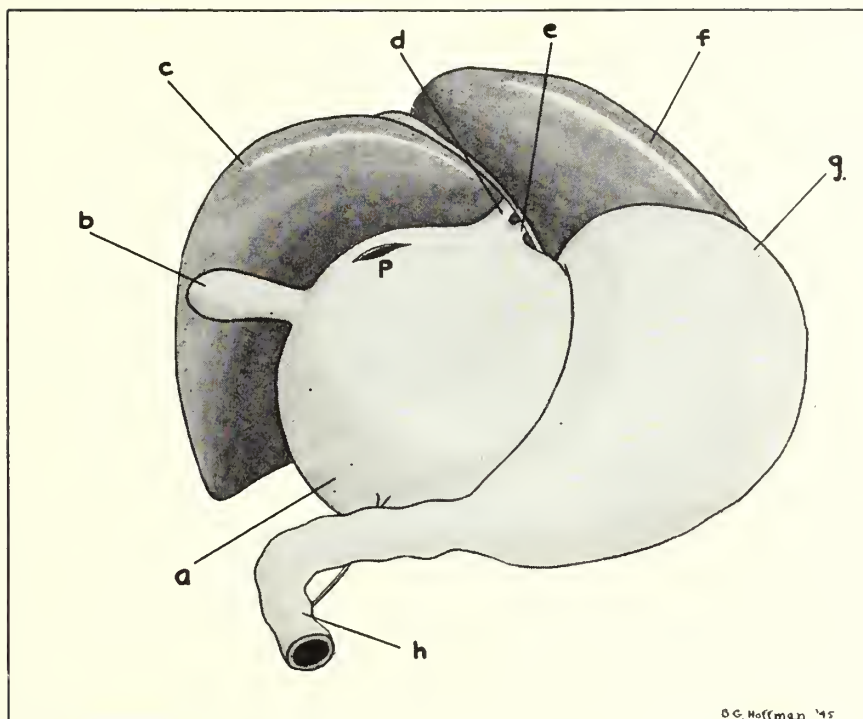


Fig. 1. Diagram of choledochus cyst: a, cyst; b, gallbladder (actually the cystic duct was of normal size, but it entered the cyst at this point); c, liver; d, e, hepatic ducts; f, T tube; g, stomach; h, duodenum. P, perforation.

anteriorly. There was generalized tenderness, but very little rigidity. A sensation of fullness was present in the right upper abdomen, but because of distention no definite mass could be outlined. Rectal examination was essentially negative, except for a soft fullness related to the abdominal distention.

The red blood count was 3,330,000, hemoglobin 62 per cent, and white blood count 22,400 with 88 per cent PMNs. The serum bilirubin was 25 mg., with an immediate direct van den Bergh reaction. Blood urea was 38 mg. Sedimentation rate was 113 mm. in one hour. The prothrombin time was reported as 105 per cent, the bleeding time 2 minutes, and clotting time 3 minutes. (She had had several transfusions and large doses of vitamin K.) There was a false positive Kahn reaction, but a negative Wassermann and Mazzini. The urinalysis was essentially negative, except for a 3 plus reaction for bilirubin. There was an absence of bile in the stool. Serum protein was 6.2 gm. Flat plate of the abdomen revealed a small amount of gas in the colon. There was no evidence of distended small bowel. There was a diffuse opacity that resembled intraperitoneal fluid.

Diagnostic paracentesis was performed and 1700 cc. of dark-green thick bile were obtained. After release of this fluid the abdomen became soft and scaphoid. A smooth mass could be palpated in the right upper quadrant of the abdomen, extending four fingers below the costal margin. The mass did not move with respiration. At this time it was felt that the patient probably had a ruptured gallbladder as the result of some form of common duct obstruction. Because of her critical

condition and the relief obtained from paracentesis, laparotomy was deferred.

In the period between March 27 and April 17 she gradually improved. Her temperature continued to range from 101° to 104° and her pulse from 120 to 140. Her serum bilirubin dropped to 4.2 mg. Paracentesis was performed every three or four days; 3000 to 3500 cc. of bile were removed on each occasion. On three occasions cultures of this fluid were all reported negative. After paracentesis the abdomen would become scaphoid, but it would gradually refill in about three days. The peritonitis gradually walled off to form a huge right-sided abscess, extending from the diaphragm to the pelvis. Peristaltic activity became evident in the bowel, which was displaced to the left. On April 13 a catheter was placed in the abscess cavity through the paracentesis wound in the right lower quadrant, and by means of Wangenstein suction continuous biliary drainage was maintained.

*First Operation (April 17). Incision and drainage of biliary abscess.* The operation was performed in the patient's room under local anesthesia. The abscess cavity was entered through a right subcostal incision 3 inches long. The liver could be felt above and a large cavity below, extending down toward the pelvis. In order to obtain more adequate drainage a second right McBurney incision was made in the right lower quadrant. Over 3000 cc. of biliary fluid were obtained by suction. Penrose drains were placed through both incisions.

Following the operation the patient did fairly well for three days, during which time her temperature

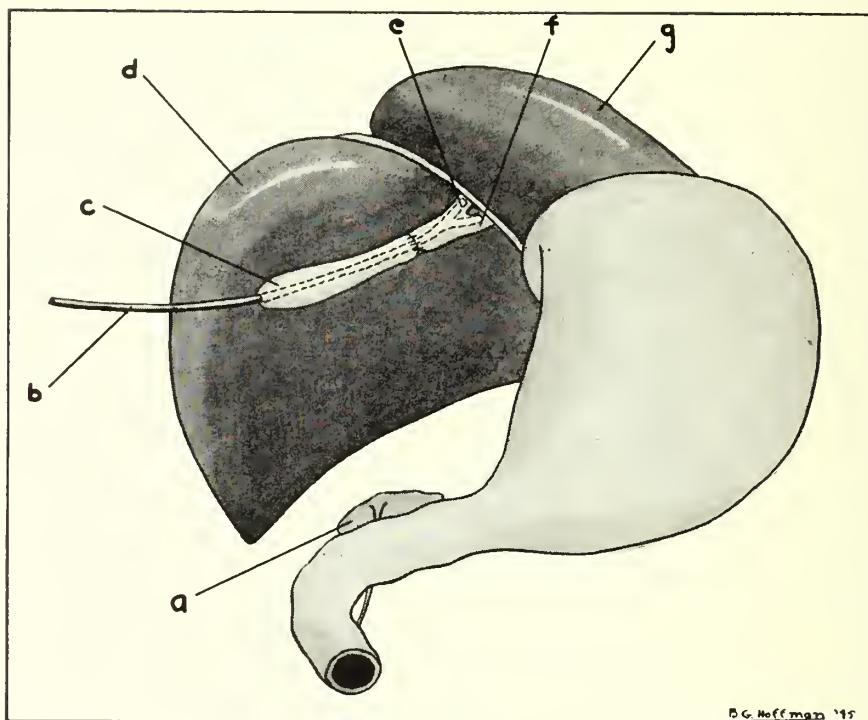


Fig. 2. External drainage of hepatic ducts with T tube, using gallbladder to form an external biliary fistula: a, remnant of cyst, most of which has been resected; b, T tube; c, gallbladder; e, f, hepatic ducts; g, T tube.

dropped gradually by lysis. However, on the fourth post-operative day (April 21) she developed pneumonia in the lower left lung field, followed in two days by a pleural effusion. This gradually subsided after multiple thoracentesis and supportive treatment with penicillin and sulfadiazine. Her abdomen remained soft. The abscess continued to drain bile. The stools remained acholic. Although she was still a poor risk for major surgery, it was apparent that she could not survive unless external drainage of the biliary tract was accomplished to sidetrack the bile from the abscess cavity. The pre-operative diagnosis was still not clear in our minds, although choledochus cyst was considered among several other possibilities.

*Second Operation* (June 30, Figs. 1 and 2). Abdominal exploration, partial excision of the cyst, external drainage of the common and hepatic ducts, and anastomosis of the ampulla of the gallbladder to the upper end of the common duct. General gas ether anesthesia. Right rectus upper abdominal incision medial to the right subcostal wound.

On opening the peritoneal cavity numerous flimsy, friable adhesions were encountered. These were most marked on the right side of the abdomen and formed a protective wall over the site of the right-sided abscess. A large mass 8 inches in diameter was found below the liver (Fig. 2). The mass was typical of choledochus cysts. The duodenum was displaced forward and to the left, as was the head of the pancreas. A normal-sized gallbladder was seen displaced to the right. The colon

and omentum were loosely adherent over the cyst and gallbladder.

In separating these adhesions we inadvertently entered the old abscess cavity in the right upper abdomen. On compressing the cyst we could then see bile escape from the point of perforation located on the upper lateral margin of the cyst below the liver. (It later proved to be between the entrance of the cystic duct and the entrance of the upper end of the common duct.) Because of the danger of injuring vital structures by complete external mobilization, the cyst was opened widely so that its internal openings could be identified. The opening of the common duct measured  $1\frac{1}{2}$  cm. in diameter and was readily located at the upper pole of the cyst. The junction of the hepatic ducts was  $1\frac{1}{2}$  cm. above this point. By passing a probe through the gallbladder the opening of the cystic duct was identified on the right lateral wall about 2 inches from the common duct. The perforation was located between these two points and was about 5 mm. in diameter. The opening of the distal end of the common duct was pinpoint in size, admitting a very fine probe. Its course could be followed through the thinned-out pancreas, but the tract was very stenotic and atrophic. No stones were palpated.

Because of the perforation and the existing infection primary anastomosis seemed inadvisable. Instead, plans were made to drain the hepatic ducts in a manner that would sidetrack the flow of bile from the cyst and abscess cavity (Fig. 3). Working from inside the cyst, we made



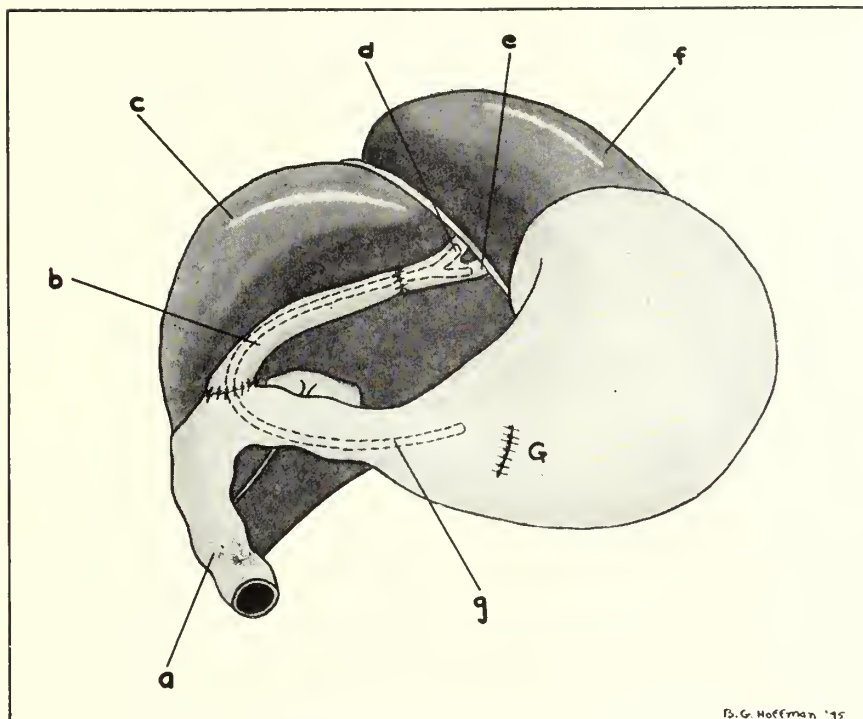


Fig. 3. Anastomosis of gallbladder to the duodenum over the T tube: a, duodenum; b, gallbladder; d, e, hepatic ducts; g, T tube. G, gastrostomy.

an incision around the internal opening of the upper end of the common duct, freeing this structure from the cyst. In this maneuver a line of cleavage was found, and although it was not our original intention, four fifths of the cyst wall peeled out with great ease. The adherent portion below the duodenum and pancreas was not disturbed. The cystic duct was divided near the cyst without injury to the cystic artery. A T tube was then placed in the end of the common duct with one arm in each hepatic radical. The limb of the T tube was then brought out through the gallbladder and the ampulla of this structure was sutured with silk to the end of the common duct. This formed an external fistulous tract made up of biliary structures, namely, the hepatic duct, the upper end of common duct, and the gallbladder. The T tube was brought out through the abdominal wall lateral to the incision and the fundus of the gallbladder was pulled snugly against the parietal peritoneum. Several Penrose drains were left against the remaining retroduodenal portion of the cyst wall and the abdomen was closed in layers. The patient's condition was critical, but we thought if she could survive the immediate operative shock our operative procedure was so arranged that at a later time the gallbladder could be anastomosed to the gastrointestinal tract.

Following the operation the patient did surprisingly well. She soon regained consciousness. Although her temperature was high ( $103^{\circ}$ - $104^{\circ}$ ) for three days, her physical and mental state seemed good. The fever gradually subsided by lysis and was normal after the tenth postoperative day. Nasogastric suction was discontinued on the sixth postoperative day, when she began taking

fluids and food by mouth. The T tube drained from 300 to 600 cc. of bile a day, with some drainage around the tube. Our greatest difficulty was to replace the lost bile. This was done by giving desiccated bile salts by mouth and by replacing the bile with a nasogastric tube. Because of the patient's progressive weight loss, in spite of extensive supportive treatment with parenteral administration of fluids, proteins, blood plasma, and vitamins, we felt it necessary to go ahead with the third stage and attempt to anastomose the biliary tract to the intestine, even though we should have preferred waiting longer.

*Third Operation (July 26). Cholecystoduodenostomy.* (Fig. 3.) Right rectus incision through the old scar. The adhesions were separated. The gallbladder was identified and freed from the abdominal wall. After resecting a small portion of the fundus an anastomosis was performed between the cut end of the gallbladder and the duodenum in a manner similar to that described by Shallow, Eger, and Wagner. A curved hemostat was inserted through a small prepyloric gastrostomy and passed into the duodenum. At the site of the anastomosis the end of the hemostat was forced through the duodenal wall. The end of the T tube was grasped and pulled into the stomach. The gallbladder was then sutured snugly to the duodenum around the tube with interrupted silk sutures. The T tube was left in place because of the danger of obstruction. Penrose drains were placed at the site of the anastomosis and the abdomen was closed in layers.

The immediate postoperative course was very satisfactory. For two days she had a sharp, febrile reaction

(T 103°–104° R), which gradually subsided by lysis and remained between 100° and 101° R after the tenth postoperative day. She gradually improved. Drainage from the nasogastric tube revealed that bile was draining into the stomach. However, there was some bile-stained drainage on the dressing also. Her abdomen remained soft and scaphoid and normal peristaltic activity began. There was a slight icteric tint to the sclera on the second postoperative day, but it disappeared by the fifth postoperative day. On the seventh postoperative day she began taking fluids by mouth and the nasogastric tube was clamped at intervals. On the ninth day an abundant watery, bile-stained drainage appeared on the dressing, and it was obvious that a duodenal fistula was present. On close observation it was estimated that 50 per cent of all oral fluids was lost through the fistula. Continuous suction was then instituted by the nasogastric tube, as well as by a catheter inserted in the drainage wound.

In spite of her marked emaciation her condition was fairly good and her mental attitude excellent. We felt if we could maintain an adequate intake of fluids, nourishment, and vitamins, supported by transfusions of blood and plasma and the replacement of lost bile, she might still recover. In order to do this and still maintain gastric and duodenal suction, a jejunostomy was felt necessary. At 5:30 P.M. on the evening of the eighteenth postoperative day this plan was explained to the patient, who accepted the prospect of another operation cheerfully.

Thirty minutes later she suddenly complained of shortness of breath and substernal pain. She gasped and in a few seconds died, undoubtedly as a result of a pulmonary embolus. Contributing factors to the development of thrombosis were undoubtedly the large doses of vitamin K, the multiple transfusions of blood, plasma and other intravenous fluids, the massive doses of penicillin, and the superficial thrombophlebitis resulting from indwelling intravenous cannulae after all three operations.

Unfortunately, autopsy was not performed. During the period of time in which permission was being obtained the body was inadvertently removed by the local undertaker, who was well on his way to the home town, 130 miles away, by the time we discovered the fact.

#### DISCUSSION

As far as we can determine, this is the fourth case to be recorded in which perforation or rupture of the cyst occurred. Wright,<sup>6</sup> in reporting in 1935 a case diagnosed by X-ray examination, casually referred to another case in which the patient died from rupture of a choledochus cyst after a fall from a bicycle.

Blocker, Williams, and Williams<sup>1</sup> reported in 1937 the case of a 14-year-old boy admitted to the hospital 15 minutes after falling from a swing. Exploration revealed bile-stained fluid in the peritoneal cavity, with retroperitoneal extravasation of blood and bile in the region of the duodenum. Because of the grave condition of the patient the area was drained and the abdomen closed. Death came the following day. Autopsy revealed a congenital cyst of the common duct which measured 5x7x7 cm. A linear rupture measuring 4 cm. in length was found on left inferior portion of cyst with

considerable extravasated bile and blood in the retroperitoneal space.

Walton,<sup>5</sup> reporting six cases (the largest number reported by a single author), describes the case of a baby girl admitted to the hospital at the age of one month. She had been ill two weeks with progressive jaundice. Her condition became steadily worse and she died five days later. Autopsy revealed a congenital cyst of the common duct with a small perforation on the right lateral surface. The peritoneal cavity contained blood and bile, with evidence of generalized peritonitis.

In all these cases the patient died shortly after perforation occurred. Only one was submitted to surgery, but because of the critical condition of the patient the abdomen was closed after drainage only. Our case lived five months after perforation and then died unexpectedly of a pulmonary embolus. The biliary peritonitis was treated at first by multiple paracentesis, during which time localization and abscess formation occurred. In spite of her critical condition and the grave surgical risk she survived two major operations and finally died eighteen days after the third operation.

The greatest difficulty in this case was the problem of replacing lost bile and maintaining adequate nutrition in spite of the extensive intravenous therapy with blood, plasma, amino acids, and vitamins. Bile was replaced through a nasogastric tube and by the oral administration of desiccated bile salts. Neither of these methods was adequate. Our chances in this case undoubtedly would have been better had we performed a jejunostomy early in the disease to facilitate the administration of fluids and food. The final anastomosis could then have been deferred until the general condition of the patient and the local character of the tissues had reached a state more favorable to primary healing.

#### SUMMARY AND CONCLUSIONS

1. Congenital cystic dilation of the common duct (choledochus cyst) is a rare anomaly, usually seen in young females. The usual symptoms are abdominal pain, jaundice, and a palpable upper abdominal mass. Unless the anomaly is corrected by surgery these individuals usually die of biliary obstruction or infection. The operation of choice at present is a one-stage anastomosis of the cyst or gallbladder to the gastrointestinal tract. With the recent developments of surgical technique in this area there is reason to believe that excision of the cyst will be attempted with increasing frequency, with a resultant decrease in morbidity. Although one-stage operations are preferable, multiple procedures are sometimes necessary where complications have occurred.

2. A case is presented in which perforation of the cyst occurred, with a resultant biliary peritonitis that localized to form a huge right-sided biliary abscess. After incision and drainage of the abscess an unsuccessful attempt was made to correct the anomaly by a two-stage operation. This operation may be of value in the treatment of certain selected cases. The first stage consisted of excision of part of the cyst and the utilization of the gallbladder to form an external biliary fistula. In the second stage the gallbladder and duodenum were anastomosed.

3. Special attention is called to the importance of a



complementary jejunostomy in the treatment of complications from congenital choledochus cyst when multiple-stage operations are necessary. Had this been done in the case presented the chances of recovery would have been better.

4. As far as we can determine, only three other cases of choledochus cyst complicated by rupture have been previously reported in the literature. These cases are reviewed briefly.

#### REFERENCES

1. Blocker, T. G., Williams, Harriss, and Williams, J. E.:

Traumatic Rupture of Congenital Cyst of the Choledochus. *Arch. Surg.*, 34: 695-701, 1937.

2. Hutchins, Elliott H., and Mansdorfer, G. Bowers: Congenital Cystic Dilatation of the Common Bile Duct with Sequelae. *J.A.M.A.*, 125: 202-4 (May 20), 1944.

3. Shallow, Thomas A., Eger, Sherman A., and Wagner, Frederick B.: Congenital Cystic Dilatation of the Common Bile Duct. *Ann. Surg.*, 117: 355-85 (March), 1943.

4. Swartley, William B.: Choledochus Cyst; Final Report of Two Cases. *Ann. Surg.*, 118: 91-96 (July), 1943.

5. Walton, J.: Congenital Diverticulum of Common Bile Duct. *British J. Surg.*, 27: 295-315 (Oct.), 1939.

6. Wright, A. Dickson: As quoted by Shallow, Eger, and Wagner.

### A PREDICTION: NEW DRUGS WILL CONTROL VIRUS DISEASES

Dr. Selman A. Waksman, Professor of Microbiology at Rutgers University, and discoverer of streptomycin, predicts that the time is not far off when such diseases as the common cold, infantile paralysis, and tuberculosis will be brought under practical control through the enlargement of medical knowledge and the development of new drugs.

Speaking before a group of scientists, engineers, and educators at the George Westinghouse Centennial Forum, Dr. Waksman said that within a period of five years we have witnessed the development of radically new methods of treating a variety of diseases in man and animals. The possibilities are just being explored, and there is promise of greater things in the future, notably in finding agents to combat many diseases, especially the virus diseases, against most of which no effective agents are known at present.

Pointing the way to such knowledge are studies being made of the microscopic forms of life that we commonly refer to as microbes, which can be seen only with the most powerful microscopes, but whose activities have touched upon every phase of human endeavor. Some microbes he classified as injurious to man and others as beneficial.

Not so very long ago man was at the complete mercy of the microbes. Pestilence and epidemics have influenced history in far greater and more important ways than have battles. The progress of man has often been changed or delayed by the harmful effects of microbes, which may have caused the destruction of crops, with the resulting hunger and starvation and outbreaks of epidemics, such as bubonic or black plague and cholera, which profoundly affected historical events.

As late as the turn of the century more soldiers died from typhoid than from the weapons of war. Now typhoid scarcely ever appears in our armed forces. During World War I deaths from typhus, influenza, and gas gangrene and other wound infections greatly exceeded the deaths caused in actual battle. Such scourges as malaria, pneumonia, and syphilis have now been brought under practical control; their causes and effects are well understood and excellent treatments for them are known.

Although many important diseases, such as influenza, the common cold, poliomyelitis, rheumatic fever, tuberculosis, and undulant fever are still rampant, or may become so under certain conditions, such as those following a long period of malnutrition or social maladjustment in a postwar period, the time is not far off when these scourges, as well, will be brought under practical control.

Chemotherapy, the treatment of diseases with chemical agents, beginning with the use of salvarsan, the introduction of the sulfa drugs, and finally the application of antibiotics, is on the threshold of a great epoch that will no doubt prove of the greatest usefulness in combating diseases caused by microbes.

# Report of an Unusual Case of Mediastinal Tumor

S. G. Clayman, M.D.

San Haven, North Dakota

**T**HE case here reported presents a multiplicity of severe diseases, and is therefore reported in some detail.

The patient, a farmer, was a white male, 57 years of age, married, and a native American of German extraction. He complained of cough of about three months' duration and hoarseness of about ten months' duration before admission to the North Dakota State Tuberculosis Sanatorium on August 7, 1944. During the year previous to admission he had lost about ten pounds in weight.

His illness had begun about one year previously with an attack of "flu". Following this attack, which was characterized by fever, chills, cough, and hoarseness, his hoarseness persisted. He saw several local doctors, one of whom insisted that he see a throat specialist, but he did not follow this advice. About three months before admission to the sanatorium he noted a cough, at first dry and nonproductive, later productive of about two drams of slimy sputum daily. Three months previous to admission the patient was examined at a local clinic and diagnosed as a case of pulmonary and laryngeal tuberculosis, and admission to the sanatorium was recommended.

Upon admission he was described as a well-developed, well-nourished, adult white male, who did not appear acutely ill. Report on indirect examination of the larynx, not detailed, described the true vocal cords as appearing edematous and reddened.

Physical examination of the chest showed some dullness in both apices posteriorly. There were a few fine dry rales heard in the right apex and along the inner border of the right scapula, after expiratory cough. On fluoroscopy at this time it was noted that there was a circumscribed mass in the posterior mediastinum. Aneurysm of the thoracic aorta was ruled out by careful fluoroscopy. The sputum was positive for tubercle bacilli on concentrated examination, Gaffky II, on many specimens.

On September 22, 1944, direct laryngoscopy revealed a marked edema of the arytenoid and interarytenoid areas and of the entire posterior larynx and false cords. No ulceration or granulation was seen. Edema, however, was so marked as to make passage of the bronchoscope through the larynx inadvisable, because of the danger of increasing the edema, with resulting laryngeal obstruction. Accordingly, no attempt at bronchoscopy was made. The post-laryngoscopic diagnosis was severe tuberculous laryngitis with marked edema.\*

Chest X-rays revealed that the right lung was essentially negative for pulmonary pathology, except for peribronchial infiltration. The left lung showed a small amount of mixed exudative and proliferative infiltration at the level of the 2d and 3d ribs and 2d interspace anteriorly. There was a rounded, sharply demarcated

mass in the hilar region, extending into the lung fields from the mediastinum at the level of the 2d and 3d ribs and interspaces anteriorly. The total diameter of the mass was about 8½ cm. by 9 cm.

At this time no conclusions were drawn, and diagnosis was deferred. The differential diagnoses included: (1) A solitary mediastinal cyst or tumor. (2) Mediastinal lymph gland tumor of the lymphoma variety. (3) Possible benign tumor of the chest.

Further X-rays were taken, and oblique views seemed to localize the mass in the lower midportion of the chest, slightly anteriorly, probably in the region of the main bronchi in this region. On November 17, 1944, there was a rather sharp and definite increase in the size of the circumscribed mass. At this time it extended from the hilar region into the lower midlung field on this side. There was a very small but new area of infiltration in the extreme base, in the region of the cardiophrenic angle. Because of the patient's positive sputum for tuberculosis and severe tuberculous laryngitis, it was now apparent that he demonstrated more than one severe pulmonary disease at the same time. The mass had all the appearance of a nontuberculous neoplasm.

On December 29, 1944, coincidental with a marked downward clinical course characterized by increased toxicity, pain in the left chest and gastric region, nausea, vomiting, and pain in the back, an X-ray revealed further marked increase in the size of the rounded mass, which now extended to the lateral chest wall and filled the costophrenic angle.

Three days previously fluoroscopy had revealed the entire left chest to be opaque, and chest aspiration was performed. The first aspiration was productive of 1700 cc. of cloudy amber fluid. Six hours later a second aspiration was done, and another 500 cc. of fluid were aspirated. Thereafter for eight consecutive days an average of 600 cc. of fluid were removed daily. The fluid changed in character from cloudy amber to yellow, purulent, putrid material. After the fifth aspiration 30,000 Oxford units of penicillin were injected intrapleurally. This injection was repeated at each succeeding aspiration. Laboratory examination of the fluid revealed both aerobic and anaerobic organisms. Blood agar plates of fluid showed streptococcus, staphylococcus, and many gram-negative bacilli. Stab cultures resulted in diffuse growth of anaerobic organisms.

Following the first aspiration, a fairly large hydropneumothorax was seen by fluoroscopy and X-ray film. The left lower lobe remained rigid, and the large rounded tumor mass extending from the first interspace anteriorly to the base was clearly seen. At the first and later aspirations no air had been allowed to enter the chest, and the presence of a fistula, due either to penetration by the mass or to trauma caused by the aspirations, was therefore assumed.

\*W. L. Wallbank, M.D., performed this bronchoscopy.



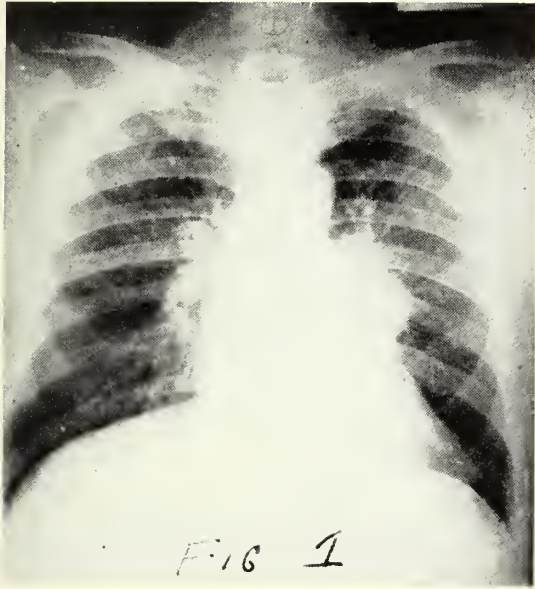


Fig. 1. Shows the well demarcated left hilar mass.

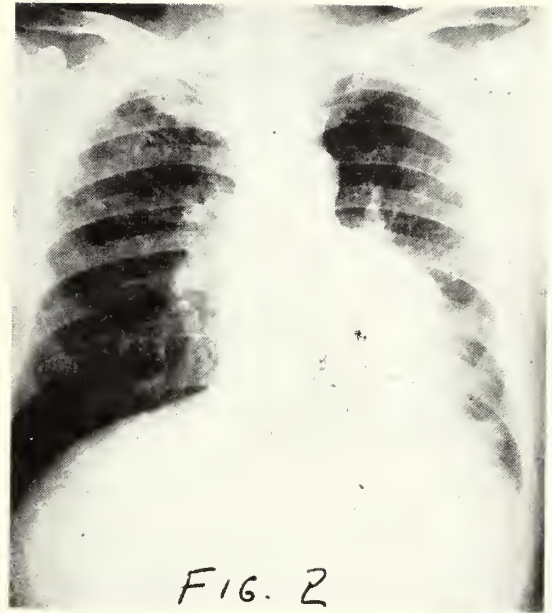


Fig. 2. Illustrates the new areas of infiltration in the cardiophrenic angle and in the left base.

On December 26 the patient began to complain of pain in the epigastric region. Phenobarbital and codeine were given for relief. On December 27, 1944, the patient's previous low-grade fever ( $99.4^{\circ}$ ) suddenly rose to  $103^{\circ}$ . Sulfathiazole, 1 gram every four hours, with soda, was begun, and was discontinued two days later because the patient claimed that the medication caused more nausea. The patient's clinical course thereafter was marked by toxicity, and frequent sedation and analgesia were required. Fluids were given intravenously, and an attempt

was made to provide an adequate fluid intake. From the time of the first aspiration the patient developed left chest wall infection. Multiloculated anaerobic abscesses were present over the entire left anterolateral chest wall.

The patient was treated with continuous hot moist compresses to the chest and with penicillin intrapleurally, and also intramuscularly and intravenously. Penicillin was given intravenously in doses of 50,000 units.

The physical condition of the patient rapidly became

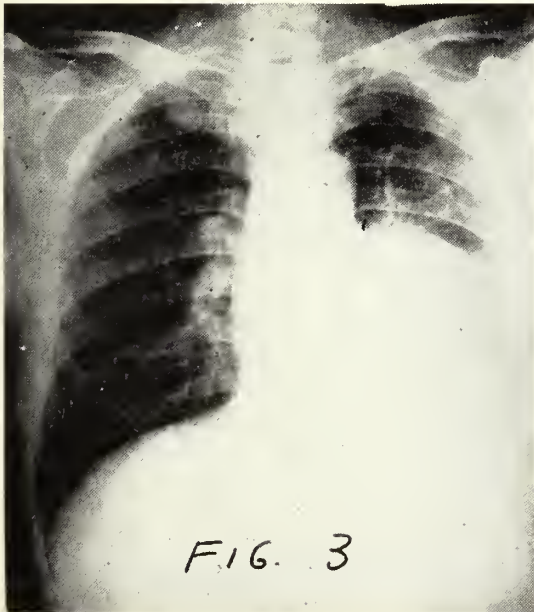


Fig. 3. The rounded mass now extends to the lateral chest wall and fills the costophrenic angle.

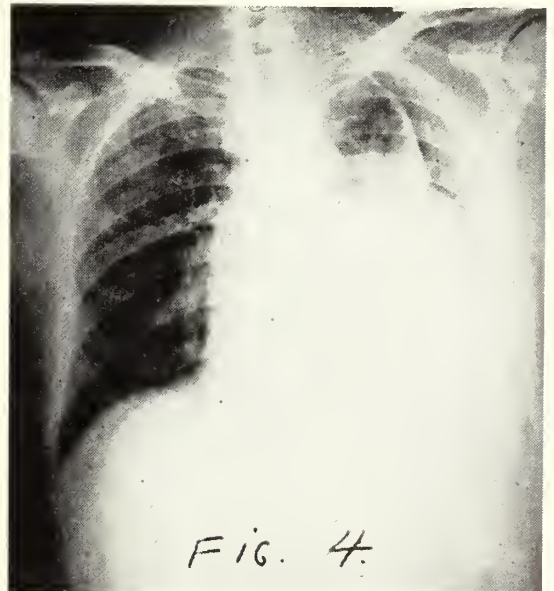
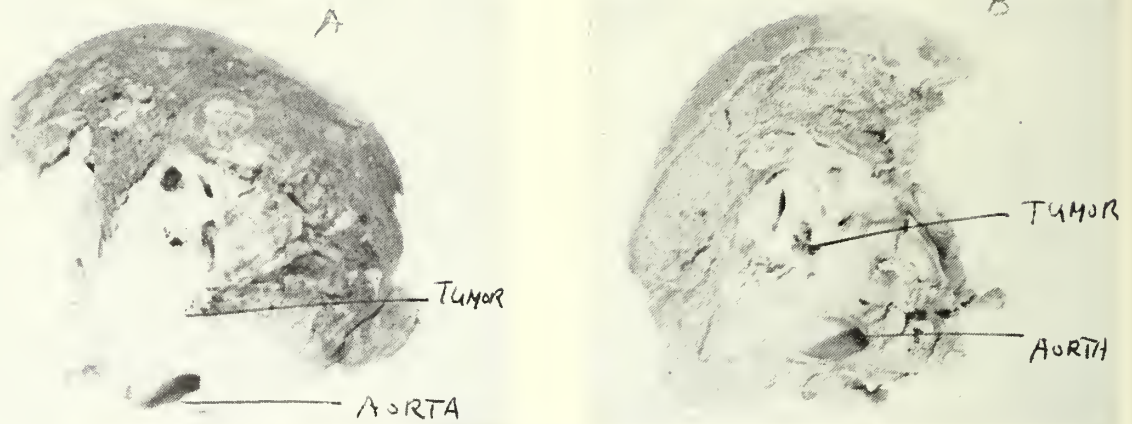


Fig. 4. Pneumothorax is shown, following the first two aspirations of over 2000 cc. of fluid. The mass is clearly differentiated.



Figs 5 and 6. Show different aspects of horizontal sections of the left lung. Note the white tumor mass completely surrounding the aorta. Multiple abscesses and the area of caseous tuberculosis and tuberculous pneumonia are shown.

hopeless, although the anaerobic chest wall infection appeared to be improving. He expired on January 17, 1945, just eleven days after the development of the massive putrid empyema and spontaneous pneumothorax on the left. Diagnosis at this time was: 1. Pulmonary tuberculosis, moderately advanced. 2. Severe tuberculous laryngitis. 3. Mediastinal tumor, exact etiology to be determined later.

Autopsy was done the following day. With the exception of neurofibromatosis well scattered over the patient's body, there were no external markings of note. When the peritoneal cavity was opened a moderately large amount of free gas was heard to escape. The omentum was seen to be displaced upward in the region of the liver and duodenum. Upon replacing it downward, about 1000 cc. of intraperitoneal fluid were seen. This fluid was thin, contained much fibrin, and was localized in the region of the lesser omental sac. There was marked congestion of the peritoneum and a marked localized peritonitis in the duodenal and lesser omental regions.

Examination of the duodenal cap revealed four duodenal ulcers, one of which had penetrated and showed signs of recent hemorrhage. The diameter of this ulcer measured  $\frac{3}{4}$  cm. There were many small, pinpoint white nodules on the serosal surfaces of the jejunum. The mesentery was also infiltrated with these white nodules, which upon gross examination appeared to be tuberculous. The peritoneal surfaces of the diaphragms were glistening and normal in all respects. The kidneys, adrenal glands, pancreas, gallbladder, and liver were normal. The spleen was soft and "mushy" in character. No nodules were present.

The chest wall was then removed without difficulty. The entire left anterolateral chest wall contained multiloculated anaerobic abscesses, which appeared to be localizing. The right lung was adherent anteriorly and anterolaterally by large, diffuse adhesions. Nodules could be felt in the apex of the right lung. The heart, aorta,

trachea, bronchi, esophagus, left lung, and the hard posterior mediastinal mass were removed *en bloc*. The left auricle was adherent to this hard mass, which extended in the paravertebral gutter from the 6th rib posteriorly to the diaphragm. Upon examination the heart was found to be normal. It was removed from this mass. The tracheal portion of the right main stem bronchus was normal. The left main stem bronchus was normal until it approached the level of the mass that occluded it. The esophagus was removed from this mass, and also the trachea to that point. The aorta was entirely surrounded by this hard mass and could not be removed.

The lower lobe of the left lung was completely filled with multiple abscesses, and appeared gangrenous. Section of the left lung showed a 1.5 cm. bronchopleural fistula, which led into the multiple abscessed areas. This fistula was present just below the left interlobar fissure in the anterior aspect of the left lower lobe. Horizontal sections of the lung were taken, as shown in Figures 5 and 6. There was an intense pleuritis, and about 800 cc. of putrid empyemic material were present. Sections of tumor, lung, jejunum, and duodenum were reviewed by Dr. A. K. Saiki of the University of North Dakota. His report was:

1. Prickle cell carcinoma (squamous) of lung metastasis to periaortic nodes, with extension to and surrounding the aorta.
2. Caseous tuberculosis and tuberculous pneumonia, left lung.
3. Healed tuberculomas of jejunum, serosal.
4. Multiple duodenal ulcers, one with perforation.
5. Tuberculous laryngitis.
6. Anaerobic chest wall infection.
7. Bronchopleural fistula.

#### DISCUSSION

This case presents seven distinct severe diseases. The malignant tumor was diagnosed during life, as were the pulmonary tuberculosis, tuberculous laryngitis, anaerobic chest wall infection, and bronchopleural fistula. The



multiple duodenal ulcers, one with perforation, and tuberculomas of the jejunum, as well as the specific nature of the malignant tumor, were not diagnosed until autopsy was performed.

In reviewing the case, it was seen that the reason for the vomiting, high temperature, and pain in the epigastrium was the perforation of duodenal peptic ulcers. At the time of treatment it was thought that the patient's condition, added to a sensitivity to the drugs, contraindicated sulfathiazole by mouth. Positive sputum early in this case suggested that we were dealing with several pulmonary conditions. The presence of a moderately large hydropneumothorax, in spite of very careful technique and the presence of an anaerobic chest wall infection, suggested the possibility that the mass perforating into the intrapleural space had created the bronchopleural fistula.

It is obvious that with extension to the pleura in bron-

chopleural fistula the patient's case was hopeless and unamenable to surgery. Since there was no primary skin cancer, it is possible that this prickle cell squamous carcinoma of the lung originated in the left bronchus. Whether the patient's chronic tuberculosis, evinced by the healed tuberculomas of the jejunum, caused metaplasia and reversion to squamous epithelium in the bronchus is an interesting speculation. It is interesting to note also that the intravenous, intramuscular, and topical injections of penicillin seemed to be speeding the localization of the anaerobic chest wall infection, in spite of the very poor condition of the patient.

Figures 1, 2, 3, and 4 demonstrate the X-ray course of this case.

#### SUMMARY

A very unusual case of multiplicity of severe diseases is described. The clinical course and gross microscopic autopsy findings are presented.

---

### THE DOCTORS MAYO AND THE FUTURE OF MEDICINE

"William and Charles Mayo did more to improve medical service to the public than any other physician of their own or earlier generations. They were pioneers. They blazed new trails in surgery, in many medical specialties. But of equal significance — perhaps of more lasting significance — they blazed new trails in organization — in medical economics.

"Among leaders in medicine, the leaven continued to work. There is fermenting a desire on the part of progressive physicians and the institutions with which they are associated further to improve medical care, its organization, distribution, methods of payment, and scientific content. Change is inevitable — as it must be in any dynamic science. The primary interests of individual physicians may vary, but the objective of all is the same: to form plans whereby better service may be assured to all of the American people."—THOMAS PARRAN, in *The Yale Review*, Spring (March) 1946.

---

### WHAT CAN A COUNTY MEDICAL SOCIETY DO WITH AN EXTRA \$500 ANNUALLY

A few years ago a member of the Adams County Medical Society in Illinois, with a membership of sixty, set up an irrevocable trust or foundation for his society. He has since contributed further to the trust, which now has an income of over \$600 annually. The principal must be held intact, and not to exceed 80 per cent of the income may be expended annually, so the foundation will naturally grow. The trustees are empowered to use the funds to sponsor or undertake one or more things of a charitable, scientific, literary, or educational nature "which will bring public and professional honor and respect to the medical profession."

The trustees know of no other foundation like this one, and are desirous of securing counsel. Further particulars may be had from Dr. Ralph McReynolds, President, Swanberg Medical Foundation, 1101 Maine Street, Quincy, Illinois. Dr. McReynolds will also appreciate receiving suggestions for the foundation's activities.

# Post-Measles and Post-Mumps Encephalitis

Stuart Lane Arey, M.D.

Minneapolis

**E**NCEPHALITIS may follow any of the contagious diseases. Gordon<sup>1</sup> reports that at Kingston Avenue Hospital, Brooklyn, New York, from 1935 to 1941 they saw 56 cases of encephalitis following measles, 48 following pertussis, 22 following mumps, 8 following chicken-pox, and 5 following scarlet fever. There were no cases following German measles.

Hoyme<sup>2</sup> reports 28 cases of post-measles encephalitis out of 400 hospitalized cases. His cases were twice as frequent in females as in males. The oldest of his patients was 18 and the youngest 8 months. Hamilton and Hanna<sup>3</sup> report the incidence of post-measles encephalitis to be one per thousand or fifteen hundred cases. Ford<sup>4</sup> states that 0.4 per cent of all measles cases have central nervous system symptoms.

The frequency of mumps encephalitis is reported to be from 0 to 40 per cent.<sup>5</sup> A relatively high percentage of mumps cases may show changes in the spinal fluid without any clinical evidence of encephalitis; that is, there is a so-called latent encephalitis.<sup>6</sup>

## ETIOLOGY

There is no apparent relation between the severity of the infection, age, sex, race, or body type of the patient and the incidence of encephalitis. Four theories of etiology advanced are: (a) An augmentation of neurotropic properties of the virus of the associated disease. (b) A latent virus in the brain is stimulated by the basic disease. (c) A hypothetic toxin liberated by the disease causes demyelination in the brain. (d) A local allergic reaction in which the virus of the associated infection acts as a sensitizing agent.

Shaffer<sup>7</sup> *et al.* were able to isolate the virus of measles from the brain of a patient dying of post-measles encephalitis.

Finley<sup>8</sup> draws an analogy between the allergic reaction observed during smallpox vaccination as explained by Pirquet and the changes observed in post-measles and post-vaccinal encephalitis.

Putnam<sup>9</sup> believes that occlusion of the small blood vessels in the central nervous system is the characteristic lesion and that the primary difficulty is a change in the clotting mechanism of the blood. He states that encephalomyelitic changes similar to those observed in encephalitis following measles, mumps, and vaccination may be produced by mechanically blocking the venules with injection of lung extracts, brain extracts, carbon monoxide, or potassium cyanide.

## CLINICAL COURSE

In post-measles encephalitis the onset is usually two to seven days after the appearance of the rash. In Hamilton and Hanna's series<sup>3</sup> the longest time elapsing was eleven days from the onset of rash. Three types of onset

are described: (a) Convulsions followed by coma in 50 per cent of cases. (b) Listlessness, drowsiness, and coma in 40 per cent. (c) Delirium, irritability, and excitement in 10 per cent.

Examination of the spinal fluid shows a clear fluid under normal or increased pressure, with a moderate increase in the cell count. The majority of cells are lymphocytes. The protein is increased, and the sugar is either normal or low. The spinal fluid may be entirely normal; in fact, Litvak<sup>10</sup> says that fatal cases are likely to have a normal or only slightly elevated cell count.

In favorable cases the temperature gradually subsides, the neurologic symptoms disappear, and the patient makes a good recovery.

In mumps encephalitis the onset may precede the parotid swelling or may follow it by several days. There is an elevation of temperature with headache and vomiting. Convulsions and coma are exceptional. The spinal fluid findings are undistinguishable from those in poliomyelitis. In general, the course is much milder than in post-measles encephalitis.

## PROGNOSIS

The prognosis in measles encephalitis should be guarded. Hoyme<sup>2</sup> had a mortality rate of 32 per cent in hospitalized cases and gives a mortality in all cases of 6 per cent. Of 19 patients surviving, five were incapacitated mentally. Hamilton and Hanna<sup>3</sup> state that, in general, of ten patients four will completely recover, two will die, and four will have one or more major or minor residual symptoms. Ford<sup>4</sup> says 65 per cent will have some residuals: 30 per cent some weakness, 12 per cent ataxia, 17 per cent some personality change, and 5 per cent epilepsy. Litvak<sup>10</sup> says 69 per cent will have sequelae.

The prognosis in mumps encephalitis is much happier. Donohue<sup>5</sup> says complete and uneventful recovery is the rule. De Lavergne, Kissel, and Accoyer (1937) found reports of only 12 patients who had died as a result of the neurologic complications of mumps.

## PATHOLOGY

According to Ford<sup>4</sup> the characteristic pathology is a toxic degeneration. In the case reported by Shaffer<sup>7</sup> there were many small scattered hemorrhages, with an accumulation of cells throughout the brain substance, an infiltration of mononuclear cells, especially about the small blood vessels, and many perivascular foci of early demyelination scattered throughout the brain.

Donohue<sup>5</sup> says the fundamental lesion in mumps encephalitis is a perivascular demyelination.

## THERAPY

Litvak<sup>10</sup> observed that no cases of encephalitis occurred in patients who had received prophylactic convalescent serum, whole blood, or placental extract.

Putnam,<sup>9</sup> who thinks the fundamental difficulty lies in some disturbance of the clotting mechanism of the

Read before the Minneapolis Academy of Medicine, March 18, 1946. From the Contagious Disease Service, Minneapolis General Hospital.



TABLE 1. Analysis of Ten Cases of Post-Measles Encephalitis

| Age       | Sex | Days after Rash | Sensorium   | Convulsions | Fever  | Sequelae             | WBC    | Spinal Fluid<br>All fluids were clear |                 |                     |                   |
|-----------|-----|-----------------|-------------|-------------|--------|----------------------|--------|---------------------------------------|-----------------|---------------------|-------------------|
|           |     |                 |             |             |        |                      |        | Cells                                 | Per Cent Lymphs | Protein mg. 100 cc. | Sugar mg. 100 cc. |
| 7         | F   | 4               | Unconscious | 0           | 105°   | Died                 | 18,800 | 180                                   | 70              | 38                  | 75                |
| 3         | F   | 5               | Unconscious | +           | 105°   | Died                 | 9,950  | 4                                     | 100             | 32                  | 185               |
| 2         | F   | 0               | Unconscious | +           | 106°   | Died                 | 3,350  | 9                                     | 100             | ....                | ....              |
| 6         | M   | 1               | Delirium    | 0           | 107°   | Died                 | 4,400  | 4                                     | 100             | 26                  | 70                |
| 4         | M   | 5               | Unconscious | +           | 105°   | 0                    | 14,500 | 100                                   | 91              | 151                 | 80                |
| 4         | F   | 6               | Delirium    | +           | 101.4° | 0                    | 11,100 | 55                                    | 88              | 38                  | 80                |
| 10 months | M   | 0               | Unconscious | +           | 104.2° | 0                    | 30,500 | 30                                    | 66              | 27                  | 145               |
| 3         | F   | 10              | Unconscious | 0           | 104°   | Died                 | 3,300  | ....                                  | ....            | ....                | ....              |
| 3         | M   | 5               | Lethargy    | 0           | 102.2° | 0                    | 4,400  | 45                                    | 96              | 38                  | 80                |
| 7         | M   | 2               | Lethargy    | 0           | 100°   | Mental Deterioration | 9,150  | 89                                    | 97              | 86                  | 70                |

blood, suggests heparin therapy. He believes that serum and intravenous medication of any kind are contraindicated, as similar encephalitis may be brought on by administration of sera.

Hamilton and Hanna<sup>3</sup> believe that shock therapy in the form of intravenous typhoid vaccine gives the best results.

Burton and Weir<sup>12</sup> used sulfapyridine and intramuscular blood in treatment.

The therapy of mumps encephalitis is entirely symptomatic. Carleton<sup>13</sup> advises against the use of spinal puncture as either a diagnostic or therapeutic measure. However, other authors<sup>6</sup> feel that spinal drainage may be useful in relieving headache.

ANALYSIS OF CASES

The records of the Minneapolis General Hospital show ten cases of post-measles encephalitis up to January 1946 (Table 1). The oldest patient was 7 years of age and the youngest 10 months. The cases were divided equally between sexes. The onset occurred 0 to 10 days after the rash. In most instances the onset was stormy, with convulsions in five cases, coma in six cases, delirium in one case, and lethargy in three cases.

The spinal fluid showed 4 to 180 cells, with a predominance of lymphocytes in all cases. The cell count tended to be low in fatal cases. The spinal fluid sugar was usually normal. There was normal or moderate elevation of the spinal fluid protein.

The white count varied from 3300 to 18,000, with no evident prognostic import.

There was a mortality of 50 per cent. The follow-up is not adequate, but of five recoveries one showed evident mental deterioration at the time of discharge.

In six cases of mumps encephalitis (Table 2), the oldest patient was 46 and the youngest was 4. There were five males and one female. The encephalitis preceded the parotid swelling in one instance and followed it up to a week later in other cases. There was some lethargy, headache, and vomiting noted at the onset. The spinal fluid showed cell counts varying from 248 to 880, with a predominance of lymphocytes. The remainder of the spinal fluid findings were similar to those occurring with post-measles encephalitis. The white blood count remained normal in all cases.

All our cases of mumps encephalitis recovered, with no mental sequelae. The only neurologic sequela noted was a unilateral nerve deafness in one case.

TABLE 2. Analysis of Six Cases of Mumps Encephalitis

| Age | Sex | Days after Onset of Swelling | Sensorium  | Convulsions | Headache | Vomit | Fever  | Sequelae | WBC  | Spinal Fluid<br>All Fluids Were Clear |                 |                                 |         |       |
|-----|-----|------------------------------|------------|-------------|----------|-------|--------|----------|------|---------------------------------------|-----------------|---------------------------------|---------|-------|
|     |     |                              |            |             |          |       |        |          |      | Cells                                 | Per Cent Lymphs | Pressure (mm. H <sub>2</sub> O) | Protein | Sugar |
| 26  | M   | 3                            | Lethargy   | 0           | +        | +     | 102°   | 0        | 7000 | 536                                   | 70              | 140                             | 136     | 60    |
| 26  | F   | 5                            | Lethargy   | 0           | +        | +     | 102.2° | 0        | 6000 | 433                                   | 92              | 135                             | 57      | 60    |
| 46  | M   | 2                            | Lethargy ± | 0           | +        | +     | 102.8° | Deafness | 8800 | 500                                   | 87              | 190                             | 78      | 70    |
| 7   | M   | 12 hours before              | Lethargy   | 0           | +        | +     | 103.8° | 0        | 5200 | 248                                   | 55              | ....                            | 37      | 70    |
| 8   | M   | 7                            | Lethargy ± | 0           | +        | +     | 102.8° | 0        | 9650 | 880                                   | 62              | ....                            | 41      | 60    |
| 4   | M   | 3                            | Stupor     | 0           | +        | +     | 102°   | 0        | 6550 | 280                                   | 88              | ....                            | 28      | ....  |

I was unable to find records of encephalitis following any other contagious disease at Minneapolis General Hospital.

#### CONCLUSION

1. Ten cases of post-measles encephalitis and six cases of post-mumps encephalitis are reported.
2. The prognosis in post-measles encephalitis is uncertain, both as to life and sequelae.
3. The prognosis in post-mumps encephalitis is excellent.
4. Suggestions concerning etiology and therapy are reviewed.

#### REFERENCES

1. Gordon, M. B. In discussion of Litvak, A. M., Sands, I. J., and Gibel, H.: Encephalitis Complicating Measles. *Am. J. Dis. Child.*, 65: 265-95 (Feb.), 1943.
2. Hoyne, A. L.: Measles in 1938. *Illinois M. J.*, 76: 136-39 (Aug.), 1939.
3. Hamilton, P. M., and Hanna, R. J.: Encephalitis Complicating Measles. *Am. J. Dis. Child.*, 61: 483-93 (March), 1941.

4. Ford, F. R.: The Nervous Complication of Measles. *Bull. Johns Hopkins Hosp.*, 43: 140-84, 1928.
5. Donohue, W. L.: Mumps Encephalitis. *J. Pediat.*, 19: 42-52 (July), 1941.
6. Wesselhoeft, C.: Mumps. *New England J. Med.*, 226, 13: 530-34 (March 26), 1942.
7. Shaffer, M. F., Rake, G., and Hodes, H. L.: Isolation of Virus from Patient with Fatal Encephalitis Complicating Measles. *Am. J. Dis. Child.*, 64: 815-19 (Nov.), 1942.
8. Finley, K. H.: Pathogenesis of Encephalitis Occurring with Variola and Measles. *Arch. Neurol. & Psychiat.*, 39: 1047-54 (May), 1938.
9. Putnam, T. J.: Newer Conceptions of Post Infectious and Related Forms of Encephalitis. *Bull. New York Acad. Med.*, 17: 337-47 (May), 1941.
10. Litvak, A. M., Sands, I. J., and Gibel, H.: Encephalitis Complicating Measles. *Am. J. Dis. Child.*, 65: 265-95 (Feb.), 1943.
11. Quoted by Donohue, W. L.<sup>5</sup>
12. Burton, A. H. G., and Weir, J. H.: Post Vaccinal and Measles Encephalomyelitis. *Lancet*, 241: 561-62 (Nov. 8), 1941.
13. Carleton, W. T.: Mumps Encephalitis. *U. S. Nav. M. Bull.*, 41: 1401-4 (Sept.), 1943.

## EARLY SYMPTOMS AND SIGNS OF ACUTE INFANTILE PARALYSIS

### (A Hospital Report)

Particular interest has been given to the history of onset of the acute illness of all cases coming to the Marmet (West Virginia) Hospital during the past two outbreaks of acute infantile paralysis of 1944 and 1945. A total of 107 cases were admitted with the diagnosis of infantile paralysis. Seventy-two of these cases were covered in a report last year in which it was stated that every child was reported by the parents to have had a high temperature at the onset of illness, was irritable or irrational and vomited. Intense headaches with sore or inflamed throats were noted in almost all cases. A rigid spine and muscle soreness came on very early and were noted in every case at the time of admission to the hospital.

The cases admitted in 1945 presented a different pattern, but certain symptoms were constant in the two series, namely, vomiting, a rise in temperature or "high fever," headache, muscle soreness or weakness, sore throat, "taking cold," stiff neck, stiff back, and stupor. The symptoms are recorded in the order of their frequency.

As stated before, these symptoms and signs were listed as taken from the parents or the patient, if capable of clear statements. It is surprising how often a history of a fall complicates the picture and both parent and physician have often attributed all symptoms to the accident.

Not every child whose illness starts with a stomach upset, sudden rise in temperature, headache, muscle soreness with stiffness of back develops anterior poliomyelitis, but this combination of symptoms should be a warning to the parent and physician to be on the alert for the one disease of childhood that simulates so many other conditions. We have seen it sneak in with bilateral otitis media, with multiple joint pains, whooping cough, epilepsy, and tonsillitis. Three cases in 1945 proved to be encephalitis and one case of brain abscess had been erroneously diagnosed as poliomyelitis. Two cases of Guillain-Barré syndrome presented many symptoms suggestive of "polio," and one of these cases required the use of the iron lung for five days, owing to the paralysis of chest muscles. The study of the spinal fluid gives the differentiation needed in these cases.

Poliomyelitis is a very interesting, yet serious and tragic, disease, and one often difficult to detect early. Fortunately, the physicians of West Virginia are ever mindful of the disease, and they are to be complimented upon their alertness, for it has been our experience that the sooner the cases are recognized and given the proper treatment, the less tragic the results. In practically all cases admitted, the attending physician had made the diagnosis and arranged for hospital care on the first visit to the child. This is a record probably not equalled in any similar community. — E. BENNETTE HENSON, M.D., Manager, Marmet (West Virginia) Hospital.



# Filariasis and Malaria on the Campus

Ellis Herndon Hudson, M.D., Captain (MC) USNR

Athens, Ohio

THE two parasitic diseases that elicited most attention during World War II were filariasis and malaria. There is a superficial resemblance between the two in that both are carried by mosquitos, but beyond that they have little in common.

Filariasis cases in the Navy arose almost exclusively among Marines who saw service in the Samoan group of islands, and though these men were once the source of much official anxiety, the passage of time has almost completely relieved the situation. It is still possible, however, that such an ex-Marine or Army man who had duty in the Pacific area may present himself in a student health clinic. Examination of such a case would probably reveal a minimal degree of adenopathy and some nodulation or thickening along one or both cords. There may be complaint of fatigue or aching in this area.

In general one may offer such a patient genuine reassurance. The prognosis for complete relief of all symptoms has been established on the basis of the experience of recent years. A good deal of the difficulty in such cases is psychoneurotic, associated with difficulties, imagined or real, in connection with marriage or reproduction. Here again psychotherapy is indicated, and if the patient's confidence can be secured the symptoms should be entirely relieved. There is no specific treatment for the parasite; in fact, it is highly probable that such parasites as were once present have now died and become walled off and calcified.

Filariasis is a disease of natives who have been bitten by mosquitoes ever since they were born. We know that such individuals by the time they reach maturity harbor innumerable parasites and often have untold millions of embryo parasites in their blood. The end results of filariasis in such natives are naturally not to be expected in Marines who have spent only a few months in the endemic area and are now completely removed from possibility of reinfection.

Turning now to malaria, I may point out that the malaria parasite has a much more perfect life cycle than the filarial worm, for there is multiplication of parasites not only in man but also in the mosquito. The multiplication in both hosts is at so swift a rate as to make the malaria parasite one of the most successful in its field.

A very useful concept which has become current in the past few years regards malaria in the human subject as occurring in two phases, one in the tissues and one in the blood.

During the tissue phase the parasite rests in the liver, spleen, bone marrow, and reticulo-endothelial system, without causing any clinical symptoms. It is apparent that malaria can remain thus in the human body for months or even years without affecting the health in any respect. This we call the latent phase, and the parasite

is said to be in its extra-erythrocytic form. Though this so-called EE form has been found in bird malaria it has never been identified in man. It is a strange fact that in spite of diligent effort to identify it during the tissue phase, the parasite is lost as soon as the mosquito introduces it into the human body and we do not pick it up again until it appears as a small ring in the red cell. We may call this a hypothetical stage of the parasite, but it is hypothetical only in the sense that we have not identified it. It produces no symptoms and apparently lives in perfect harmony with the human tissues.

What is it that changes the tissue phase into the blood phase? We do not know, although we know some things that seem to precipitate the parasites out of the tissues into the blood. In a proportion of cases the parasites introduced by the mosquito are disposed of in the tissue phase. These patients never have a symptom. In other cases the parasites may cause but one explosion in the blood phase and none thereafter. These are the patients who have had only one "attack" of malaria. In a third group attack after attack may appear in the blood phase, alternating with asymptomatic periods when the infection retreats temporarily into the tissue phase. The malaria cases with which we were most concerned in the military service were in the last group, namely, those with repeated relapses. These were due almost entirely to vivax infection.

A notable point in regard to malaria as now seen among veterans is that it is solely concerned with this vivax infection, and this is comforting, since no one dies of this type of malaria. In this sense it merits its name, benign tertian, though it may sometimes seem by no means benign, considering the severity of the paroxysms. If you ask why falciparum and quartan infections are excluded, the reply is that falciparum has been screened out by treatment and by the passage of time, and that quartan is a rare infection and one prone to extreme latency.

The malaria case that we encounter on the campus today is therefore of the benign tertian type in a subject who, in the majority of cases, has had his infection for a year or more and has had a number of attacks, each terminated by treatment. What such a person requires is an exhortation to live according to a regular hygienic program and to secure prompt treatment when an attack seems imminent. He should be told that he is building up his immunity whether he has attacks or not and that with the passage of time the attacks will become less violent and less frequent. It is extremely rare for any patient to exhibit symptoms of vivax infection for as long as three years, barring reinfection.

The patient's friends should be told that if he is well treated with each attack he is no menace to his community, though there may be anopheline mosquitoes in the vicinity. If he is treated promptly he need not an-

ticipate more than one paroxysm with each attack. Thus if treatment is systematic the disease has no deteriorating effect upon the general health. The current impression to the contrary is based on experience in this country in areas where malaria is widespread, chronic, and often untreated.

A word about drugs. These are now two in number, but there will shortly be three. Quinine is the oldest, atabrine (quinacrine) is the best one so far, and chloroquine is the newest and perhaps will supersede the others. Considerable work was done on this chemical during the war, but its superiority, although admitted, was not sufficiently great to justify scrapping all the routine anti-malarial treatment programs of the Army and Navy.

On the campus today either quinine or atabrine is perfectly suitable.

It should be remembered that these drugs are effective only against the blood phase. We have absolutely no drug that kills the parasite of vivax malaria in the tissue phase. To know this fact is fundamental to an understanding of the therapy of malaria. We have to remind ourselves that we are not curing the disease when we stop the fever and the paroxysms; we are merely terminating the obvious or apparent phase and driving the infection back into the inapparent phase. If we do this, however, our patient will assuredly get well, because in the course of time he will develop his own immunity.

---

## MALARIA

“. . . The decline in malaria incidence, beginning in the prewar years, apparently continued through 1944 and 1945. This favorable situation probably reflects the gratifying result of special malaria control activities conducted by the civilian and military authorities in malarious areas.

“According to cases reported by the State health officers, the incidence of malaria in the United States has been steadily declining since 1935. The latest cyclic peak of reported malaria cases and deaths occurred during the period 1933–36. In 1932 a total of 68,613 cases was reported in the United States, with 2,540 deaths, but a sharp increase in both malaria morbidity and mortality was recorded in 1933, when 125,549 cases and 4,678 deaths were reported. In 1935 these figures were 137,502 and 4,435, respectively. By 1938 the number of reported cases had dropped to 84,206 and the number of deaths to 2,378. The malaria death rate in the United States declined from 3.7 per 100,000 population in 1933 to 0.5 in 1943. The average of the monthly rates for 1945, based on a 10-percent sampling of death certificates, is approximately 0.4.

“The proportion of malaria cases that relapse is not known. It is understood that, in the absence of information to the contrary, it is the policy of the Medical Statistics Division of the Office of the Surgeon General of the Army to record as overseas infections cases occurring within one year of the return of the patient from overseas. Public Health Service and other investigators have demonstrated that *Plasmodium vivax* malaria cases contracted by soldiers in foreign countries (South Pacific, Mediterranean, and South American areas), which relapse after the men return to the United States, is infective to species of the native American anopheline mosquitoes, and that these mosquitoes infected by imported *vivax* malaria can transmit the disease by biting a susceptible person. If reliable information can be secured during the current year on the numbers of indigenous cases and relapses of overseas infections it will afford an index to the effect of the thousands of cases of malaria in men returned from overseas, and local distribution will show whether the disease has appeared in formerly malaria-free areas.”—BROCK C. HAMPTON, U. S. Public Health Service, in *Public Health Reports*, May 10, 1946.



# Oxygen Therapy

Joe W. Baird, M.D.

Minneapolis

ARISTOTLE in 350 B.C. recorded the first experiments in respiration, but it was not until 1775 that oxygen was discovered by Joseph Priestley. Even then he did not realize the significance of his discovery, and it remained for Lavoisier (1775-1794) to demonstrate that the gas was absorbed by the lungs, burned in the tissues, and eliminated as carbon dioxide and water.

The discovery of oxygen aroused considerable interest in medical circles, and in 1798 Beddoes established his Pneumatic Institute. Here oxygen was used as a panacea. Like all such cure-alls it rapidly fell into disrepute from misuse and abuse. As a result of this unfortunate experience, it was not until the beginning of World War I that oxygen therapy again became popular. However, in the intervening years much study and research was done on the subject which prepared the way for the place oxygen therapy was to occupy in therapeutic medicine.

## USES OF OXYGEN THERAPY

As a therapeutic measure, oxygen is used mainly to combat anoxia. Anoxia, as it is recognized today, may be divided into four classes, namely, the anemic, the anoxic, the stagnant, and the histotoxic forms. In the anemic form the oxygen tension in the blood is normal, but the oxygen content is limited because of insufficient hemoglobin. The primary anemias are an example. In the anoxic form the hemoglobin is unsaturated because of a lowered oxygen tension. This condition may result from breathing atmospheres with a reduced oxygen content or from any condition that leads to a reduced alveolar ventilation.

Stagnant anoxia is the end result of cardiac or circulatory failure. The oxygen tension and oxygen content are normal, but the tissues are inadequately supplied because of a retarded blood flow. This condition is frequently seen in traumatic and surgical shock. Histotoxic anoxia is a condition in which the oxygen tension and content are essentially normal but the cells are incapable of utilizing the available oxygen because of poisoning. Examples are cyanide and carbon monoxide poisoning.

## EFFECTS OF OXYGEN WANT

Studies have shown the effects of oxygen want. These studies were made at high altitudes or in closed chambers in which the oxygen content could be reduced to varying levels. It has been shown that there are no definite signs of oxygen want in normal individuals until the oxygen has been reduced by 7 per cent. This slight deficiency results in an accelerated heart rate and moderate hyperpnea. A still greater reduction of oxygen will lead to headache, nausea, vomiting, and visual disturbances.

If the content is reduced further, convulsions, coma,

and eventual death result. If the onset of anoxemia is insidious the symptoms are those of mild alcoholic intoxication, with exhilarated mental functions, impairment of judgment, amnesia, and varying types of emotional disturbances. "Pilot error" has been definitely traced to varying degrees of anoxemia. It has been shown that a mild degree of oxygen want develops at 10,000 feet altitude, that oxygen want is definitely evident at 12,000 feet, and is well marked at 15,000 feet. For this reason pilots are instructed to use oxygen if flying above 10,000 feet for more than 30 minutes.

Cyanosis, which results from high altitudes or cardio-respiratory disease, is not evident until the oxygen concentration of arterial blood has fallen to 85 per cent. It should be borne in mind that the bluish color is produced by the reduced hemoglobin, not by the degree of saturation of hemoglobin with oxygen. Thus the anemic patient with only 5 grams of hemoglobin may not show cyanosis even though he is suffering from serious arterial oxygen saturation. On the other hand, the patient with polycythemia, who has 7 million red cells instead of the normal 5 million, may show cyanosis with an arterial oxygen saturation of 93 per cent, since 7 per cent of his relatively large total hemoglobin is in a reduced state.

In the absence of cyanosis, a pulse rate out of proportion to the degree of hyperpyrexia and the presence of a grayish color and rapid, shallow respirations are clearly indicative of anoxia, and steps should be taken to correct the condition at once.

## INDICATIONS FOR OXYGEN THERAPY

It has been stated<sup>1</sup> that the efficacy of oxygen is virtually in direct proportion to the day on which oxygen therapy is started, particularly in pneumonia and cardiac disease. Chemotherapy has markedly altered the course of many diseases, particularly pneumonia. However, it does not eliminate the danger of anoxia and the necessity for early oxygen treatment.

The patient suffering from cardiac disease is usually greatly improved by oxygen therapy. The cyanosis, dyspnea, and orthopnea are usually improved, and the patient is consequently more comfortable. Aside from adding to the patient's comfort, oxygen therapy will often prevent circulatory collapse and ultimate pulmonary edema. The pain of coronary thrombosis has been shown to be due to myocardial ischemia. The administration of oxygen to these patients has in many cases offered marked relief of pain.

Pulmonary edema responds very well to oxygen therapy. However, in these cases the oxygen should be administered under increased pressure. A positive pressure of 4 to 5 cm. of water should be used. As the edema improves, the pressure is gradually reduced to 1 or 2 cm.

Oxygen in combination with other gases is at times indicated, especially in cases of asthma and hiccough. Asthmatics are frequently afforded marked relief by

Read before the Minneapolis Academy of Medicine, November 19, 1945.

administration of oxygen 20 per cent and helium 80 per cent.

Persons suffering from hiccough frequently get relief from the addition of carbon dioxide to the oxygen mixture. The usual mixture used is oxygen 90 per cent, carbon dioxide 10 per cent. The patient is allowed to breathe this mixture until marked hypernea develops. It is then discontinued and repeated at intervals of 15 to 30 minutes, if necessary, to control the paroxysms.

Aside from diseases of the cardiorespiratory system, oxygen therapy is indicated in many other diseases. Fine<sup>2</sup> and his co-workers have demonstrated that the administration of 95 per cent oxygen will remove nitrogen from an obstructed bowel and thus lessen distention. They also demonstrated that pure oxygen will lessen the post-encephalogram headache.

Mayo<sup>3</sup> concluded that the administration of 100 per cent oxygen postoperatively to surgical patients leads to a smoother convalescence in many instances. Oxygen therapy is indicated in many other diseases, particularly in cases of shock, coma, hyperpyrexia, thyroid crisis, postoperative atelectasis, asphyxia of the newborn, and gas poisoning.

#### METHODS OF ADMINISTERING OXYGEN

At present we have four popular methods for the administration of oxygen: intranasal catheter, tent, mask, and chamber. The method used depends largely upon the available equipment and the concentration of oxygen to be delivered. There has been much discussion as to the relative merits of low oxygen concentrations and the dangers of high concentrations. It is generally agreed that concentrations below 40 per cent are of little value. The value of higher concentrations is recognized; but the dangers of the higher concentrations are also recognized. To be safe, it is advisable not to administer 100 per cent oxygen continuously for more than 48 hours. The concentration should then be reduced to 50 or 60 per cent for 1 to 2 hours. If necessary, the concentration may then be changed back to 100 per cent.

The periodic removal of the mask for washing the face, feeding, and so on is usually enough to alter the continuous administration of the high oxygen concentration and thus eliminate the danger of oxygen poisoning, which is characterized by pulmonary edema and areas of consolidation resembling bronchial pneumonia.

The intranasal catheter is a very satisfactory method for administering oxygen in concentrations of 40 to 70 per cent. A flow of 5 to 8 liters of oxygen per minute will usually deliver these concentrations to the patient. A number 10 F. catheter is passed through one nostril and the tip is anchored opposite the uvula. If the patient begins swallowing after the oxygen is turned on, the catheter should be withdrawn slightly. It is advisable to remove the catheter every 6 to 8 hours for cleaning. After cleaning, the catheter should be placed in the opposite nostril to prevent irritation to the lining membranes of the nose. As pure oxygen is very drying to the nose and throat, some means for humidifying it must be available. Humidifiers may be purchased, and they add markedly to the patient's comfort and the effectiveness of the treatment.

Intranasal oxygen has several advantages. In the hands of the inexperienced, this method is usually the most satisfactory. Other advantages are that the cost of equipment and its upkeep are less than for the tent or chamber, and, lastly, that the expense to the patient is less.

The mask is used for administering oxygen concentrations of 70 per cent and above. A flow of 6 to 8 liters of oxygen per minute will deliver these concentrations if a well-fitting mask is used.

There is one important objection to the oxygen mask; it becomes uncomfortable to the patient after he has worn it for several hours. He begins to perspire beneath the mask, it begins to feel too tight, and frequently it becomes quite uncomfortable; for this reason it is not tolerated by some patients.

The oxygen tent will deliver an available oxygen concentration of 40 to 60 per cent oxygen to the patient. A flow of 10 to 12 liters of oxygen per minute is necessary to furnish these concentrations in the inspired air. However, these concentrations are available only if the tent is managed correctly. If improperly managed, this form of therapy may be ineffectual and even dangerous.

A properly managed oxygen tent furnishes a pleasant means of oxygen administration. The patient is unhampered by tubes or masks, and he lies in a pleasantly cooled, humidified atmosphere, breathing the oxygen-enriched air. The tent is necessary for the administration of oxygen to small children and the older, non-co-operative patient, who usually do not tolerate the mask or intranasal catheter.

The chamber furnishes the ideal method for administering an oxygen-enriched atmosphere. While this method is ideal, it is more expensive and is to be had only in the larger hospitals, which have specially built rooms for this purpose.

#### MISCONCEPTIONS ABOUT OXYGEN THERAPY

Although oxygen therapy is a well-established form of treatment, many physicians discount its effectiveness. Such opinions arise from unfavorable experiences with this rather expensive form of treatment. For this reason, oxygen therapy is too often used only as a last resort, to impress upon the patient's family that everything is being done for his welfare.

Let us analyze the factors underlying the failure of this form of treatment to produce the desired results and see if we are able to determine the factors that may have led to failure. Unfortunately, there is more to oxygen therapy than wheeling in an oxygen tent, placing it over the patient's bed, and turning on a valve. This is the first misconception of this form of treatment. As in any form of treatment, there must be definite indications, and once these indications are determined, steps must be taken to insure adequate carrying out of the treatment.

In most hospitals oxygen therapy is the "orphan child" of the therapies. There just seems to be no place for it, and even if a place is found trained personnel for its management is usually lacking. Because of this situation, equipment is frequently in poor repair, obsolete, and ill functioning. All these conditions lead to unsatisfactory results. If oxygen is to be administered successfully



the equipment must be in good repair and properly managed.

It has been proved that the concentration of oxygen in the inspired air must be at least 40 per cent if oxygen therapy is to be effective. Yet many tests have shown the concentration of oxygen in the tent to be only 25 or 30 per cent. This low concentration of oxygen is usually due to a torn tent, improper adjustment of the canopy over the bed to insure a tight fit, too frequent opening of the tent, or an inadequate oxygen flow. There must be a flow of 10 to 12 liters of oxygen per minute into the tent to have a concentration of 50 per cent oxygen in the inspired air; nevertheless, many observations have shown a flow of only 6 liters per minute. All these factors lead to an oxygen concentration too low to be effective. Aside from adequate oxygen concentration within the tent—which can be maintained only by periodic analysis of the oxygen concentration—the tent must be properly cooled and humidified. These conditions for satisfactory results can be maintained only by having someone in charge who is familiar with this

type of therapy, rather than the untrained nurse or orderly or the uninterested intern.

If oxygen therapy is to be effective it should be started early. Above all we must maintain at all times an oxygen concentration that will correct the existing anoxia. Otherwise this form of therapy will prove to be only a disappointment to the physician and an added expense to his patient.

#### REFERENCES

1. Evans, J. H., and Durshordwe, C. J.: Indications for Oxygen Therapy in Respiratory Disease. *Anesth. & Analg.*, 14: 162 (July-Aug.), 1935.
2. Fine, Jacob; Banks, B. M.; Sears, J. B.; and Hermanson, Louis: The Treatment of Gaseous Distention of the Intestine by the Inhalation of Ninety-Five Per Cent Oxygen. *Ann. Surg.*, 103: 375 (March), 1936.
3. Boothby, W. M.; Mayo, E. W.; and Lovelace, W. R.: One Hundred Per Cent Oxygen: Indications for Its Use and Methods for Its Administration. *J.A.M.A.*, 113: 477 (Aug. 5), 1939.
4. Tovell, Ralph M., and Remlingen, Joseph, Jr.: History and Present Status of Oxygen Therapy and Resuscitation. *J.A.M.A.*, 117 (Dec.), 1941.
5. Barach, Alvan L.: *Inhalational Therapy*. Philadelphia: J. B. Lippincott Company, 1944.

### AMERICAN STUDENT HEALTH ASSOCIATION NEWS-LETTER

The American Student Health Association, an organization of two hundred colleges and universities throughout the country, with two in Canada, represented at annual meetings by members of their departments of student health, held its 24th annual meeting in Minneapolis, May 7-9.

Visits to the University of Minnesota Student Health Service and the hospitality of the staff are pleasant memories of those who attended.

*High points of the professional sessions.* In the session led by Dr. J. P. Ritenour, Pennsylvania State College, a keen interest was shown in faculty health problems. It was conceded that since faculty members are in a different age group from that usually served by college health services, and therefore present different types of health problems, significant increases in staff and financial support would be required were the services to assume the medical care of faculties. An alternative approach to the problem was seen in the recently developed independent plans for prepayment medical services.

Dr. Bruce Dill of the Fatigue Laboratory at Harvard offered a test for determining the physical fitness of students. It is the result of months of study of various methods for measuring reactions to strenuous exercise in students and military trainees.

Dr. Wesley Spink, University of Minnesota, warned of the danger of small and inadequate dosages of sulfa drugs and penicillin, as usually present in sprays, powders, and lozenges. Such inadequate dosage often permits the development of strains of organisms which are resistant even to large doses of these drugs when used later in the course of treatment.

An increased emphasis on health education in colleges is demanded by the national and international developments of today. The San Francisco Charter contains an important section on health. Disputes between management and labor are concerned with the health of em-

ployees. To provide leadership in this field and to develop an enlightened citizenry the college must recognize its responsibility. This was the appeal made by Dr. A. O. De Weese of Kent State University and his committee on health instruction.

Dr. Warren E. Forsythe, University of Michigan, on the basis of a detailed statistical analysis of the services rendered civilian and veteran students, expressed the opinion, shared by many delegates, that the problems presented by veterans are not greater or fundamentally different from those presented by civilian students.

However, Dr. Robert Hinckley, University of Minnesota, gave case histories of veterans with war-related emotional problems and demonstrated that a psychiatrist can be of great service in helping students, veterans or civilians, to adjust themselves to the problems and situations facing them.

Dr. Holden, University of Colorado, reported on the basis of his experience that veterans may be the carriers of intestinal diseases, such as amebiasis, and so threaten the health of the campus community.

As with all such meetings, the memories most likely to last are those of the people met, of exchanges of information with others facing similar problems, of informal debates around the luncheon table. Talking with others from all over the country, one realizes that the health of college students is a national problem needing the coordinated and united efforts of all departments on the college campus interested in health. Dr. Ralph Canuteson, University of Kansas, stressed this need in his presidential address. Later he announced that a third national conference on health in college would be held in New York, in May 1947, to be sponsored by four national associations, namely, the Association of American Colleges, the National Education Association, the National Health Council, and the American Student Health Association.

# The Treatment of Trimalleolar Fractures of the Ankle

Major Robert E. Van Demark, M.C., A.U.S.

Camp Joseph T. Robinson, Arkansas

A SINGLE fracture at the ankle is frequently difficult to reduce and may result in prolonged disability. In case of a trimalleolar fracture, where the distal end of the tibia is fractured at two points—medially and posteriorly—and the distal end of the fibula is also fractured, the attending surgeon is faced with a very definite problem. Failure to restore the fractured fragments to their normal position frequently results in a painful ankle and ultimately a degenerative arthritis.<sup>1</sup> Incongruity of the joint surface should be avoided and the anatomical positions of the fractured fragments should be restored.

Delayed reduction of the fracture is not advisable. The resulting severe swelling obliterates the normal anatomical landmarks at the ankle within a few hours, and materially adds to the difficulty of direct manipulation of the medial and lateral malleoli. Reduction of the fracture is most easily effected within six hours of the injury.

The choice of anesthetic varies with the age and condition of the patient.<sup>3</sup> A general anesthetic, a low spinal anesthetic, or a local anesthetic in the fracture-hematoma may be used. It is noted that the use of a local anesthetic (2 per cent procaine solution) is usually unsatisfactory because of failure to inject the solution into the posterior fracture-hematoma. Such an injection is preferably made from a point just behind the lateral malleolus. A few cubic centimeters of the solution are also injected directly into the ankle joint.

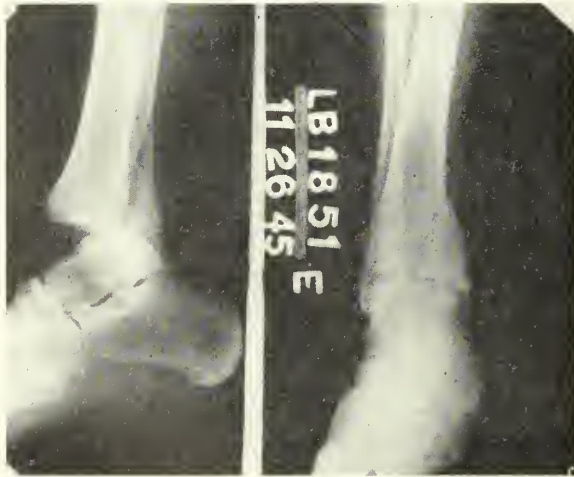


Fig. 1. Trimalleolar fracture with displacement of astragalus posteriorly.

Closed reduction<sup>2</sup> of the fracture can usually be effected (Figures 1 and 2). The method of reduction varies with the individual case. It is essential that the astragalus be replaced to its normal position under the



Fig. 2. Same case as shown in Figure 1. Closed reduction under local anesthesia.



Fig. 3. Combined fracture of medial and (inner) posterior malleoli with fracture of lateral malleolus. A small bone fragment, displaced into the joint, is seen adjacent to the astragalus medially. A satisfactory closed reduction could not be effected despite repeated manipulation.

distal tibia by manual traction on the heel. Subsequently the lateral and medial malleoli can be replaced in their normal positions by direct manipulation.





Fig. 4. End result of case shown in Figure 3, following open reduction and internal fixation which was removed.

Plaster of paris immobilization is the method of choice. A minimum amount of padding should be used, in order to avoid redisplacement of the fracture. Care must be taken to avoid undue pressure on bony prominences. With a padded cast bivalving is unnecessary. The affected extremity should be well elevated and closely observed for signs of circulatory embarrassment.

Open reduction of the fractured fragments is rarely necessary and should be undertaken only under the most rigid conditions of aseptic technique. In contrast to soft tissue, infection of bone results in prolonged drainage and disability. Only after repeated manipulations have failed and where a strict aseptic technique can be relied upon is open reduction justifiable (Figures 3 and 4). An appropriate incision should be followed by accurate reduction of the unreduced fragment or fragments. Inert materials, such as vitallium or stainless steel, are those of choice for internal fixation.

Immobilization is usually continued for a period of ten weeks. Following the removal of the cast the judicious employment of physical therapy is advisable.<sup>1</sup> Weight bearing is begun two weeks later. The use of an elastic bandage about the foot, ankle, and lower leg will prevent the appearance of the edema frequently seen following the removal of the cast.

#### REFERENCES

1. Ghormley, Ralph K.: The Relationship of Fractures to Severe Painful Joint Lesions of the Lower Extremity; an Editorial. *Surg. Gynec. & Obstet.*, 76: 752-53, 1943.
2. Key, J. A., and Conwell, H. E.: The Management of Fractures, Dislocations and Sprains. Third Edition. St. Louis: C. V. Mosby, 1942.
3. Lundy, John S. Clinical Anesthesia: A Manual of Clinical Anesthesiology. Philadelphia: W. B. Saunders, 1942.
4. Van Demark, R. E., and Krusen, F. H.: Uses of Physical Therapy in the Practice of Orthopedics. *M. Clin. North America*, 27: 913-22 (July), 1943.

## ROCKY MOUNTAIN SPOTTED FEVER SEASON APPROACHES

Rocky Mountain spotted fever occurs in a large number of states. It is conveyed to human beings by the bites of ticks. In eastern and southern states the vector is the dog tick, in the northwest it is the wood tick, and in southwestern states it is occasionally the lone star tick.

The symptoms of Rocky Mountain spotted fever appear suddenly. They include fever, headache, extreme sensitiveness of the eyes to light, pains in the muscles and joints, and chills. A rash spreads over the body after the third or fourth day of fever.

About 20 per cent of Rocky Mountain spotted fever cases have been fatal. However, vaccination reduces the chance of infection and lowers the fatality rate. A serum also is available for treatment, and a new treatment recently has been tried by doctors.

Precautions to be taken against Rocky Mountain spotted fever include avoiding tick-infested areas, vaccination of persons whose work takes them into tick areas, and careful search of the clothing and the body at noon and at night after going into the woods during the tick season. Ticks can be recognized by their flat, leathery appearance, and their eight legs. If a tick is found on the person it should be removed carefully with tweezers or a piece of paper so that it will not be crushed, and so that the fingers will not come in contact with it.

## Book Reviews

**Surgical Treatment of the Motor-Skeletal System.** Super-  
vising Editor, **FREDERIC W. BANCROFT, A.B., M.D., F.A.C.S.;**  
Associate Editor, **CLAY RAY MURRAY, M.D., F.A.C.S.**  
Philadelphia: J. B. Lippincott Company, 1945. 2 volumes.  
Pp. 1254, illustrations 1061. \$20.00.

Drs. Bancroft and Murray have succeeded in editing a comprehensive treatise which will take its place as a standard and authoritative work in its field. These volumes represent the combined efforts of 42 surgeons, all men recognized nationally as authorities in their special fields of interest. Some of the authors, together with the chapters they have written, are as follows:

Frank R. Ober, M.D., Congenital Anomalies of Upper Extremity and Shoulder Girdle

A. H. Brewster, M.D., Congenital Dislocation of Hip

Mather Cleveland, M.D., Anterior Poliomyelitis

Joseph A. Freiberg, M.D., Low-back Pain

Bradley L. Coley, M.D., Tumors of Bones and Joints

Frank D. Dickson, M.D., Tuberculosis of Bones and Joints

William Darrach, M.D., Compound Fractures

Paul B. Magnuson, M.D., Treatment of Fractures of Bones of Forearm.

In keeping with the times, the text has been streamlined and made to fit the needs of the busy practitioner and surgeon, who is more concerned about present-day authoritative opinion than in the historical background of the subjects covered. The emphasis is placed primarily on modern surgical treatment. As Dr. Bancroft says in a prefatory note, "... no attempt has been made in general to present the diagnostic problems or the etiology." He states further, "It seemed advisable to establish a pattern of treatment and coverage for each field which would safeguard against omissions and would present the up-to-date, authoritative material in the most concise and usable form. This pattern would include not only the operation itself, but also indications for it, a full discussion of the preoperative preparation of the patient, the common sequellae, a full presentation of the prognosis, and a complete discussion of the most approved postoperative treatment."

As the title indicates, the scope of the book is broad indeed. The subjects covered transcend the bounds that general surgeons even now are willing to place on the sphere of activity of the orthopedic surgeon. For that reason both the orthopedic surgeon and the general surgeon will find much of interest in these volumes. Those interphases between the admittedly artificial boundaries between the two great subspecialties of the art and science of surgery are fully covered. Even the domain of neurosurgery is touched upon by a fairly comprehensive treatment of the prolapsed intervertebral disc. Lesions of the spinal cord and peripheral nerves, however, are not discussed directly.

The chapter on "Anterior Poliomyelitis" contains discussions of the approved methods of treatment for each stage of the disease. Paragraphs added by the editor give a fair outline of the so-called Kenny method of treatment, but no appraisal is made of the value of this much debated regimen. As would be expected, the orthopedic phases of treatment for the late stages of the disease are dealt with in detail and completely.

The discussion of recurrent dislocation of the shoulder joint is written in an admirably objective fashion. Reasons are given for the failure of many of the operations for this condition recommended in the past, and then four operative procedures used generally today are presented. The reader is left to draw his own conclusions as to the relative worth of these procedures. No comparative statistics or reported series are given.

The two chapters outlined above are typical of the entire work. There is a notable lack of percentages and statistics throughout both volumes. Each chapter is accompanied by a relatively short bibliography of modern articles on the subject concerned.

As in most surgical books being published these days, a section on military surgery has been included. Surgeon General

Kirk and Colonel Moore have written a comprehensive chapter that outlines the methods of treatment used during the early phases of war. For obvious reasons of time, it fails to include many of the developments in surgical treatment that came about slowly as the war progressed. The complete authoritative treatise on military surgery as it developed and was practiced in World War II is yet to be written.

Little more in criticism of this work can be said, except that references to the role of penicillin in the surgical treatment of the motor-skeletal system are rare and sketchy. Here again, however, the time of publication and the rapid daily advances in the subject would appear to be to blame, rather than willful omission of the subject.—J. R. P.

**A Bibliography of Infantile Paralysis, 1789-1944, with Selected Abstracts and Annotations.** Prepared under direction of the National Foundation for Infantile Paralysis, Inc. Edited by **MORRIS FISHBEIN**, compiled by **LUDVIG HEKTOEN, M.D.**, and **ELLA M. SALMONSEN**. Philadelphia: J. B. Lippincott Company, 1946. Pp. 672. \$15.00.

A thorough and complete bibliography, with abstracts of some of the longer and more important articles. It is dedicated to Franklin Delano Roosevelt, "who by his triumph over the most dreaded of crippling diseases, which could not conquer him, gave inspiration and courage to thousands of children, men and women similarly afflicted." Of great value in any library where a study of infantile paralysis might be undertaken.—J. L. W.

### LATEST BOOKS RECEIVED

**Active Psychotherapy**, by **ALEXANDER HERZBERG, M.D.**  
New York: Grune & Stratton, 1945. Pp. 152. \$3.50.

**Amputation Prosthesis**, by **ATHA THOMAS** and **CHESTER HADDAN**. Philadelphia: J. B. Lippincott, 1945. Pp. 306. \$8.00.

**The Clinical Application of the Rorschach Test**, by **RUTH BOCHNER** and **FLORENCE HALPERN**. New York: Grune & Stratton, 1945. \$4.00.

**Clinical Electrocardiography**, by **DAVID SCHERF, M.D.**, and **LINN J. BOYD, M.D.** 2d ed. Philadelphia: J. B. Lippincott Company, 1946. Pp. 268. \$8.00.

**Personality Factors in Counseling**, by **CHARLES A. CURRAN**. New York: Grune & Stratton, 1945. Pp. 310. \$4.00.

**Rorschach's Test, II. A Variety of Personality Pictures**, by **SAMUEL J. BECK**. New York: Grune & Stratton, 1945. \$5.00.

**War Neuroses**, by **ROY A. GRINKER** and **JOHN P. SPIEGEL**. Philadelphia: The Blakiston Co., 1945. Pp. 145. \$2.75.

**The 1945 Year Book of General Medicine**. Chicago: Year Book Publishers, Inc., 1945. \$3.00.

**The 1945 Year Book of Industrial and Orthopedic Surgery**. Chicago: Year Book Publishers, Inc., 1946. Pp. 432. \$3.00.

**The 1945 Year Book of Pediatrics**, edited by **ISAAC A. ABT** and **ARTHUR F. ABT**. Chicago: Year Book Publishers, Inc., 1946. Pp. 448. \$3.00.

**Ambulatory Proctology**, by **ALFRED J. CANTOR, M.D.** New York: Paul B. Hoeber, Inc., 1946. Pp. 524. \$8.00.

**Oral Medicine**, by **LESTER W. BURKET, D.D.S., M.D.** Philadelphia: J. B. Lippincott Company, 1946. Pp. 674. \$12.00.

**A Textbook of Gynecology**, by **ARTHUR HALE CURTIS, M.D.** 5th ed., Philadelphia: W. B. Saunders Company, 1946. Pp. 755, illustrated. \$8.00.

**Surgical Treatment of the Nervous System**, edited by **FREDERIC W. BANCROFT, M.D., F.A.C.S.**, and **COBB PILCHER, M.D., F.A.C.S.** Philadelphia: J. B. Lippincott Company, 1946. Pp. 534, illustrated. \$18.00.

**The 1945 Year Book of General Therapeutics**, edited by **OSCAR W. BETHEA, M.D., F.A.C.P.** Chicago: Year Book Publishers, Inc. Pp. 456. \$3.00.



# The JOURNAL LANCET

Serves the *Medical Profession of*  
MINNESOTA, NORTH DAKOTA, SOUTH DAKOTA AND MONTANA

Official Journal of the American Student Health Assn., Great Northern Railway Surgeons' Assn., Minneapolis Academy of Medicine, Montana State Medical Assn., North Dakota Society of Obstetrics and Gynecology, North Dakota State Medical Assn., Northwestern Pediatric Society, Sioux Valley Medical Assn., South Dakota Public Health Assn., South Dakota State Medical Assn.

## ADVISORY COUNCIL

### *North Dakota State Medical Assn.*

Dr. A. E. Spear, *Pres.*  
Dr. Philip G. Arzt, *Pres.-Elect*  
Dr. L. W. Larson, *Secy.*  
Dr. W. W. Wood, *Treas.*

### *North Dakota Society of Obstetrics and Gynecology*

Dr. E. H. Boerth, *Pres.*  
Dr. Paul Freise, *Vice Pres.*  
Dr. G. Wilson Hunter, *Secy.-Treas.*

### *Minneapolis Academy of Medicine*

Dr. Karl W. Anderson, *President*  
Dr. Russell W. Morse, *Vice Pres.*  
Dr. J. C. Miller, *Secretary*  
Dr. Ragnvald S. Ylvisaker, *Treasurer*  
Dr. Henry E. Hoffert, *Recorder*

### *South Dakota State Medical Assn.*

Dr. F. S. Howe, *Pres.*  
Dr. H. R. Brown, *Pres.-Elect*  
Dr. J. L. Calene, *Vice-Pres.*  
Dr. Roland G. Mayer, *Secy.-Treas.*

### *South Dakota Public Health Assn.*

Dr. J. M. Butler, *Pres.*  
Dr. C. E. Sherwood, *Vice Pres.*  
Dr. Gilbert Cottam, *Secy.-Treas.*

### *Sioux Valley Medical Assn.*

Dr. D. S. Baughman, *Pres.*  
Dr. Will Donahoe, *Vice Pres.*  
Dr. R. H. McBride, *Secy.*  
Dr. Frank Winkler, *Treas.*

### *Montana State Medical Assn.*

Dr. S. A. Cooney, *Pres.*  
Dr. M. A. Shillington, *Pres.-Elect*  
Dr. R. F. Peterson, *Secy.-Treas.*

### *Northwestern Pediatric Society*

Dr. G. B. Logan, *Pres.*  
Dr. Geo. Kimmel, *Vice Pres.*  
Dr. Northrop Beach, *Secy.-Treas.*

### *Great Northern Railway Surgeons' Assn.*

Dr. W. W. Taylor, *Pres.*  
Dr. R. C. Webb, *Secy.-Treas.*

### *American Student Health Assn.*

Dr. Ralph I. Canuteson, *Pres.*  
Dr. Glenadine Snow, *Vice Pres.*  
Dr. G. T. Blydenburgh, *Secy.-Treas.*

## BOARD OF EDITORS

Dr. J. A. MYERS, *Chairman*

Dr. J. O. Arnson  
Dr. A. B. Baker  
Dr. D. S. Baughman  
Dr. Ruth E. Boynton  
Dr. Gilbert Cottam  
Dr. H. S. Diehl  
Dr. L. G. Dunlap  
Dr. Ralph V. Ellis  
Dr. W. A. Fansler

Dr. A. R. Foss  
Dr. James M. Hayes  
Dr. A. E. Hedback  
Dr. E. D. Hitchcock  
Dr. R. E. Jernstrom  
Dr. A. Karsted  
Dr. L. W. Larson  
Dr. W. H. Long  
Dr. O. J. Mabee

Dr. J. C. McKinley  
Dr. Irvine McQuarrie  
Dr. Henry E. Michelson  
Dr. C. H. Nelson  
Dr. N. J. Nessa  
Dr. Martin Nordland  
Dr. J. C. Ohlmacher  
Dr. K. A. Phelps  
Dr. C. E. Sherwood

Dr. M. A. Shillington  
Dr. J. C. Shirley  
Dr. E. Lee Shrader  
Dr. E. J. Simons  
Dr. J. H. Simons  
Dr. S. A. Slater  
Dr. W. P. Smith  
Dr. S. E. Sweitzer

Dr. W. H. Thompson  
Dr. E. L. Tuohy  
Dr. M. B. Visscher  
Dr. O. H. Wangenstein  
Dr. S. Marx White  
Dr. H. M. N. Wynne  
Dr. Thomas Ziskin,  
*Secretary*

LANCET PUBLISHING CO., *Publishers*, 84 South Tenth Street, Minneapolis 2, Minnesota

MINNEAPOLIS, MINNESOTA, JUNE, 1946

## MEDICAL CONVENTIONS AGAIN

Medical conventions have now returned to their pre-war splendor. They were few in numbers and the programs sadly curtailed during the war years that are now fortunately past.

The North Dakota Medical Association held its annual meeting at Bismarck May 16-18. The Minnesota State Medical Association met in St. Paul May 20-22. The annual meeting of the South Dakota Association is scheduled for June 1-4 in Aberdeen. The Montana Association will meet in Great Falls July 18-20. Although these state associations suffered some abbreviations in program and attendance during the war period, their sheltered locations in the very heart of the nation gave their meetings some advantage over those that were not so favorably situated. The national associations were hit the hardest, not only because of the undesirability of meeting in cities on the Atlantic or Pacific coast, but also because of restricted transportation facilities and

actual government orders prohibiting attendance at any such gathering beyond a certain limited number that seemed necessary to transact business and keep the organization intact.

There is ever increasing interest manifested in social and medical economic problems. Sane, progressive groups have done splendid work to institute justice in place of charity; and effort is being made to level out the economic burden of unpredictable illness. A well thought out prepayment medical care plan was approved by the Minnesota Association.

The commercial exhibits are more popular than ever. The old-time detail man with his stereotyped lecture has been superseded by a specialist in his line who is truly qualified to dispense information on modern therapy. He does so in a way that really appeals to physicians, who have a right to feel confused by the multiplicity of products and proprietary names that have come into the market during the past few years. A. E. H.

## DOCTORS ARE STILL SCARCE

The latest available count of physicians in the United States reaffirms the complaints of scarcity that have been made in the past few years, especially in the less populous states that make up the greater part of the JOURNAL LANCET's primary constituency.

Of the four states — Minnesota, Montana, North Dakota, South Dakota — represented, Minnesota has by far the largest number of physicians, namely, 2565. Of these all but approximately 250 are under 69 years of age. General practitioners in the state number 1500; those under 69, 1208. Interns number 65 and hospitals 286.

Montana has a total of 361 physicians, of whom all but 57 are under 69 years of age. Of the total, 201 are general practitioners, of whom 154 are under 69. Like the Dakotas, Montana has no interns, though it has 79 hospitals.

North Dakota has 363 physicians, of whom 69 are over 69 years of age. About two thirds of the total, or 202, are general practitioners, and 155 of these are under 69 years of age. The state has 64 hospitals.

South Dakota has only 334 physicians, of whom 61 are over 69 years of age. About two thirds, or 200, are general practitioners, and some three fourths, or 153, are under 69 years of age. The state has 73 hospitals.

These figures compare with a total of 118,338 physicians in the United States, of whom 101,555 are under 69 years of age; a total of 67,664 general practitioners, of whom 56,122 are under 69 years of age; and a total of 6616 interns and 8258 hospitals.

Of the specialists, surgeons are by far the largest group; they number 12,488. Next in order are the internists, with 4926; the eye, ear, nose, and throat specialists, with 4258; the pediatricians, with 3724; and the obstetricians and gynecologists, with 3677. Between this group and the next largest, the urologists, with 1985, there is a considerable drop. Smallest of the groups are the plastic surgeons, who number 85.

---

### French Doctors Want Automobiles

Doctors in at least eighteen Departments of France have refused to sign birth or death certificates in protest against the Government's failure to meet their demands for automobiles, according to a cable to *The New York Times*. The "strike" is threatening to spread over the whole of France. A commission formed by the Ministry of the Interior thus far has failed to reach a solution acceptable to the doctors' organizations, which, according to a report in *Figaro*, have received only 200 automobiles since the beginning of the year, despite urgent demands for 3000.

## MEET OUR CONTRIBUTORS . . .

DR. HALWARD M. BLEGEN of the active surgical staff of the Western Montana Clinic and St. Patrick's Hospital at Missoula, Montana, is a graduate of the University of Minnesota (B.S., B.M., 1936, M.D., 1937). He is a Fellow of the American College of Surgeons, a Diplomate of the American Board of Surgery, and a Fellow of the American Medical Association and the Montana State Medical Association.

DR. ESTHER L. BOYER, a surgeon, also of the Western Montana Clinic at Missoula, Montana, is a graduate of the University of Wisconsin, with the degrees of B.A., M.A., Ph.D., and M.D. Before going to the Missoula clinic she was Instructor in Anatomy at the Women's Medical College of Pennsylvania in Philadelphia (1940-42), and Instructor in Surgery and Student Health Physician at the University of Missouri Medical School (1942-44). She is a member of Sigma Xi, the American Association of Anatomists, and the Montana State Medical Association.

DR. SIDNEY GRANVILLE CLAYMAN, whose specialties are tuberculosis and diseases of the chest, has been at the State Tuberculosis Sanatorium, San Haven, North Dakota, as staff physician in charge of male patients, for the past five years. He is a graduate of the University of Michigan Medical School (M.D., 1939), and a member of the American Medical Association, the Trudeau Society, and the American College of Chest Physicians.

DR. STUART LANE AREY, who was also a contributor to our May issue, is a Minneapolis pediatrician.

DR. ELLIS HERNDON HUDSON, recently Officer in Charge of Preventive Medicine, Department of Hawaii, has returned to Ohio University at Athens as Director of Student Health. An authority on nonvenereal syphilis, he spent many years in the Near East before assuming the position at Athens. At the beginning of the war he was assigned as Captain of the Medical Corps, U.S.N.R., in charge of the Bethesda Navy Tropical Disease Laboratory and Tropical Disease Wards. His teaching and preparation of text pamphlets on tropical diseases were a significant contribution to the medical aspects of the war. He holds the Certificate in Tropical Medicine of the London School of Tropical Medicine.

DR. JOE W. BAIRD, Associate Professor of Anesthesiology at the University of Minnesota, is a graduate of the University of Nebraska (B.Sc. in Med. and M.D., 1930). He was resident at Hartford (Connecticut) Hospital from 1940 to 1942 and did graduate work at the Mayo Clinic 1942-43. He is a Diplomate of the American Board of Anesthesiology and a member of the American Medical Association, the American Society of Anesthetists, and the Hennepin County Medical Society.



MEET OUR CONTRIBUTORS (*Continued*)

DR. ROBERT E. VAN DEMARK, orthopedic surgeon with the Army for the past several years, is now Chief of the Orthopedic Section, Regional Hospital, Camp Joseph T. Robinson, Arkansas. He is a graduate of Northwestern University (M.B., 1938, M.D., 1939), and of the University of Minnesota. He is a member of the Minnesota State Medical Association and the Olmsted-Houston Fillmore-Dodge County Medical Society and a Fellow of the American Medical Association.

**ANNOUNCEMENTS****American College of Chest Physicians**

Owing to crowded conditions in San Francisco hotels, the dates of the 12th Annual Meeting of the American College of Chest Physicians have been changed from June 29-30, July 1-2 to June 27-30.

**National Gastroenterological Association**

The National Gastroenterological Association resumes its annual scientific sessions this year with a three-day convention in New York City, June 19-21. The program will consist of five symposia and five additional short papers. There will be two luncheon round-table conferences, one on June 19, on "Parasitology and Tropical Medicine from a Military and Civilian Standpoint," led by Dr. Z. Taylor Bercovitz, and the other on June 21 on "Socialized Medicine," led by Dr. William B. Rawls. A symposium on "Carcinoma of the Gastrointestinal Tract" will be presented by Dr. George T. Pack and his associates from the Memorial Hospital, New York.

**American Association for the Study of Goiter**

The American Association for the Study of Goiter will hold its annual meeting at the Drake Hotel, Chicago, June 20-22. Among the program participants are Dr. J. W. Buchta of the University of Minnesota, who will speak on "Radioactive Isotopes," and Dr. Brown W. Dobyns of Rochester, Minnesota, who will read his Van Meter Prize Award essay.

**125 Fellowships in Public Health**

Surgeon General Thomas Parran announces a grant for the establishment of 125 fellowships to train physicians and sanitary engineers in public health, approved by the National Foundation for Infantile Paralysis. Each fellowship provides a year's graduate training in a school of public health or a school of sanitary engineering. The fellowships will be available for the academic year 1946-47 or 1947-48, and are open to men and women, citizens of the United States under 45 years of age.

The purpose of the fellowships is to aid in the recruitment of trained health officers, directors of special med-

ical services, and public health engineers to help fill some of the 900 vacancies in public health medical positions and 300 vacancies for public health engineers, existing in state and local health departments over the country. The fellowships are reserved for newcomers to the public health field, and are not open to employees in state and local health departments.

Applicants may secure details by writing to the Surgeon General, U. S. Public Health Service, Attention Public Health Training, 19th and Constitution Avenue NW., Washington 25, D. C. The awards committee will act on applications on June 15, July 1, July 15, and August 1.

**"Rheumatism" Resumes Publication**

*Rheumatism*, quarterly journal devoted to the clinical aspects and treatment of rheumatic disorders, resumed publication in April 1946, after suspension of publication since 1940, owing to war conditions. The journal, sold on subscription of 10 shillings post-free to the medical profession only, is published by the Rolls House Publishing Company, Ltd., 2 Breems Building, London, E. C. 4, England.

**Scholarships for Advanced Study of Eye Diseases**

Announcement has been made of four scholarships for the advanced study of eye diseases at New York University College of Medicine, to be provided annually by the Lions Club of New York. They will be awarded to graduate medical students selected by the department of ophthalmology of the university. In accepting the gift Dr. Currier McEwen, dean of the College of Medicine, pointed out that it fitted into the plan for an Institute of Eye Disease to be established as part of the great new medical center which will unite New York University College of Medicine and Bellevue Hospital.

**Journal of Kansas Medical Society  
Names New Editor**

W. M. Mills, M.D., editor of the *Journal of the Kansas Medical Society* for the past eleven years, resigned from the editorship in April to assume his new duties as president of the Kansas Medical Society.

Dr. Mills has been succeeded as editor by Lucien R. Pyle, M.D., of Topeka, who has been a member of the editorial board of the *Journal* for eleven years. Dr. Pyle continued his editorial work during the four years he served with the Navy, and the *Journal* considers him well qualified for his new position. He assumed his duties with the May issue.

## Deaths

DR. DONALD MICHAEL DE COURCY, 44, St. Paul, died May 28 after a heart attack, an hour before his second son was born. Dr. De Courcy, a graduate of Marquette University School of Medicine, attended St. Thomas College and the University of Minnesota. He was formerly a national collegiate tennis champion and captain of the St. Thomas football team, and is one of three hockey players listed in the Marquette University Hall of Fame.

DR. JESSE E. LONG, 87, of Minneapolis, died April 30. A graduate of Rush Medical College in 1882, Dr. Long had practiced in Minneapolis for 52 years, and retired only a few years ago. He was one of the oldest members of the Hennepin County Medical Society.

DR. JOHN HENRY NOONAN, 64, of Anaconda, Montana, died May 9 in that city, following an illness of two months. Dr. Noonan, a graduate of Northwestern University Medical School (1908), had practiced in Anaconda for 29 years. He was born in Kokomo, Indiana, in 1882.

DR. SAMUEL RAINVILLE, 71, physician at Crosby, North Dakota, for more than 30 years, died there May 1, in his sleep, after a heart attack. A native of Glens Falls, New York, where he was born December 25, 1874, he was brought to Minneapolis to live as a small boy and later moved to Devils Lake, North Dakota, where he was a member of the first high school graduating class. He was a graduate of the Minneapolis College of Physicians and Surgeons (1897), and had practiced at Leeds and Minnewaukan, North Dakota, and later near Spokane, and, again in North Dakota, at Bowbells and Kenmare before moving to Crosby in 1915. He is survived by his wife and two daughters.

DR. CYRIL A. SCHWARZE, 32, of Rochester, Minnesota, son of Mr. and Mrs. Arthur Schwarze of Casselton, North Dakota, died April 22 at Rochester. Dr. Schwarze was born in Chaska, Minnesota, and was a graduate of the University of Wisconsin Medical School (1938). Dr. Schwarze interned at the Methodist Hospital, Des Moines, Iowa, and for a time was on the staff of Bradley Memorial Hospital, Madison, Wisconsin. He served overseas as a captain in the Army Medical Corps.

DR. JACOB MARTIN ERMAN, 54, of Omaha, Nebraska, a native of Minneapolis and a resident there for twenty-five years, died in Omaha June 4 of a heart attack. He was a graduate of the Chicago College of Medicine and Surgery, class of 1916.

DR. ROGER H. MATTSON, 56, long a practicing physician in North Dakota, died June 5 at Bayport, Minnesota. Services will be at New Rockford, North Dakota. He was a graduate of the University of Minnesota Medical School, class of 1920.

## News Items

### NEWS FROM MINNESOTA

*Minnesota State Medical Association.* About 300 persons were present at the opening session of the association, which met May 20-22 in St. Paul. Among the many topics discussed were advances in surgical treatment of cancer of the pancreas, brucellosis, bacillary dysentery, the Rh factor, and the use of hormone preparations.

In his presidential address Dr. Edwin J. Simons of Swanville said: "Unless every physician and every medical society devotes more time to the proper, broad solution of medicine's problems, the majority of the entire profession's time will be spent filling out governmental reports under a new national compulsory health insurance program."

The establishment of a voluntary prepaid medical service plan for Minnesota was authorized by the association. The action was announced by Dr. B. J. Branton, Willmar, chairman of the committee on organizing for prepaid medical care.

A colorful feature of the meeting was the presentation of 50-Year Club pins to nine Minnesota physicians who have practiced in the state for fifty years. Dr. L. E. Claydon of Red Wing, Dr. E. E. Novak of New Prague, and Dr. M. F. Knauff of St. Paul were present at the dinner honoring the 50-year men. Those absent from the celebration were Dr. Charles Bolsta, Ortonville; Dr. Charles Geromo, Balaton; Dr. Charles D. Harrington, Wayzata; Dr. A. E. Henslin, Le Roy; Dr. Edgar A. King, Minneapolis; and Dr. George P. Kirk, East Grand Forks.

Dr. William A. Coventry of Duluth, past president and now speaker of the House of Delegates, was honored with the distinguished service medal of the association.

Dr. Kano Ikeda, St. Paul, won first prize for a scientific exhibition, presented by the Southern Minnesota Medical Society, for his display on routine color photography.

Newly elected officers of the association who will take over their offices on January 1, 1947, are: Dr. L. A. Buie, Rochester, president; Dr. Carl B. Drake, St. Paul, vice president; Dr. L. E. Gowan, Duluth, vice president; Dr. B. B. Souster, St. Paul, secretary; Dr. W. A. Coventry, Duluth, speaker, House of Delegates; Dr. Charles G. Sheppard, Hutchinson, vice speaker; Dr. F. J. Elias, Duluth, chairman of the Council.

Dr. Gaylord W. Anderson, Director of the School of Public Health, University of Minnesota, has been elected Secretary-Treasurer of the Association of Schools of Public Health.

The Minnesota Hospital Association held its 23d annual convention May 26-28 in St. Paul. Twelve allied organizations, some of which held separate meetings, attended the convention. A dinner at St. Joseph's Hospital, St. Paul, honored Dr. William O'Brien, director



of postgraduate medical education at the University of Minnesota. At a luncheon meeting on May 27 George Bugbee, executive director of the American Hospital Association, spoke on "Federal Legislation Affecting Hospitals."

The Renville County Board of Commissioners has selected Carl H. Buetow of St. Paul as the architect for the new county hospital. Browns Valley is considering the design for its proposed hospital submitted by Ursa Louis Freed of Aberdeen, South Dakota. Fairfax is considering the question of whether a county hospital is needed.

The Grand Chapter of Alpha Epsilon Iota, national women's medical group, held its meeting in Minneapolis May 1-3. The sorority, formed in Ann Arbor in 1940, now has 26 chapters in medical schools throughout the country, with a membership of 3000, including doctors and undergraduate women medical students.

The St. Paul Surgical Society observed its tenth anniversary April 26 at a dinner meeting. Dr. Robert L. Sanders of Memphis, Tennessee, spoke on "Surgical Complications of Duodenal Ulcer." Guests included Dr. Owen H. Wangenstein of the University of Minnesota, Dr. Robert McGancy, president of the Minneapolis Surgical Society, and a group of Mayo Clinic surgeons.

Minneapolis physicians who have returned from military service to resume practice include Drs. George S. Bergh, Gordon G. Bowers, Cyril P. Dargay, Samuel A. Dworsky, Nathan K. Jensen, Bourne Jerome, John P. Kelly, Karl W. Pleissner, Erven E. Pumala, and Richard E. Reiley.

Dr. Donald Paulson, formerly of St. Paul, is credited with saving the life of a Texas soldier who had been stabbed in the heart. Dr. Paulson performed a delicate emergency operation, involving drawing the heart from its sac and reviving it with injection of adrenalin and hand massage. Hospital authorities described the odds against the success of the operation as greater than 100 to 1. Dr. Paulson was graduated from the University of Minnesota Medical School in 1937.

Dr. F. M. Feldman, city health officer of Rochester, speaking before the Rochester and Olmsted County Safety Council in April, pointed out that health departments must in future concentrate more on preserving the health of older persons, of whom there will be an increasing number. Figures compiled by health agencies show that in 1955 Minnesota will have a definite and marked increase in the 60 to 75 age group, which is expected to increase by 135,000, so that one person in six in the state will be over 60.

In the Elias P. Lyon memorial lecture delivered before 350 scientific research workers at the University of Minnesota in May, Dr. Carl F. Cori of Washington University stated that research has discovered a lead to the effect of insulin on the energy-producing functions of the body. The data are expected to be of importance in long-range studies of the interrelations of insulin and other hormones.

Dr. Mario Fischer, city health director of Duluth, has been named a member of a health advisory group assist-

ing the Minnesota Committee of Local Health Services. Such groups are being organized also in Willmar, Virginia, Hibbing, and Ely. They will urge legislative action to permit multiple-county health districts.

The Veterans Administration for the five-state area including Minnesota, the Dakotas, Iowa, and Nebraska, will have a board of physicians acting as consultants to Dr. Einer Andreassen, acting VA medical director. Among the physicians already appointed as chief consultants are Dr. Alan Challman, Minneapolis, neuropsychiatry; Dr. Everett K. Geer, St. Paul, tuberculosis; Dr. Russell H. Frost, Minneapolis, tuberculosis (to serve full time); Dr. Robert R. Kierland, Rochester, dermatology; and, from the Mayo Clinic, Dr. Oscar T. Clagett, thoracic surgery; Dr. Thomas B. Magath, pathology, and Dr. Winchell McK. Craig, neurosurgery.

The Minneapolis Council of Social Agencies is conducting a study of city health problems through its health and medical care division, of which Dr. Donald A. Dukelow is director. The five-point initial program includes a study to determine the advisability of creating a bureau of industrial health; an inquiry into the need of developing an extensive program of public health dentistry for children; a long-term plan for the institutional care of chronic and convalescent cases; advisory studies in regard to a proposed bill for a state enabling act to permit multiple-county health districts; establishment of uniform methods of record keeping and reporting of social and medical information at medical care institutions.

Dr. Arthur George Davis, orthopedic surgeon, addressing a group attending a continuation course sponsored by the University of Minnesota and the Hennepin County Medical Society, said that spine injuries in the region of the neck often go undetected, and conditions that stem from the hurt may be diagnosed as symptoms of another injury or infection. Dr. Davis, staff chief at Shriners Hospital for crippled children in Philadelphia, served as a wartime consultant on orthopedics to the Army.

Hospital leaders of Duluth paid tribute early in May, at the annual observance of Hospital Day, to the volunteer hospital and nursing workers who gave unstinting service during the critical war years and are continuing their help in the postwar period, while hospitals are still struggling to maintain adequate service with limited space and personnel.

Dr. Edward N. Peterson, Virginia physician and surgeon, has been named chairman of the St. Louis County Republican party.

Raymond K. Runge, X-ray technician at the Mayo Clinic, has been elected president of the Minnesota Society of X-Ray Technicians.

With the slogan "A Better City through Better Health," Minneapolis conducted a public health week beginning May 20, sponsored by the Junior Chamber of Commerce and the City Health Department. A radio forum was conducted each day, with special speakers, and an information booth was maintained in the Medical Arts Building. Health subjects discussed included child health, venereal disease prevention, blood banks, and

food sanitation. Among the speakers were Dr. Frank J. Hill, city health commissioner, Dr. William A. O'Brien of the University of Minnesota, Dr. E. J. Huenekens, chairman of the mayor's advisory committee on health, and Dr. Hermina Hartig, public school physician.

According to the Minnesota State Medical Association, ten Minnesota towns — Brandon, Browns Valley, Canton, Evansville, Henderson, Lewisville, Madison Lake, Menagha, Northome, and Sanborn — are still without doctors. In the summer of 1945, at the peak of the doctor-dentist shortage, about forty towns had neither a dentist nor a doctor. Physicians are said to be returning at a faster rate than dentists. Approximately 1200 doctors, of the 2800 practicing in the state when the war began, left for military service.

A grateful patient, Eddie Barnes of Fairmont, a disabled veteran of World War I, has established "the Dr. H. B. Bailey Memorial Fund," in honor of the physician who devoted many hours to helping him. Mr. Barnes, who conducts a magazine subscription and greeting card business from his home, plans to set aside 5 per cent of his profits on subscription sales and 10 per cent on greeting card sales. "It will not be much," remarks Mr. Barnes, as reported in the *Austin Daily Herald*, "but just a few dollars would give someone a bedside telephone or radio, a favorite book or magazine, any one of dozens of little things to make living more tolerable. It is a work Dr. Bailey would like to have associated with his memory, for truly he was one who went about doing good." The death of Dr. Herbert Burr Bailey on February 11 was noted in the March *JOURNAL LANCET*.

Dr. Karl Pfuetze, medical director and superintendent of the Mineral Springs Sanatorium at Cannon Falls, held a chest clinic at the Visiting Nurse's office in Fari-bault on May 20.

Dr. George Morris Curtis, professor of surgery at Ohio State University, spoke at the annual dinner of the St. Paul Surgical Society and Ramsey County Medical Society in St. Paul on May 20. Dr. Curtis, who has been directing studies in the relation of iodine to thyroid activity, predicted that revolutionary changes in medicine, similar to those caused by the introduction of X-ray fifty years ago, may result from research now under way.

*TB news.* According to Dr. Lewis S. Jordan, president of the Minnesota Public Health Association and president of Riverside Sanatorium at Granite Falls, some 12,000 pupils in 240 schools of four western Minnesota counties have been given tuberculin tests recently. The counties are Renville, Yellow Medicine, Chippewa, and Lac Qui Parle. Among the 12,000, Dr. Jordan said, not more than 2 per cent were reactors, and in 183 schools not a single child reacted. Awards of tuberculosis control certificates were made to 106 schools of the four counties by the American School Health Association.

Dr. Hilbert Mark, Minneapolis, State Health Department tuberculosis control officer, spoke at the 27th annual meeting of the Tuberculosis and Health Association of St. Louis County at Duluth, on April 16.

Cold Spring, granite community west of St. Cloud, conducts a tuberculosis control campaign among its employees. New applicants for employment are given a complete physical examination, including tuberculin test and X-ray examination.

Glen Lake Sanatorium has contracted with the Veterans Administration to provide care for 125 veterans of World War II who are suffering from tuberculosis. With its present 400 patients, the additional 125 veterans will bring the sanatorium population to an all-time high, according to Dr. E. S. Mariette, superintendent. The rate at which the veterans can be admitted will depend upon how soon an extra 25 nurses can be found.

### NEWS FROM MONTANA

Montana physicians who have recently returned from the services to resume practice include: Dr. R. D. Harper, Sidney; Dr. D. S. MacKenzie, Jr., Havre; Dr. L. T. Krogstad, Wolf Point; Dr. R. C. Kane, Butte; Dr. W. F. Morrison, Missoula.

Dr. W. A. McCannell has moved from Harlem to Chinook, Montana, where he has taken over the practice of Dr. D. J. Almas. Dr. Almas is now associated with Drs. Lawson, Houtz, and McKenzie at Havre.

Dr. Robert A. Benke has moved from Chester to Kalispell, where he will be associated in practice with Dr. F. B. Ross.

Dr. Roger Anderson, orthopedic surgeon of Seattle, addressed a meeting of the Silver Bow County Medical Society on April 23 on methods of reducing fractures. There were many guests from surrounding towns, including Anaconda and Helena.

The Cascade County Medical Society met at the Rainbow Hotel in Great Falls May 10 to discuss plans for the Montana State Medical Association meeting to be held July 18-20 in Great Falls.

Dr. Edward S. Murphy of Missoula was awarded the United States Typhus Commission medal at Fort Missoula on May 13. Dr. Murphy served with the Army Medical Corps for several years, both in the United States and the European theater.

Dr. H. D. Harlowe has joined the Garberson Clinic of Miles City as eye, ear, nose, and throat specialist, according to Dr. J. H. Garberson. Dr. Harlowe, a graduate of the University of Minnesota Medical School, has recently been released from the Army Air Corps with the rank of Major.

Dr. Arthur Rikli, formerly assistant surgeon with the U. S. Public Health Service in Washington, D. C., has been appointed the first director of the newly-created tuberculosis control division of the Montana State Board of Health. He will receive from Dr. E. M. Larson of Great Falls, president of the Montana Tuberculosis Association, a fully equipped mobile X-ray unit for state-wide diagnosis. The new X-ray unit, purchased by the Tuberculosis Association, and equipped to permit 250 examinations daily, will be used to give examinations without charge at state institutions, to state industrial workers, and in local communities, in that order. A technician and a nurse will accompany the unit. Dr. Rikli,



a graduate of the University of Illinois Medical School, interned at Cleveland City Hospital.

Dr. John A. March of Livingston has left for Conrad, where he will establish a practice. Dr. March was for some time associated in practice with the late Dr. Paul L. Greene.

Dr. L. J. Salan, formerly of Washington, D. C., has arrived in Conrad to become associated with Dr. W. F. Paterson.

Dr. Emmet Doles, formerly of Fort Benton, is now in Chicago, where he holds a three-year residency in radiology and X-ray at Wesley Memorial Hospital.

Seven candidates have been admitted to medical practice in Montana after board examination, according to Dr. Otto Klein, secretary of the State Board of Medical Examiners. They are: James J. Bulger, Helena; Robert W. Kullberg, Cut Bank; Matthew W. A. Calvert, Laurel; George J. Moffitt, Deer Lodge; George A. Sexton, Great Falls; James O. Logan, White Sulphur Springs; T. L. Lockridge, Whitefish. Other candidates were admitted on a reciprocity basis with other states.

### NEWS FROM NORTH DAKOTA

*The North Dakota State Medical Association.* The state association, meeting at Bismarck May 26-28, for their 59th annual session, took two important steps to improve medical service in the state. The House of Delegates approved the plan proposed by the Veterans Administration for permitting veterans to secure medical treatment from physicians of their own choice in their home communities. A Bismarck office will be established to carry out the administration of the plan. Also approved was the North Dakota Physicians' Service, a doctor-controlled prepaid medical insurance plan, offering surgical, obstetrical, and fracture care to individuals and groups for small monthly payments.

The new officers elected by the association are: Dr. A. E. Spear, Dickinson, president; Dr. Philip G. Arzt, Jamestown, president-elect; Dr. W. A. Liebeler, Grand Forks, first vice president; and Dr. W. A. Wright, Williston, second vice president.

Re-elected officers are: Dr. John H. Moore, Grand Forks, speaker of the House of Delegates; Dr. L. W. Larson, Bismarck, secretary; and Dr. W. W. Wood, Jamestown, treasurer. Dr. A. P. Nachtwey, Dickinson, was named delegate to the American Medical Association in 1947, and Dr. G. W. Toomey, Devils Lake, alternate delegate.

Nominated for the State Board of Medical Examiners, to which appointments are made by the governor, were: Dr. D. J. Halliday, Kenmare; Dr. Joseph Sorkness, Jamestown; and Dr. George M. Williamson, Grand Forks.

*The North Dakota Health Officers' Association,* meeting in Bismarck May 27, heard addresses by Dr. Jay Arthur Myers, Minneapolis, and Dr. William M. Smith of Bismarck, director of the Division of Preventable Diseases of the State Health Department.

Dr. Myers pointed out that tuberculosis takes about 55,000 lives annually, and said: "We can control it if

we carry out what we know." He said that any effective tuberculosis control program should include both tuberculin tests and X-ray examination, since tuberculin tests detect the disease in its early stages, whereas about 90 to 95 per cent of those recently infected are missed if X-rays are used alone.

Dr. Smith discussed North Dakota's immunization program, and urged immunization of preschool, grade school, and high school children against diphtheria and smallpox.

*The North Dakota Radiological Society,* also meeting in Bismarck in connection with the state association session, heard Dr. Leo Rigler of the University of Minnesota speak on lung tumors. Dr. Rigler led a round table diagnostic conference on May 27, and also addressed the state association on the early diagnosis of cancer.

Other speakers at scientific sessions of the state association included Dr. A. W. Adson of the department of neurosurgery of the Mayo Clinic, who discussed the early diagnosis of brain tumors. Dr. M. Edward Davis of Chicago discussed obstetrical emergencies and menopausal bleeding.

Dr. Adson, a member of the Council on Medical Service and Public Relations of the American Medical Association, spoke on medical economics at a special session on May 27.

*North Dakota Society of Obstetrics and Gynecology.* The society met at the Patterson Hotel, Bismarck, North Dakota, on May 26, with Dr. M. Edward Davis of Chicago as guest speaker. Dr. G. Wilson Hunter, secretary-treasurer, reports the election of the following officers for the coming year: Dr. Paul Freise, Bismarck, president; Dr. G. Wilson Hunter, Fargo, vice president; Dr. F. A. De Cesare, Fargo, secretary-treasurer. Dr. E. M. Ransom, Minot, was elected to the Board of Governors for a three-year term. Devils Lake was selected for the November meeting.

The new medical center to be established at the University of North Dakota has the following general objectives: establishment of a complete medical course at the university; construction of a university hospital with a minimum of 200 beds; establishment of a nurses' training department; establishment of a department for training public health personnel; and unification of medical and health services of the state. John A. Page of the university faculty is director.

The Grand Forks District Medical Society, meeting at Grand Forks in April, heard Dr. Bayard Horton of the Mayo Clinic speak on histamine. Dr. W. C. Dailey is president of the society.

Dr. Charles B. Porter, formerly of Kentucky, who was with the 38th Evacuation Hospital in England, Africa, and Italy during the war, will locate at Crosby.

Dr. Donald W. Fawcett, who in April completed a month of postgraduate work in pediatrics at Cook

County Hospital, Chicago, has resumed practice at Devils Lake.

Dr. G. J. McIntosh has been renamed city health officer of Devils Lake.

Dr. Thomas M. Cable, Hillsboro, and Dr. Hugh G. Cleary, Sharon, have been accepted into membership of the Traill-Steele Medical Society, at a meeting held at Mayville in April. Dr. W. H. Cuthbert of the state hospital staff at Jamestown, formerly of Hillsboro, spoke on conditions at the Jamestown State Hospital.

The sons of Dr. and Mrs. J. W. Moreland of Carpio held a reunion at Grand Forks in April on the occasion of the arrival of Capt. J. William Moreland of the Army Medical Corps from California.

Dr. L. Almklov, who has long practiced in Coopers-town, has scotched a rumor that he intends to leave the town or to retire.

Dr. R. G. White of Minot, district health officer, has reported that a mobile X-ray unit will be available about June 1 in all communities served by the First District Health Unit.

*Hospital News.* The North Dakota Hospital Association met May 9-10 at Fargo, with more than 75 members of hospital associations in the state attending. Dr. G. F. Campana of Bismarck, state health officer, was among the speakers.

J. E. Janzen, who served 43 months with the Army and participated in four major Pacific campaigns, has been named business manager of Jamestown Hospital.

Pembina County Memorial Hospital has been incorporated and has chosen a board of directors and officers. Over \$34,000 has been raised in cash and pledges, and the organization hopes to raise sufficient funds in 1946 to begin construction in 1947.

### NEWS FROM SOUTH DAKOTA

The South Dakota State Medical Association held its annual session at Aberdeen, June 1-4. News of the meeting will be published in a later issue of the JOURNAL LANCET. Dr. F. S. Howe of Deadwood, president-elect, will take office as president of the association.

As president-elect, Dr. Howe in April appeared as a witness before the Congressional committee considering the Wagner-Murray-Dingell bill. Dr. Howe was accompanied on his trip to Washington by Mrs. Howe, and together they visited their son, Dr. John Howe, and his family in Richmond, Virginia, and their daughter, Mrs. S. C. Spurdon, and family in New York.

Further doctors appointed by Dr. O. S. Randall, executive director of the South Dakota Field Army of the American Cancer Society, to work with their county commanders as educational directors, include: Dr. William Duncan, Webster, Day County; Dr. F. T. Younker, Sisseton, Roberts County; Dr. P. R. Scallin, Redfield, Spink County.

Dr. G. C. Redfield of Rapid City has been appointed by Gov. M. Q. Sharpe to the State Board of Health to complete the unexpired term of Dr. L. F. Bartels of

Buffalo, who has left the state to live in Lander, Wyoming. Dr. Redfield will serve until January 1, 1949.

Dr. F. E. Manning has been honored by citizens of Custer for twenty years of practice in that community. A graduate of Creighton University School of Medicine, Dr. Manning came to Custer from Edgemont on April 25, 1926, as an associate of the late Dr. M. Long. He has been superintendent of the county board of health for eighteen of his twenty years in Custer, and county coroner for seven terms. Dr. Manning is also active in civic affairs and is reported to be an ardent sportsman and lover of the outdoors. His son, Dr. Don Manning, is with the Army, stationed at Greensboro, North Carolina, and his daughter, Mrs. Albert Triplet, lives in Custer.

News of many South Dakota doctors' resuming or transferring their practices has come into the JOURNAL LANCET office.

Dr. John V. McGreevy, associated with Dr. W. A. Delaney at Mitchell for nine years, has transferred his practice to Sioux Falls.

Dr. Robert J. Ogborn is now associated with Dr. Edwin S. Stenberg at Sioux Falls.

Dr. Walker D. Judkins, who has been affiliated with the sanatorium at Rapid City for four years, in charge of the tuberculosis unit, has been transferred to the Indian Service hospital at Tallihina, Oklahoma. The sanatorium staff and their guests held a picnic honoring Dr. Judkins before his departure.

Dr. Hugh D. Patterson, formerly of Brainerd, Minnesota, is now assisting Dr. A. P. Peeke in his practice at Volga. He is a graduate of the University of Minnesota Medical School.

Dr. Howard R. Wold has begun the practice of medicine and surgery at Sisseton, in association with the Sisseton Clinic.

Dr. F. F. Smith of Emery has opened an office at Chamberlain.

Dr. John H. Dickinson has located in Canistota, which has been without a resident physician since the death of Dr. William E. Dickinson, father of the new practitioner.

Dr. Mark Williams has located at Conde, and will carry on his practice at his residence, pending the acquiring and equipping of a building for hospital purposes. He has disposed of the Linton Hospital. Meanwhile, Conde Community Hospital has been incorporated as a nonprofit organization.

Dr. Raymond Grove, ear, nose, and throat specialist, will practice in Sioux Falls, following his recent discharge from service.

Dr. Frank Lima, formerly of Mobridge and later of Hoven Hospital, is now in Babylon, Long Island, New York, with his family, recuperating from an allergic condition that affected his left eye.

Dr. George McIntosh of Hoven, recently released from service after four years, will be associated with Dr. Mark Graeber in Eureka.



Dr. Robert M. Ferguson, former director of the Sioux Falls and Minnehaha County Health Department, resumed that position on May 8, after working since October 1945 on a nutrition research project at Albany, Georgia.

Dr. Obel T. Andresen of Canton, associated with the Diekman Clinic, was married on March 2 to Miss Bessie Costain, music instructor at the Mitchell High School. Dr. Andresen served during the war with a hospital unit in both the African and European theaters.

Dr. Edward Greenough of Letcher, a recent graduate of Northwestern University Medical School, will interne at General Hospital in Kansas City.

Lt. Stewart T. Ramsdell, graduate of Washington University School of Medicine, has begun a four-week basic training program for reserve medical officers at Brooke Army Medical Center, Fort Sam Houston, Texas. He is a son of Mr. and Mrs. C. Stewart Ramsdell of Flandreau.

Dr. Paul K. Odland, son of the Reverend and Mrs. Ole M. Odland of Dell Rapids, will intern at Long Beach, California, following his recent graduation from Temple University School of Medicine.

Dr. A. W. Hermann of Custer will head the Custer Rotary Club during the coming year.

Dr. T. H. Proctor was installed in April as head of the Deadwood Lodge of the Elks.

*Hospital News.* Subscriptions for a projected hospital at Chamberlain totaled over \$43,000 up to April 7.

Dr. Marvin Lane, formerly of Phoenix, Arizona, will join the hospital staff at McLaughlin.

Dr. Donald Rayl has joined the staff of St. Mary's Hospital, Pierre; a graduate of Johns Hopkins Medical School, and formerly assistant resident in surgery at the Hospital for Women of Maryland, Dr. Rayl comes originally from Sioux Falls.

Lt. Col. Claud Lewis, clinical director at Fort Meade Veterans Hospital, has been made manager of the hospital, succeeding Lt. Col. Peter A. Peffer, who is being transferred to Roanoke, Virginia.

Dr. Gilbert Cottam, superintendent of the State Board of Health, points out that at present no federal matching funds are available for hospital construction in the states. Most communities in South Dakota, he reports, plan to build hospitals entirely from private and local funds. However, a bill now being considered by Congress would allocate \$398,000 annually for five years for hospital construction in South Dakota, if the annual amount is matched by \$277,000 in local and private funds. Such a plan would make \$675,000 a year available for new hospital construction in the state, with 59 per cent of the cost carried by the federal government.

Dr. Cottam pointed out that communities planning to build hospitals should determine their needs on the basis of the hospital survey now in progress under the direction of the State Health Committee and the State Board of Health, and warned that groups planning new structures should be assured of sufficient physicians to staff the hospital before any building is done.

## NEW EXECUTIVE SECRETARY OF NORTH DAKOTA STATE MEDICAL ASSOCIATION

This is to introduce to our readers Mr. E. Forsythe Engebretson, the new executive secretary of the North Dakota Medical Association. He was born March 1, 1915, in Fargo, North Dakota, and attended public schools there through Fargo Central High School. Beginning in 1933, he attended North Dakota Agricultural College for one year and two terms. He entered the University of Minnesota in 1934 and graduated in 1939 in Law, with degrees of B.S. and LL.B.



Since 1939 he has been associated with the firm of Cox & Cox, now Cox, Cox & Pearce, Fargo, both as an associate member and a member. He has been engaged in the general practice of law since that time with the exception of slightly more than two years' service in the United States Navy. He spent 15 months overseas as Executive Officer and Commanding Officer of PT 354, in Motor Torpedo Squadron 25, which operated in the Morotai area and the Philippines.

His present duties as Executive Secretary of the North Dakota State Medical Association include the administrative work for the state association, public relations work, liaison work with the American Medical Association and other nation-wide organizations, and will include administrative work in connection with the medical section of the Veterans Administration.

### "SOLO OR SYMPHONY?"

*A Consideration of Medical Group Practice for the Demobilized Doctor*

Many returning veteran doctors must establish themselves in practice for the first time or re-establish old practices. Shall they strike out alone in private practice, or join with other doctors in group practice? This is exactly the question discussed in a new pamphlet, "Solo or Symphony?," issued by the Medical Group Practice Council of Medical Administration Service of New York City, an organization financed partly by grants from the Rockefeller Foundation, to enlighten professional men on problems encountered in this field. Subtitled "Shall the Demobilized Doctor Enter Medical Group Practice?," it is in the form of letters exchanged between a veteran doctor and Dr. Kingsley Roberts, head of Medical Administration Service.

A fact not usually recognized, Dr. Roberts points out, is that American doctors first engage in group practice as interns attached to hospital staffs. Many may also have worked under a form of group practice while in the Army.

The doctor who decides to investigate further in the field of group practice will find a variety of choice that strikingly indicates how existing group practice units have come into being during the past 20 years in answer to definite needs in American life. There are doctors who practice in groups at medical schools, in hospital clinics, or in industrial clinics and hospitals such as Henry Kaiser's on the west coast. Other doctors belong to consumer-administered groups such as Group Health Association in Washington, D. C. There are large private diagnostic clinics like the Mayo Clinic, run by groups of doctors or by one prominent doctor who takes full responsibility for his staff. Sometimes the patient pays regular doctors' fees, sometimes he belongs to an insurance plan that foots the bills. The doctor may be on salary or be paid by some other means.

In this great variety, Dr. Roberts points out, there is one underlying unity. Group medical practice, the application of medical science by physicians working with joint equipment and technical personnel, with a centralized administrative and financial organization, enables the doctor to practice better medicine. It raises professional standards, increases quality of service, facilitates and encourages consultation service, conserves professional time, and reduces overhead expense. These benefits, says Dr. Roberts, can be passed on to the patient, and in a well-administered group practice unit, they are passed on.

He points out that many of the 600 group practice clinics in the United States arose in the period 1918-1930 because doctors returning from World War I service had discovered they liked working together and so started their own groups. Today about 70,000 veteran doctors have had their ordinary routines torn apart by war. They are at the crossroads of their professional careers. Hospitals like Presbyterian Medical Center in New York, medical schools like the New York University College of Medicine, are experimenting with group practice in their clinics. Consumer groups, such as unions, are demanding medical protection for their members. The physician is faced with adapting his medical practice to our changing social and economic order. "Solo or Symphony?" poses his problems and gives a quick view of what one path, group practice, has to offer him.

The Medical Group Practice Council consisting of forty-four members is composed entirely of doctors with two exceptions, one of whom is Alfred G. Stasel, administrator of Eitel and Franklin Hospitals and manager of Nicollet Clinic, Minneapolis.

## Classified Advertisements

### PRACTICE FOR SALE

Active general practice in town of 550 north central Minnesota, with house-office combination completely modern, grossing \$15,000.00 yearly. Excellent hospital facilities nearby. Prefer sale house-office cash or terms. Purchase of drugs and equipment optional. Address Box 833, care of this office.

### PHYSICIAN AND SURGEON WANTED

Cooperstown North Dakota invites inquiry concerning location open to good physician and surgeon. Prospect of new thirty bed hospital in near future. Only two doctors in county. For details write, Carl Lingby, Secy. Commercial Club, Cooperstown, No. Dak.

### X-RAY PRACTICE

Exceptional opportunity for X-ray man to establish himself in town of 4200 population; 10,000 in county; no other X-ray machine in town or county. Small investment, on percentage basis. Wiring all in, dark-room ready; rent free to him. Needed badly. For details address Box 842, care of this office.

### LABORATORY TECHNICIAN WANTED

Wanted: A laboratory technician, preferably registered, to be an assistant in our general laboratory which serves twelve doctors in the Clinic. The position may be regarded as permanent. The pay will be satisfactorily arranged. Write Dakota Clinic, 702 First Avenue South, Fargo, North Dakota.

### ASSISTANCE AVAILABLE

Aznoe's, established in 1896, has available a number of well trained physicians (diplomates of the specialty boards, industrial physicians and surgeons, general practitioners, psychiatrists, tuberculosis specialists and residents). For histories write Ann Woodward, Aznoe's-Woodward Medical Personnel Bureau, 30 North Michigan Ave., Chicago 2, Illinois.

### EXCEPTIONAL OPPORTUNITY

for beginning or established physician to share suite of offices with another physician or dentist. Individual treatment room or laboratory in new office building located in very best residential retail section of North Minneapolis. Address Box 761A, care of this office.

## Advertisers' Announcements

### PRECISION CONTACTS EXPANSION PROGRAM

Precision Contacts, an associated firm of the N. P. Benson Optical Company, have taken over the sixth floor of the Gateway Bank Building, Minneapolis. Their greatly expanded laboratory facilities will permit an increased production and prompt delivery. Precision Contacts also maintain a contact lens manufacturing laboratory in Los Angeles.

In addition to a new laboratory with latest equipment, a complete research department is maintained for experimental work in solution and lens design. Research in contact lens solutions is being carried on with the aid of University of Minnesota researchers. Albert L. Anderson is managing director of Precision Contacts.

### W. Fred Allen New Upjohn Sales Director

Donald S. Gilmore, president and general manager of The Upjohn Company, Kalamazoo, has announced the promotion of Mr. W. Fred Allen, authorized at a meeting of the board of directors April 23. He was elected to the board of directors and named vice president and director of sales, filling the vacancy created by the death of Emil H. Schellack, sales director, last February.

Mr. Allen was appointed assistant director of sales on January 1 of this year. Starting as a salesman for The Upjohn Company in Monroe, Louisiana, under the Kansas City, Missouri, branch, Mr. Allen advanced rapidly through various supervisory positions in the south and southwest. He was sales manager of the Dallas, Texas, branch for nine years.

### PENICILLIN SODIUM 500,000 UNITS

Burroughs Wellcome & Co. has released Penicillin Sodium 500,000 units in rubber-stoppered aluminum-capped bottles. The addition of 20 cc. of sterile distilled water or isotonic saline solution provides a solution of Penicillin containing 25,000 units in each cubic centimeter. This new 500,000 unit strength offers a number of advantages. The higher concentration provides greater convenience in dosage, requires less storage space and the opening of fewer vials, and is more economical.

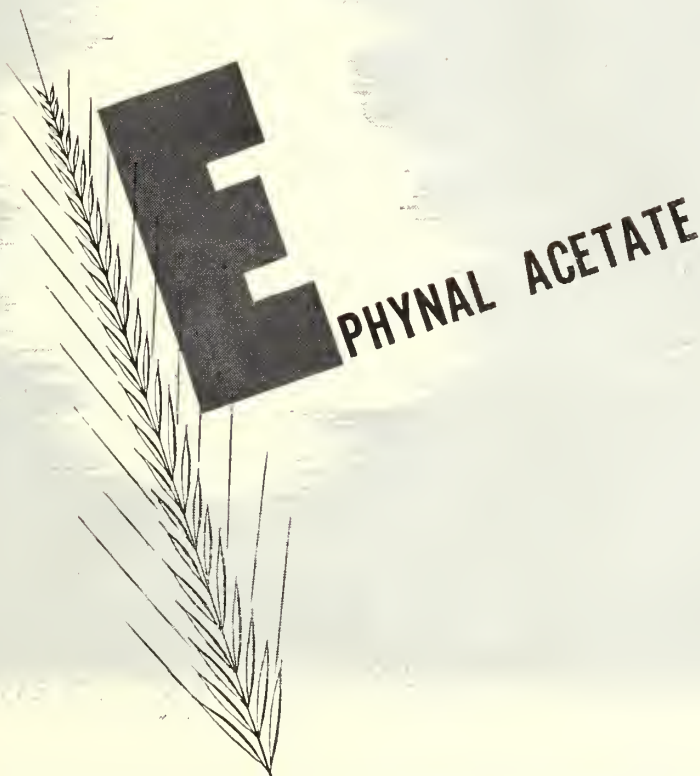
### THE BORDEN AWARDS FOR 1945

These awards established in 1936 to recognize and encourage outstanding research achievements in the food industry and related fields are administered by seven professional and scientific associations, and are based upon research reported in public documents or scientific journals.

Associations which make the selections, and the 1945 recipients: American Chemical Society—Ben H. Nicolet, Senior Chemist, Bureau of Dairy Industry, Department of Agriculture, for fundamental investigations in chemistry of milk proteins; American Dairy Science Association—Genn W. Salisbury, Professor of Animal Husbandry at Cornell University, for contributions in the feeding of dairy cattle, and for studies in dairy cattle breeding, also George M. Trout, Professor of Dairy Manufactures, Michigan State College and Staff, Michigan Agricultural Experiment Station, for studies of effect of homogenization on the quality, flavor, and some of the physical and chemical properties of milk; The American Academy of Pediatrics—Edwards A. Park, Professor of Pediatrics at Johns Hopkins and Staff of the Johns Hopkins Hospital, for fundamental investigations and research achievements in the causes and treatment of rickets and for stimulating and fostering the spirit of scientific investigation and inquiry in young physicians in all fields of medicine.

Also the American Home Economics Association — Mrs. Bertha Shapley Burke, Associate in Nutrition, Department of Maternal and Child Health, Harvard School of Public Health, for studies in prenatal nutrition showing importance of the diet during pregnancy; The American Institute of Nutrition—Harold Hanson Mitchell, Professor of Animal Nutrition, University of Illinois, for fundamental contributions in the field of human and animal nutrition, and for research on the biological





# **E**PHYNAL ACETATE

## **FOR THREATENED AND HABITUAL ABORTION**

In the treatment of habitual abortion, "vitamin E should be used because it appears to offer great hope in salvaging pregnancies that would otherwise habitually abort."\* Ephynal Acetate—the Roche vitamin E preparation ( $\alpha$ -tocopherol acetate)—is particularly suitable for the treatment of habitual and threatened abortion because it is stable, of unvarying potency and purity, and well tolerated even in large doses and over long periods of time. Its freedom from side reactions is of signal value in all disorders amenable to vitamin-E therapy. Available in tablets of 3, 10, and 25 mg.

**HOFFMANN-LA ROCHE, INC.,** Roche Park, Nutley 10, New Jersey.

\*A. T. Hertig & R. G. Livingstone, *New England J. Med.*, 230:798, 1944

value of milk protein and the efficiency of calcium utilization; The Poultry Science Association—Erwin Leopold Jungherr, Professor of Animal Pathology, University of Connecticut, for (1) application of histopathology to poultry diseases and (2) cooperative work with the federal laboratory at East Lansing, Michigan, on the leukosis complex. The American Veterinary Medical Association—Willard Lee Boyd, Chief of the Division of Veterinary Medicine, University of Minnesota, for research investigations in bovine pathology and for research achievements on other diseases of the dairy species.

Previous University of Minnesota award recipients are Leroy S. Palmer, 1939 (deceased), and William E. Peterson, 1942. At the University of Wisconsin Edwin B. Hart won in 1941, Kenneth G. Weckel in 1938, Hugo H. Sommer in 1942, and Paul H. Phillips and Helen T. Parsons in 1944. In 1937, Amy L. Daniels of the University of Iowa received one of the first Borden awards. Up to the close of 1945 there have been 47 awards, each consisting of a gold medal and a thousand dollars.

#### PARKE DAVIS PRODUCTS

Benadryl, a synthetic chemical compound, is made by Parke, Davis & Company, Detroit. B-dimethylaminoethyl benzhydrol ether hydrochloride, exhibiting antihistamine action is used as an antiallergic and antispasmodic. It is supplied in Benadryl Kapsels, 50 mg., in bottles of 100 and 1000. Benadryl Elixir (10 mg. Benadryl in each teaspoonful), in 16 oz. and 1-gallon bottles.

ABDEC drops of a stable, aqueous multivitamin liquid, each 0.6 cc. containing vitamin A, 5000 units; vitamin D, 10,000 units; vitamin B<sub>1</sub>, 1 mg.; vitamin B<sub>2</sub>, 0.4 mg.; vitamin B<sub>6</sub>, 1 mg.; pantothenic acid as sodium salt, 2 mg.; nicotinamide, 5 mg.; vitamin C, 50 mg., are made by Parke, Davis & Company, Detroit.

They are employed in the prevention and treatment of vitamin deficiencies and are particularly useful as a supplement in infant feeding.

"Abdec drops" are supplied in 15 cc. and 50 cc. bottles equipped with specially calibrated droppers adjusted to deliver 0.3 cc. or 0.6 cc.



# Prompt Estrogenic Action



Menopausal symptoms and other conditions involving an estrogenic deficiency have been found to respond rapidly and favorably to this synthetic estrogen.

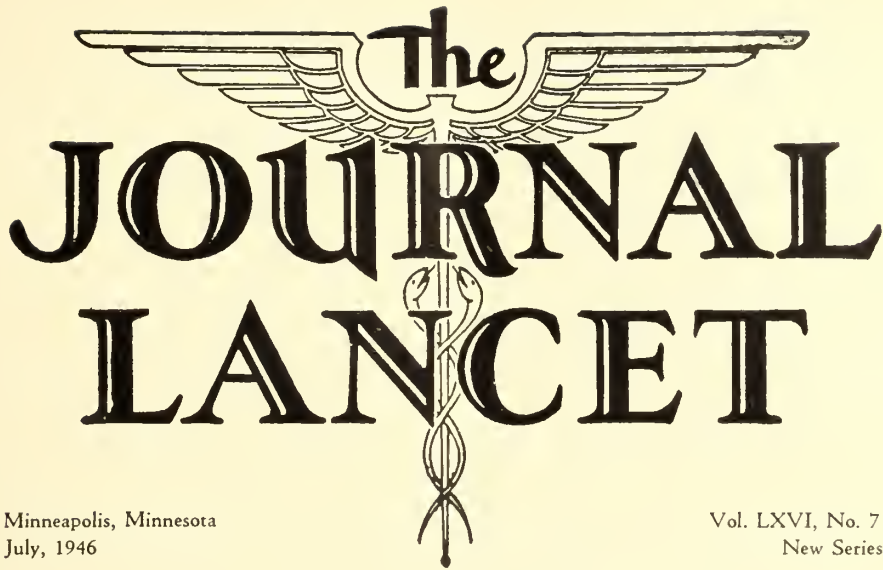
Schieffelin BENZESTROL, a non-stilbene compound, is a preparation of high estrogenic activity and has proved to be desirable because of its low incidence of untoward side effects.

Schieffelin BENZESTROL is available in tablets of 0.5, 1.0, 2.0 and 5.0 mg., in solution, in 10 cc. vials, 5.0 mg. per cc., and vaginal tablets of 0.5 mg. strength.

*Literature and Sample on Request*

**Schieffelin & Co.** 20 COOPER SQUARE • NEW YORK 3, N. Y.  
Pharmaceutical and Research Laboratories





# The JOURNAL LANCET

Minneapolis, Minnesota  
July, 1946

Vol. LXVI, No. 7  
New Series

## Massive Hemorrhage from the Upper Digestive Tract

Winfred W. Arrasmith, M.D., F.A.C.P.  
Casper, Wyoming

**T**HROUGH the years of clinical experiences with massive bleeding in the upper digestive tract, I have been intrigued by the diversity of my cases as to etiology, symptomatology, and end results.

With a few exceptions I shall hold what follows largely to my personal experiences gleaned from a reasonably large number of cases of bleeding in the upper digestive tract. I pledge that my deductions are founded on a strict basis of originality, and that in no case have I withheld the bitter from the sweet. Men practicing in localities similar to the one in which I expend my professional efforts, will appreciate the clinical wisdom that I have gained from these tragic episodes. The prognostic values must obviously vary where the matter of hospitalization is but a few city blocks distant, as contrasted with countless miles through dim trails in the sagebrush.

### PEPTIC AND DUODENAL ULCER

Peptic and duodenal ulcer are, of course, the most common causes of bleeding in the upper digestive tract segment. An intensive review of recent literature leads me to be exceedingly optimistic as to the newer ovations in the medical treatment of these lesions. Gastrosocopy, amino acid therapy, adjuvant vitamin administration, and the well recognized aluminum hydrate treatment offer favorable elements to our armamentarium of therapy. Based on observation in my own sphere of practice, my belief is that peptic ulcer is definitely on the increase. Perhaps this is answerable in view of the nervous tension incident to problems of the recent war. Excessive use of alcohol prevalent in both sexes throughout the war period is without doubt reflected in increased incidence

of upper alimentary lesions. Tobacco, especially smoking, is a definite provocative element in the etiology of peptic ulcer. I concur fully with the gastroenterologists of the Lahey Clinic in their positive viewpoint that smoking is a cardinal element of etiology and perpetuation of active ulcer.

### CAUSATIVE AGENTS

This paper, therefore, shall be limited to the etiology and the actual treatment of the immediate and urgent situation of massive bleeding from the esophagus, the stomach, and the duodenum. Also some of the recently recognized sequellae incumbent upon large hemorrhage occurring in the upper digestive tract will be included.

The literature is copious with factors of etiology in the matter of such hemorrhage. This presentation will purposely be restricted to the four most common causes. In order of frequency, the causative agents are: gastric and duodenal ulcer; ruptured varices occurring largely in the esophagus, but not infrequently in the gastric mucosa; malignancy, either primary or from contiguous viscera; and with certain limitations, trauma.

Whatever may be the cause of a violent hematemesis and melena with the accompanying collapse, it is an exceedingly urgent situation for the patient, the clinician, and the family. Those who aspire to the clinical field see these cases sporadically, and too often without forewarning. They are serious in that the victim may make a hasty exodus by the very simple route of exsanguination. Particularly is such a danger paramount in our section of the country where physicians, ambulances, and ultimate hospitalization are available only at great distances from the patient in his primary episode. In this category of patients residing in remote sections of my country is the shepherd, the cow hand, the oil-field

Read before the American College of Physicians, Montana-Wyoming Branch, at Billings, Montana, April 27, 1946.

worker and the rancher, all of whom reside far off the modern highway.

#### DIAGNOSIS AND TREATMENT

Each case of massive bleeding must invoke superlative clinical judgment from the original onset through the entire clinical course of the case. It is rare that the patient himself, due to his condition, is able to offer an immediate comprehensive history. Frequently there is no history of significant import to establish even a possible diagnosis of the bleeding site. On the other hand, we are often appraised by the family or associates of the patient of an ulcer syndrome, or of an alcoholic history that leads to a strong suspicion of a cirrhotic liver with complicating ruptured varices at or near the cardia.

Massive bleeding has occurred in my practice in what one might term an "idiopathic sense." Trauma from eating a gargantuan meal has definitely been the primary etiology of several severe bleeders in my experience. Their occupational situation was particularly punishing to the torso, and they bled to the point of collapse.

It is obvious that when large hemorrhage occurs in the esophagus, stomach or duodenum, greater or lesser shock prevails. The patient is usually in extremeness. We can not say that he has, or has not stopped bleeding. I no longer place any credence in the color, quantity and character of the vomitus, or the appearance of a melena in locating the possible site of the accident. Our first duty is to treat this patient who is either in a status of shock, or impending shock. It would be superfluous to include in this presentation a recapitulation of the treatment of collapse. For the record, however, I place oxygen and morphia in the affirmative column of immediate therapy.

Victims of hemorrhage are too sick for immediate intensive diagnosis. A trip to the X-ray room and the ingestion of barium is to be delayed until a reasonable assurance exists that the bleeding is controlled and all evidence of collapse has vanished. Surgery on a case in extremeness, is nothing short of poor clinical judgment. Too often a capable surgeon in a prolonged bungling procedure meets defeat in locating the site of bleeding, and his patient promptly makes an unforgivable exodus. When and when not to meddle surgically in these cases is a matter that taxes to the utmost the ability of both internist and consulting surgeon. I admit that I belong to the conservative group. Low mortality and early recovery in benign lesions have justified my position.

In recent years I have abandoned the viewpoint that the hematocrit is merely a lazy man's laboratory procedure and have utilized this valuable diagnostic aid especially in the early hours of hemorrhagic tragedy. This expression of mathematical percentage of ratio between the volume of red cells per unit of circulating blood has been of more than usual importance in directing replacement of hemic deficiency. It is truly an ovation in the field of hematology, and an exceedingly precious asset in dealing with bleeding in all ramifications. Whether it be a bleeding ulcer, a severe burn, metrorrhagia, or even a case of extreme malnutrition; the hematocrit provides the clinician a superlative index for therapy.

I subscribe completely and unconditionally to the viewpoints of Soper<sup>1</sup> and Meyer<sup>2</sup> that the intravenous supply of plasma, citrated blood, and physiological solutions, in large quantities is indicated. The so-called "blowing out" of a fibrous clot at the lesion by such a procedure is entirely a myth. Since Soper published his article, "Hematemesis",<sup>3</sup> in 1931, I have evacuated the accumulated debris from the upper digestive tract by the passage of a Levin tube at frequent intervals, or better still, by leaving it installed via the nasal route. The removal of this debris obviates to a minimum the azotemia and the troublesome gastric contractions, placing the clinician in a position to appraise at all times the character of the stomach content. The indwelling tube has been used for the purpose of early feeding of albumin and gelatin waters. If the matter of chloride loss might be an indictment to my procedure, the administration of physiological and glucose solutions by clysis amply meets the challenge.

The early use of the Levin tube is an exceedingly valuable aid in the administration of hemostatic agents to the site of the bleeding. Topical thromboplastin,<sup>4</sup> recently made available, has been used by this technique with admirable results in more recent cases. Each twelve hours, 500 milligrams of vitamin C parenterally is administered in all cases of upper digestive tract bleeding. This has been based on the favorable findings by Rivers and Carlson<sup>5</sup> of the Mayo Clinic, who have used this agent since 1937 in peptic ulcer regimen. The work on enteric healing since the original work of these two men has definitely and conclusively placed ascorbic acid in the "must" column of treatment sequence. The literature is copious with unanimous endorsement of this vitamin in such connection.

Attention should be paid to blood pressure observation and to the pulse rate taken at hourly intervals and plotted graphically. By this expedient we are appraised of new bleeding, and recurrent hemorrhage or persistent oozing of a lesion is sharply defined. This information, coupled with observing the efferent debris from the indwelling gastric tube, has frequently indicated the imperative need for immediate transfusion. With all deference to plasma and its life saving proclivities, the patient should be fortified by obtaining at the earliest moment a quantity of matched citrated blood, placed in refrigeration, and available for immediate use. Frequently, in repeated copious bleeding, the hematocrit is not immediately lowered. Procrastination in the matter of venoclysis should not be indulged when a consistent fall in blood pressure with increased pulse rate, and the presence of new blood from the Levin tube exist.

The dietary method of Muehelengracht<sup>6</sup> in feeding these bleeders full meals from the day of their accident through the clinical course of the situation is rather dogmatic. I have preferred the method of Soper in what might be termed gastric lavage using the indwelling, intranasal stomach catheter whereby irritating gastric debris is readily removed and replaced by aluminum hydroxide drop, with frequent feedings of gelatin and albumin water for at least four days after the initial episode. Most certainly Muehelengracht's claim to more



rapid rehabilitation and a more comfortable patient through his dietary method may be countered by the more conservative therapy of clysis in the administration of calories and the correction of chloride deficiency. The value of early feeding lies in supplying the tissues with exogenous protein. The mechanical effect of motor and digestive activity with full feedings may be sufficient to inaugurate further bleeding. The Muehelengracht plan of feeding must be associated with recurrence of bleeding more than is the case with the more conservative dietary procedures.

An ideal plan would be the incorporation of all the advantages of a full dietary intake of protein without any of its disadvantages. Theoretically at least, the use of food which is already digested such as "Amigen"\* fulfills this requisite. It readily appears that in this protein hydrolysate are present the necessary agents for correcting hypoproteinemia. Sufficient calories must be supplied via the optional route along with the protein digest, or the amino acids will be utilized for caloric requirement rather than for the correction of the prevailing protein deficiency. A brilliant report of seventeen cases of massive bleeding in the upper digestive canal was reported less than a year ago by Levy,<sup>7</sup> showing the efficacy of this treatment. I have used it recently in two cases of massive bleeding with most encouraging results.

Recently, concentrated albumin,<sup>8</sup> salt poor, of the protein fraction of human plasma has been made available commercially. This concentrate was used extensively by the navy during the recent war in combat casualties, especially extensive burns and sudden large hemorrhage. The efficacy of this preparation given intravenously 1.0 cc. per pound of body weight each day is reported to be remarkable in the immediate correction of hypoproteinemia. The navy reports its antishock proclivities as being five times more rapid than is the action of standard plasma.

Since the publications of Harkins on alimentary azotemia,<sup>9</sup> I have adopted the routine of early evacuation of the bowels. This may safely be accomplished by the administration of a mild purgative through the indwelling gastric catheter, or in experienced hands, by the colon tube and syphoning enemata.

Clinicians have all recognized certain manifestations of toxemia resulting from occult blood in appreciable amount within the alimentary tract. It has been assumed that this was from the absorption of the plasma proteins. However, Harkins<sup>10</sup> in his brilliant research series has conclusively demonstrated both in animal and in man, that the primary element in producing the elevation of blood urea nitrogen is the contained hemoglobin of the erythrocyte fraction of the blood, while the plasma fraction plays a distinctly secondary role. The clinical importance of this work is the fact that it is a definite contribution in laboratory study to substantiate the continuation, or cessation of bleeding. This lies in taking frequent blood urea nitrogen values. It is to Dr. Harkins that we owe the term, "alimentary azotemia."

Observations in cases of massive bleeding have shown

\*Amigen (Mead Johnson & Co.), a hydrolysate, dextrimaltose, plus acid buffer.

the presence, within a comparatively short time, of a certain symptom complex that has all the attributes of uremia. Too often, in the absence of significant urine findings, the actual existence of a high blood urea nitrogen has been overlooked. Many bleeders have shown uremic symptomatology in greater or lesser degree. They have developed an actual parenchymatous nephritis as an obvious complication of the accident in the upper alimentary tract. I shall report one such case recently under my care who made his departure via the uremic route.

The situation of uremia in alimentary azotemia is somewhat analagous to the uremia that we meet in severe burns. Perhaps some day soon the physiological chemists will completely unravel these clinico-pathological complexities to the end that we will be fortified with rational therapy against all similar exigencies.

The intention in this paper has been to emphasize the immediate care of these cases. Experience directs a guarded prognosis, particularly in the cases of the late middle life and old age. This is justified on several factors; lesser physical resistance, chronicity of the lesion, and a bleeding hardened vessel in a sclerotic environment. In all cases of hematemesis and profound melena, the outcome is doubtful.

The immediate diagnosis of the lesion responsible for these accidents is distinctly secondary in clinical routine. Never, until the patient recovers from his original shock and sequellae, should diagnostic curiosity jeopardize recovery. Many of us through our early years were without trained roentgenologists to visualize alimentary lesions; blood chemistry was in swaddling clothes; and competent cytologists were too few and remote to be of value in the exigency. The pendulum of conservatism, in matters diagnostic in these bleeders, should swing to the present concept of handling acute skull fracture; wherein the patient is the element of major importance, rather than the inherent curiosity of the clinician.

The advent of the gastroscope, the esophagoscope, and the gastric camera, have all added to diagnostic armamentarium. A recent series of cases of esophageal varices treated successfully via the esophagoscope and sclerosing solution by Patterson and Rouse<sup>11</sup> commands deepest appreciation. In my practice, this type of diagnostic and treatment procedure is not available to my colleagues or me. We are therefore dependent on the clinical manifestations, and the correlated findings of the roentgenologist and laboratorian.

Tribute should be paid to Dr. Frederick Templeton, of the Cleveland Clinic<sup>12</sup> for his recent volume, "X-Ray Examination of the Stomach." As a man outside the field of radiology, I believe that this described work in obtaining diagnostic visualization from the visceral rugae, is an epoch-making contribution in diagnostic gastroenterology.

The vast majority of bleeding in the upper digestive segment is distinctly a medical problem. There may be surgical indications, with actual operative work accomplished, but in the ultimate the case reverts into the lap of the internist. Recipients of the once popular gastroenterostomy to the present radical gastric resection or

even total gastrectomy, are people in the present and the ultimate who require rigid supervision and treatment by dietary and medical regimen "ad infinitum." They are not pleasant responsibilities for those of us in the field of internal medicine.

#### ILLUSTRATIVE CASES

*Case 1.* B. E. W., an office executive, age 48, combat veteran World War I. Past illnesses, operations, and habits inconsequential. Thirty minutes after he had eaten a huge dinner of boiled chicken and dumplings, topped by two large pieces of apple pie, he was found in a state of collapse, lying face down in a large pool of blood on the bathroom floor. He seemed to be quite dead, and I inquired if he might have attempted self-destruction. The pupils were widely dilated, there was no perceptible radial pulse, there was extreme pallor and a cold clammy sweat. He was hospitalized and immediately given two flasks of plasma, later followed by 500 cc. of citrated blood. His response to this treatment, together with those methods ordinarily invoked in the treatment of shock was strikingly satisfactory within two hours after collapse. He received an additional 500 cc. of citrated whole blood. A few hours later the hematocrit had approached normalcy. Four days later he was regarded as being safe for X-ray study. The laboratory rendered a normal chemo-microscopic report on study of the aspirated Ewald meal. The radiologist rendered a negative report after his study. This man remained in the hospital a total of three weeks under carefully controlled diet and bed rest. He resumed his normal employment a month following the chicken dinner episode. He has reported at least four times each year for the past four years for study. He has never enumerated a single subjective symptom, nor shown a positive physical finding of a lesion of the upper digestive tract. He is at the moment a fine and healthy physical specimen.

*Case 2.* R. C., a welder in the oil industry, age 51, likewise a World War I veteran. He had an acute appendix removed at 21. Had influenza-pneumonia while in service in 1918. Heavy cigarette smoker all his life and drank whiskey moderately. Three years ago was operating a "jack-hammer" some 120 miles distant from Casper at a remote oil field. Ate a heavy mid-day meal of hash, boiled cabbage, corn bread and a double helping of preserved peaches for dessert. He returned to work, operated the jack-hammer for about thirty minutes and was compelled to quit because of dizziness. Fellow workmen noticed that he was very pale and staggered when he attempted to walk. He was taken to the camp physician, who gave him a pint of warm soda solution to invoke vomiting. This failed and the physician advised that he be taken to his home in Casper. Enroute to Casper, he fainted in the car and had a large hematemesis. He was taken directly to the hospital and admitted on my service. The man was apparently acutely ill, bordering on collapse. The epigastric region was distended markedly and there was a flat percussion note in the region. Blood study revealed a marked lowering of hemoglobin and erythrocytes and a hematocrit of 32 per cent. During the physical examination an

involuntary defecation of extreme melena occurred. Blood pressure 92/68, pulse 102. We administered a 500 cc. flask of plasma and ordered immediate cross matching for whole blood transfusion. This was accomplished within the subsequent two hours, but not until a very copious hematemesis of bright red gastric content had occurred. Coagulants were given parenterally and by mouth. Four hours later a second large emesis of bright red gastric content occurred and the status of shock was greatly increased. Blood pressure 88/64, pulse 128, hematocrit 28 per cent. Fortunately, we had refrigerated 500 cc. of blood in anticipation of such an event. This was given immediately and the usual treatment of shock continued. Ten hours later the marked pallor subsided. The general aspect was markedly improved. The hematocrit had approached normalcy (40 per cent). This man was required to remain in the hospital with bed rest the subsequent ten days, which were uneventful. Upon his insistence he returned to his home, where he rested an additional ten days. He resumed his usual employment twenty-four days after the onset of the acute affair. I see this man sporadically for a check-up. He is free of symptoms and physical findings. Subsequent study has included two routine gastrointestinal X-ray studies, both of which have been reported negative by the laboratory and the radiologist.

*Case 3.* J. H., age 36, a steel construction foreman. For the past three years has had prolonged periods of indigestion in spring and fall "relieved by baking soda." Arising at night with pain, has found that a lunch will immediately relieve pain in pit of stomach. Has seen black stools at times during periods of distress. Has never consulted a physician as he attributed symptoms to poor food obtainable when working away from home. Keeps bottle of milk and package of crackers in his room for night lunches. He arose one morning and while shaving thinks he fainted. When he resumed consciousness he was on floor of room and had vomited large amount of dark coffee-ground material. When he failed to report on job, one of his crew came to hotel and found him. A physician was called and patient was advised to return home by ambulance and to be immediately hospitalized. The 130-mile trip by ambulance was accomplished uneventfully, attended by a graduate nurse. Patient was admitted on my service. The facies typically that of a patient suffering from recent severe hemorrhage. There was definite air hunger, the conjunctivae were pearly white, blood pressure 88/76, pulse 126. The patient was apprehensive and persisted in wishing to sit up. Blood study was immediately ordered and while the technician was withdrawing blood, the patient fainted. The syncope persisted but a few minutes, and was immediately followed by a large hematemesis and an involuntary defecation of tarry feces. Morphine was administered perenterally, hematocrit 28 per cent. A flask of plasma was given within the half hour subsequent and patient placed in oxygen tent. Six hours later the patient presented a much more favorable picture. All evidence of shock had disappeared, and pulse was of good quality, and of reasonable rate. The patient complained of his usual dis-



tress in his upper abdomen. Palpation disclosed a definite defense reflex and some rigidity three finger breadths below the mid-portion of the right subcostal region. He received normal saline and glucose solution alternately by venoclysis each six hours. Morphine was continued when indicated for the apprehension and abdominal discomfort. On the fourth hospital day the patient was studied by the roentgenologist with a small ingestion of barium. He demonstrated conclusively the presence of a lesion in the first portion of the duodenum. This was confirmed a week later by more elaborate X-ray technic. The laboratory found a marked hyperacidity and considerable erythrocytes in the aspirated Ewald meal. This patient was hospitalized for the subsequent three weeks on rigid ulcer diet and acid neutralizing therapy. He was ultimately discharged on ambulatory ulcer regimen. He resumed his normal occupation seven weeks after the acute onset of bleeding. This man soon left the community, but returned to my office two and one-half years later to state that he had suffered another similar attack of hematemesis six months ago and had remained in the hospital on ulcer diet for six weeks. He was now on ambulatory diet and had permanently followed his physician's admonishment to cease smoking. He is to all appearances in the best of physical condition and entirely free of his indigestion. Correspondence with his physician indicates that the ulcer site in the recent episode was more distal and of lesser size than the one found primarily.

*Case 4.* R. C., age 37, a graduate civil engineer, but later owner and operator of a small butter-making plant. Emaciated in appearance, and profoundly myopic. Heavy cigarette smoker. Presented in the recital of his complaint all the cardinal symptoms of duodenal ulcer. This was confirmed by the radiologist who demonstrated a rather large lesion just distal to the pylorus, and with considerable narrowing of the lumen. The acid curve was typically high. At this particular time we were experiencing the wave of enthusiasm pertaining to surgery for this condition. This man was acquiescent to a gastroenterostomy and this was accomplished by a highly capable surgeon. This patient made an enviable recovery, and soon returned to his butter-making factory. Some eighteen months later I was called to his home. The patient had stated that he felt exhausted and desired to remain in bed for the day. When I arrived at his home he was lying on a mid-landing of the stairway leading to the living room. His head was near the top step of the lower flight of stairs and bloody gastric contents were actually cascading down the steps to the living room. He was immediately hospitalized and intravenous physiological solution administered (this antedates the availability of plasma). He was in profound shock. Four hours later a donor of compatible type was secured and 500 cc. of citrated blood were given, promptly followed by a violent reaction. But strangely the patient survived both the bleeding and the badly matched blood. Sippy diet and alkaline therapy were instituted within a few days, but not until the X-ray study revealed two large marginal ulcers at the new opening of the stomach. The patient refused further surgery and agreed to follow a

dietary and acid neutralizing regimen. He refused to cease using tobacco, and was known to flagrantly violate his diet and neglect his medication. He had two subsequent massive hemorrhages in two years. He then developed, plus all his alimentary troubles, a pulmonary lesion that on study by X-ray and sputum was found to be pulmonary tuberculosis, from which he died at a veterans' facility two years later.

*Case 5.* A. A., age 40, divorcee. One child, 15. Two induced abortions since. Vaginal hysterectomy five years ago. Habits good except smokes two packs cigarettes per day. Family history negative. Two years ago after a brief period of indigestion, vomited large quantity of clotted blood. Was hospitalized by her physician for one week on strict diet. Had no X-ray study. Followed ambulatory ulcer diet prescribed for her but was distressed in epigastrium almost constantly for the subsequent seven months. Distress gradually subsided, gained weight, color improved, and was able to eat normal diet and eliminate medication. Two years following the hematemesis, the patient presented herself for study, stating she had sustained a blow in the epigastrium incurred in an auto accident ten days previously. The patient was somewhat emaciated and her color was only fair. Laboratory study indicated a hemoglobin of 78 per cent, RBC 2,260,000, and a normal leukocyte count and differential, hematocrit 34 per cent. An Ewald meal disclosed a total acidity of twenty degrees and no free HCl. Many erythrocytes were noted on microscopic study of the gastric contents. This patient refused X-ray study. There was a mild defense reflex in the upper right portion of the epigastric region and a suggestion of a nodular mass underlying. Exploration was urgently recommended but patient refused. Five months later we received a letter from the chief of a surgical section at a large mid-west clinic which reported, "exposure through a primary upper midline incision revealed huge ulcerating carcinoma involving the posterior wall of the stomach and forming a circular lesion around the insertion of the esophagus. There was an indurated area in the right lobe of the liver, but otherwise there was no definite distant metastasis. The growth was infiltrating and attached posteriorly so that any attempt to remove it was out of the question." Seventeen days following the receipt of this communication, the patient had returned, entered our hospital on my service, and died of exsanguination via repeated massive hematemesis.

*Case 6.* J. B., age 48, coin-operated amusement machine dealer. Gives a negative family history. Married, has three children, one son, an army pilot killed in Pacific combat. States that he has been constipated and "off feed" for past two weeks. He has been taking a bottle of citrate of magnesia each day and has vomited undigested food occasionally. Has not observed color of stools. Odor of food occasionally has caused nausea and impending syncope. Routine physical examination was made at my office. Temperature, 98, pulse, 114, blood pressure, 92/74. The patient dressed himself and walked from a nearby examining room to my private office and collapsed. A few minutes later he vomited a large amount of gastric contents containing bright red blood and in-

numerable clots. He was immediately hospitalized and a flask of plasma administered, followed by 1000 cc. of physiological saline solution. Pressure 90/74, pulse 106. The hematocrit was quite normal on admittance, (42 per cent). The urine showed a trace of albumin with an occasional granular cast present. Blood serology was negative. This patient recovered from the collapse episode within a few hours, insisted that he sit up and read the evening paper and expected to return to his home the following morning. Against my better judgment he was permitted to go to his private bath the following morning, and on returning to his bed had another collapse of lesser degree and without hematemesis. In the interim we had organized donors who were at the moment in process of being cross matched. We immediately gave two flasks of plasma followed shortly by a severe chill lasting thirty minutes. Four hours later 500 cc. of citrated blood were given. On the occasion of a visit from his wife the evening of his second hospital day he had another severe syncope with an involuntary melanotic stool. The blood picture had dropped from a normal to Hb. 62 per cent with 2,620,000 R.B.C., hematocrit 28 per cent, blood pressure 86/66, pulse 132. A consultant from a nearby city was summoned who sustained my position that this patient was too ill for X-ray study or exploratory surgery. Periods of mental befuddlement began to occur. He was placed in an oxygen tent, and in the subsequent twelve days a total of nine transfusions and twelve flasks of plasma were given. The urine progressively showed evidence of acute nephritis. During the last eighteen hours of life there was a complete urinary suppression. He died of uremia on his fifteenth hospital day. An autopsy disclosed, and I quote the pathologist's report, "There was slight hardness and hypertrophy in the antral portion of the stomach. The organ contained 1000 cc. of clotted blood and was dilated. There was an ulcer 2½ cm. near the greater curvature in the antral portion of the stomach, with a definite raised border and a small papillomatous growth in its center. There was a small (0.5 cm.) ulcer just lateral to this. The entire antrum in its distal two thirds appeared infiltrated, more on the greater curvature. There was some narrowing of the pylorus. There was no evidence of enlarged nodes or metastases to the liver. The kidneys and remaining organs were pale but of normal size and contour. Pathological Findings: Multiple ulcers of greater curvature, grossly appearing malignant. Histological Findings: There is marked ulceration of chronic infiltration and acute infiltration at base of large ulcer. The edge of the ulcer shows abnormal proliferation of polygonal cells with small nuclear derangement—definitely abnormal. There is abnormality of the remaining small portions of the gastric mucosa surrounding the edge of the ulcer. Diagnosis: Adenocarcinoma."

This patient was fed albumin and gelatin water alternately via Levin tube for forty-eight hours. Parenteral hemostatic sera were administered at twelve-hour intervals. During the last ten days of life the blood urea nitrogen values determined by six different observations progressively rose from the first observation of 32 mg. to 53.5 mg. a few hours prior to the exodus.

## SUMMARY

1. Massive bleeding in the upper digestive tract is distinctly an emergency invoking the highest ability and skill of the attending clinician.
2. Immediate clysis of plasma, or better, albumin, salt poor fraction, whole blood, and indicated physiological solutions are predominantly imperative throughout critical period.
3. Meddlesome diagnostic and surgical procedure are contra-indicated until rehabilitation from shock, and the re-establishment of near normal blood status in its entirety.
4. Hourly blood pressure and pulse rate observations, frequent hematocrit study, and appraisal of efferent debris from indwelling gastric catheter, provide significant indications for transfusion.
5. Feeding of albumin and gelatin waters, protein hydrolysate, aluminum hydroxide, together with the administration of topical hemostatic are readily accomplished through the Levin tube.
6. The incidence of uremia attributable to alimentary azotemia directs frequent blood urea nitrogen estimations for diagnostic, treatment, and prognostic values.
7. Massive hemorrhage in the upper segment of the alimentary tract irregardless of intervening treatment, surgical or medical, becomes in the vast majority an ultimate distinct problem for the internist.

## BIBLIOGRAPHY

1. Soper, H. W.: *Clinical Gastroenterology*. St. Louis, Mo.: C. V. Mosby Co., 1939.
2. Meyer, K. A., and Steigmann, F.: Gastric Hemorrhage: Implications as to Treatment. *Surg. Clin. North America*, 24: 29 (Feb.), 1944.
3. Soper, H. W.: Treatment of Hematemesis. *J.A.M.A.*, 97: 771 (Sept. 12), 1931.
4. Research Lab. Parke Davis & Co. Topical Thromboplastin. Detroit, Mich.
5. Carlson, L. A., and Rivers, A. B.: Clinical Consideration of Defense Factors of Tissue in the Etiology of Peptic Ulcer. *Rev. of Gastroenterology*, 4: 96 (June), 1937.
6. Tice, F.: Gastric and Duodenal Hemorrhage. *Practice of Medicine*, vii: 482a.
7. Levy, J. S.: Effect of Oral Administration of Amino Acids on Hypoproteinemia Resulting from Bleeding Peptic Ulcer. *Gastroenterology*, 4: 375 (May), 1945.
8. Volkert, M., and Astrup, T.: Effect of Dialyzed Serum Proteins and Serum Dialysates on Shock. *Acta Medica Scandinavica*, 115: 537 (Dec. 9), 1943. *J.A.M.A.* 128: 470 (June 9), 1945.
9. Cohn, E. J.: Blood Proteins and Their Therapeutic Value (as Blood Substitutes). *Science*, 101: 51 (Jan. 19), 1945.
10. Janeway, C. A.: Clinical Use of Products of Human Plasma Fractionation: Albumin Shock and Hypoproteinemia; Gamma Globulin in Measles. *J.A.M.A.*, 126: 674 (Nov. 11), 1944.
11. Janeway, C. A.: Concentrated Human Serum Albumin; Albumin in Treatment of Shock; Safety of Albumin; Albumin in Treatment of Hypoproteinemia. *J. Clin. Investig.*, 23: 465 (July), 1944.
12. Warren, J. V., Stead, E. A., Jr., Merrill, A. J., and Brannon, E. S.: Treatment of Shock with Concentrated Human Serum Albumin: Preliminary Report. *J. Clin. Investig.*, 23: 506 (July), 1944.
13. Woodruff, L. M., and Gibson, S. T.: Use of Human Albumin in Military Medicine; Clinical Evaluation of Human Albumin. *U. S. Nav. Med. Bull.*, 40: 791 (Oct.), 1942.
14. Heyl, J. T., and Janeway, C. A.: Use of Human Albumin in Military Medicine; Theoretic and Experimental Basis for its Use. *U. S. Nav. Med. Bull.*, 40: 785 (Oct.), 1942.
15. Newhouser, L. R., and Lozner, E. L.: Human Serum Albumin (Concentrated); Clinical Indications and Dosage. *U. S. Nav. Med. Bull.*, 40: 277 (April), 1942.
16. Harkins, H. N., et al: Experimental Studies on Alimentary Azotemia. *Surgery*, 10: 991 (Dec.), 1941.
17. Harkins, H. N., and Chunn, C. F.: Experimental Studies on Alimentary Azotemia. *Surgery*, 9: 695 (May), 1941.
18. Patterson, C. O., and Rouse, M. O.: Esophageal Varices. *J.A.M.A.*, 130: 384 (Feb. 16), 1946.
19. Templeton, F.: X-Ray Examination of the Stomach. Univ. of Chicago Press, 1944.



# The Treatment of Prostatism

Oliver Elton Sarff, M.D.

Minneapolis, Minnesota

IT IS NOT the purpose of this article to discuss in detail the pros and cons of the various surgical approaches for the relief of bladder-neck obstruction, nor to attempt to mediate the many new concepts of therapy for carcinoma of the prostate. Rather, I shall endeavor merely to outline the diagnosis and general treatment of prostatic hyperplasia on the basis of my experience in the urological service of the State University of Iowa.

In the past several decades there has been an increase in prostatism, both benign and malignant. Duff,<sup>1</sup> working with the Metropolitan Life Insurance Company, found that from 1917 to 1928 life expectancy had risen from 46½ to 63½ years. A man of 60 is more likely to have a diseased prostate than a man of 50, and the increase is more marked in each decade after 60 years of age. Thus we may expect a greater incidence of prostatism as the life span lengthens.

In 1933, Dr. N. G. Alcock<sup>2</sup> in Iowa reported on a series of 400 suprapubic prostatectomies. The average age of the patients was 66.3 years. In a recent survey at the same clinic it was found that the average age was 74.4 years. This rise in the average age of the patients is due to two factors, namely, the increase in life expectancy and the fact that the older and poor risk patient can now undergo surgery with comparative safety. Formerly, if he survived, he would have been doomed to a catheter life or a permanent cystostomy. These improvements have been made possible by advances in chemotherapy and in surgical techniques.

A careful history must be obtained and recorded if the pathology is to be understood. The symptomatology varies greatly with the type of lesion and the duration of the disease. In general there is a tendency toward a short history in carcinoma, while the benign hyperplasia will usually show a slow progression over a period of years, with frequent remissions. The cardinal symptoms of bladder-neck obstruction are frequency, nocturia, burning and smarting, dysuria, diminution in the size and force of the urinary stream, and varying degrees of urinary retention.

Cases of long standing at times reveal evidence of retention of blood metabolites. In benign hyperplasia hematuria is not infrequent, but, strangely enough, it is seldom a manifestation of carcinoma of the prostate. Carcinoma should be suspected if there is loss of weight, anorexia, weakness, anemia, low backache, and a sciatic type and distribution of pain, particularly if the symptoms are of short duration.

A careful search should always be made for evidence of metastasis, as it is too often present before other symptoms manifest themselves. Bumpus<sup>3</sup> reported a series in which 25 per cent had metastasis when first seen at his clinic.

Inquiry concerning the patient's dietary habits will give useful information regarding his nutritional status.

An early uremia can be suspected when the history reveals poor appetite and nausea. Retention of blood metabolites is indicated if the patient is apathetic and has a dry skin and tongue. Profound uremia will be self-evident. A history of shortness of breath, asthma, effort syndrome, chest pain, and cerebral accidents is of great value to the physician in evaluating the condition of the patient and the eventual prognosis. A history of cerebral disease should put one on guard for a neurogenic bladder.

The patient should be given a complete physical examination, with special emphasis on the cardiovascular-renal systems. A careful rectal examination is of vital importance in determining the type of pathology. Unfortunately, it is not always possible to discern the early carcinoma per rectum. Kahler<sup>4</sup> studied a series of 490 prostate glands that had been diagnosed clinically as benign, only to find at post mortem that 54 of them showed microscopic proof of malignancy. These tumors were small, limited to one lobe, usually the posterior, and sufficiently removed from the capsule to make recognition by a rectal examination possible.

Poor rectal tone suggests cerebral disease and the possibility of a neurogenic bladder. X-ray studies, consisting of air cystograms and cysto-urethrograms, are of great value in diagnosis, and also make preoperative cystoscopy unnecessary. Experience in interpretation enables the physician to establish quite accurately the size of the gland and the type of bladder-neck deformity. At this time also the amount of residual urine may be determined and the urine may be studied for any evidence of infection or renal damage. Evidence of bladder tumor, diverticuli, and ureteral reflux can also be determined. If there is X-ray evidence of bladder tumor, intravenous pyelograms should be made to rule out renal involvement. A complete blood study should be done routinely, along with cultures of the urine.

If the diagnosis of benign hyperplasia has been made, one should next decide whether or not surgery should be undertaken. If the patient carries no residual urine and the symptoms are minor, consisting chiefly of frequency and nocturia, a conservative regime should be instituted.

Such a regime includes hot sitz baths, forced fluids, clearing up existing infection, and such other supportive treatment as may be indicated. Strictures will have been noted in the previous examination, and should be given adequate treatment. If the patient shows improvement he should be sent home with proper instructions and kept under observation. Many of these patients can be carried easily and comfortably for years under such a regime.

If carcinoma is found and the obstructive symptoms are borderline, a course of stilbestrol is instituted. Experience shows that many patients respond well and

rapidly to such treatment: pain disappears, the patient voids without difficulty, and appetite and weight are regained. The gland becomes so softened and reduced in size that many, returning after several months for re-examination, will defy a diagnosis of carcinoma by rectal examination.

If the patient fails to respond, or if the obstruction is complete, surgery is indicated. The patient should be hospitalized and carefully prepared. Anemias and any evidence of avitaminosis and nutritional imbalance should be corrected. If the blood chemistry is within normal limits and the urine clear, no presurgical bladder drainage is necessary. Most patients seen in private clinics will fall into this group. Ward cases, owing to neglect and late diagnosis, will more often need indwelling catheters to eradicate infection and combat uremia. Occasionally gross hematuria with clot formation, causing complete retention, will necessitate preoperative drainage. We have found 1-10,000 zephiran solution to be an excellent medium for intermittent irrigations. Another instance in which indwelling catheter and drainage may be necessary is for those patients who develop fever and chills due to bacteremia following X-ray examinations.

In our experience suprapubic cystostomy was seldom necessary, and then only in the very severe uremic patient who failed to respond, or in the senile patient whose co-operation was negligible. If the patient is uremic, Hartmann solution is of value, and the blood chemistry and CO<sub>2</sub> combining power should be checked frequently.

In many instances an electrocardiogram will be helpful in evaluating cardiovascular disease, but only in conjunction with the clinical findings, which, in my opinion, take precedence in value.

The clinician can glean much information from observing the activity of the patient in the wards. Ability to walk about without effort or discomfort is significant. The physician should attempt to gain the patient's confidence and to allay his apprehension. The patient should be given time to orient himself and opportunity to observe other patients in various stages of treatment. The benefit of such measures cannot be overemphasized, for it is my firm conviction that many coronary accidents have been directly precipitated by apprehension and emotional stress.

One must be very careful in the choice of sedatives. These patients do not tolerate well the barbiturates, which often cause mental confusion. Morphine must be used with extreme caution, but it still remains the drug of choice for pain. Paraldehyde in one-dram doses is useful in combatting restlessness. Preoperative medication was rarely found necessary in our experience, but, if it must be given, scopolamine, with a quick-acting barbiturate such as seconal, gives excellent results. Fluid balance must be assured before surgery.

We prefer a low spinal anesthesia, and give 75-85 mg. of novocain dissolved in 1½ cc. of spinal fluid. It should at all times be given slowly. Ephedrine should be given in the amounts indicated and dictated by the blood pressure reading. The blood pressure should be determined frequently throughout the operation. Adequate therapy should be given for sudden drops of pressure, for these

elderly patients do not tolerate a profound drop in pressure for any length of time without suffering severe renal and cerebral damage, often permanent.

The choice of surgery is dictated by the experience and training of the surgeon available. If a carcinoma of the prostate is found early and is confined within the limits of the capsule, radical surgery by a competent man should be considered. Colston and Lewis<sup>5</sup> reported that in 1041 consecutive cases of carcinoma, 4 per cent were considered candidates for radical surgery. For the great majority, other methods of treatment must be devised. Treatment is at best merely palliative, but the patient is entitled to any degree of comfort that can be obtained for him.

If surgery is required the method of choice is transurethral resection. The only contraindications are inability to pass the resectoscope or inability to reach a high intravesical gland. This last condition is occasionally found in the very obese patient.

We feel that with enough training and experience, any gland, regardless of size or type, can be successfully removed. The older the patient and the graver the prognosis, the more important it becomes to attack a prostate by transurethral resection.

We do not hesitate to elect preoperatively to do a transurethral resection in two stages, for it is our experience that these elderly, poor risk patients suffer less morbidity and mortality by this method. By doing the resection in two stages, we can use smaller and therefore less toxic doses of novocain intraspinally, thus allowing for less drastic falls in blood pressure, with resultant shock. We have also found that much more tissue can be removed rapidly during the second stage, owing to the fact that the tissue is comparatively avascular.

At the time of resection, bladder tumors can be removed by fulguration, stones can be removed by litholapaxy, and the neck of a diverticulum can be resected to afford better drainage.

In support of our preference for transurethral resection, we may cite Latchen and Emmet,<sup>6</sup> who, reporting on a study of material at the Mayo Clinic, stated that from 1934 to 1942 transurethral resections were done on 345 men of 80 or over, with a mortality rate of 2.6 per cent.

An important advantage of the transurethral method is that it allows the patient to become ambulatory in twenty-four to forty-eight hours. Owing to this advantage, the number of cardiovascular and pulmonary accidents that so frequently befall the aged patient forced to remain in bed for long periods has been reduced.

#### POSTOPERATIVE TREATMENT

In the immediate postoperative period, carbon dioxide and oxygen are useful in preventing pulmonary and cardiovascular complications. Adequate fluid balance and diet are imperative. Hemorrhage and shock should be treated with whole blood and plasma as necessary. Contrary to the experience of others, we have found the administration of penicillin to be a valuable addition to the sulfonamides in combatting infection. The blood pressure should be taken frequently until it becomes stabilized.



If the patient is afebrile, the catheter is removed in forty-eight hours. The patient should be given ample opportunity to void. If he is unable to do so, or if the residual urine amounts to 100 cc. or more, the catheter should be replaced for an additional twenty-four to forty-eight hours, and the procedure then repeated. Allowance must be made for the large, atonic bladder with a history of long-standing retention. Such a patient will carry residual urine until the tone of the bladder muscle is restored to normal.

In our experience the average length of hospitalization following transurethral resection, including all complications, is about eleven days, with six days as the usual period.

Following the patient's discharge, he should report to his local physician or back to the surgeon in the event of hematuria, fever and chills, or any other untoward symptom. He should be impressed with the necessity of adequate fluid intake and a well-balanced diet, supplemented, if necessary, with vitamins.

During the healing period of four to six weeks the patient should take frequent sitz baths. If the diagnosis was carcinoma the patient should be given complete instructions in the use of stilbestrol. We have found it satisfactory to give 15 mg. of stilbestrol daily, in divided doses, until the breast becomes tender and enlarged. The dose is then cut to an amount that will maintain a tender breast without swelling.

The patient should be rechecked within several

months. At this time, the urethra should be calibrated for stricture or bladder-neck contraction. Except in cases of malignancy very few will need further treatment.

#### SUMMARY

Recent advances in surgery, chemotherapy, and other supportive measures have enhanced the chance of survival of the elderly, poor risk patient with prostatic hyperplasia. In our opinion transurethral resection has given the urologist an instrument that minimizes the risk, affords a better prognosis, and makes the selection of cases unnecessary. We may hope that, along with the increasing incidence of prostatic hyperplasia, both benign and malignant, our knowledge of the branches of medicine necessary to its successful treatment may be advanced still further.

#### BIBLIOGRAPHY

1. Duff, J.: Cancer Mortality, Bladder, Kidney and Prostate. *J. Urology*, 32: 346-353, 1934.
2. Alcock, N. G.: Prostatic Resection and Surgical Prostatectomy; Comparison of Immediate Results in Two Equal Consecutive Series of Cases. *J.A.M.A.*, 101: 1355-1358 (Oct. 28), 1933.
3. Bumpus, H. C.: Cancer of Prostate; Difficulties in Evaluation of Treatment. *Tr. A.M.A. Genital Urinary Surgeons*, 34: 191-194, 1941.
4. Kahler, J. E.: *Year-Book of Urology*. Pages 302-303, 1942.
5. Colston, J. A., and Lewis, L. J.: Carcinoma of the Prostate, a Clinical and Pathological Study. *South. M. J.*, 25: 696-700, 1932.
6. Latchen, Charles W., Emmet, John L.: Transurethral Resection for Men 80 or More Years of Age. *J. Urology*, 53: 482 (March), 1945.

### ARMY PROGRAM PREVENTS IMPORTING OF DISEASE

There is little or no risk of introducing foreign disease into the United States through returning military personnel from abroad, according to an announcement by the Office of the Surgeon General, which pointed out that the most careful estimates anticipate only moderate danger in a few cases.

This conclusion was reached after a world-wide survey by the Interdepartmental Quarantine Commission, which was jointly established by the Secretaries of War and Navy, and the Administrator of the Federal Security Administration to study this problem.

With the end of the war and return of the bulk of combat forces, it is now possible to review actual results on a preliminary basis. Though tentative, highly optimistic conclusions appear warranted, the announcement stated.

To date, no acute outbreak or secondary spread of an imported disease has been reported. While more slowly evident diseases may be identified later, it should be remembered that the traffic of war has gone on for four years, giving ample time for discovery of such diseases.

The 440,000 hospitalizations for malaria reported among Army personnel during the war fall short of pessimistic predictions for what has proved to be the commonest infectious disease of troops abroad.

Even with the consideration that a portion of infected persons are liable to recurrence after their return to the States, conditions in this country are generally unfavorable for the spread of malaria and the chances of community risk are very small.

The special danger of cholera, smallpox, plague, epidemic typhus, and yellow fever, is a matter of historical record. Immunizations were employed against all these diseases by the Armed Forces along with water purification, environmental sanitation, and disinfestation and insect control. This preventive medicine program was exercised even under combat conditions and its effectiveness was shown by Army records. The high general level of sanitation, insect control, and alert medical care available here forms the final link in the protection of this country from imported diseases.—*War Medicine*, May 1946.

# Hypochromic Anemia: Treatment with Molybdenum-Iron Complex

James C. Healy, M.D.\*

Boston, Massachusetts

**A**LTHOUGH iron is regarded as a specific in the treatment of hypochromic anemia, it is well known that relatively small amounts of the elements are absorbed, and still smaller amounts utilized, following oral administration of therapeutically adequate doses of iron preparations.

Various means of potentiating the therapeutic action of iron, by facilitating absorption or utilization of the metal, have been studied. For example, enhancement of the action of iron by calcium,<sup>1</sup> cobalt,<sup>2</sup> preformed pyrol substances such as chlorophyll<sup>3</sup> and "secondary anemia" liver extract<sup>4</sup> has been observed. However, the practical value of such "accessory substances" in the treatment of hypochromic anemias is at best doubtful, since their potentiation of iron can be demonstrated only in animals and, as emphasized by Witts,<sup>5</sup> only when suboptimal amounts of iron preparations are used.

In the investigation of the possible catalysis of iron by "accessory substances," most attention has been given to copper. This element has been clearly shown to potentiate the action of iron in experimental animals made anemic by a diet deficient in both copper and iron.<sup>6</sup> Its importance as an adjuvant to iron in the treatment of clinical anemias, however, seems to be limited to a minority of patients, notably young infants, apparently because of the rarity of copper deficiency among other age-groups in man.<sup>7</sup>

## PRESENT STUDY

The purpose of this paper is to report the results of an endeavor to determine the therapeutic efficacy of a molybdenum-iron complex in patients with hypochromic anemia. Preliminary study of this preparation had demonstrated its lack of toxicity in guinea pigs and rabbits and suggested its usefulness as a valuable hemopoietic agent in clinical hypochromic anemia.

Molybdenum-iron complex, hereafter designated "M-I complex," is said to be prepared by a process in which molybdenum sesquioxide ( $\text{Mo}_2\text{O}_3$ ) and ferrous sulfate are co-precipitated to produce a homogeneous mass containing a partial physical union of the component salts. The preparation was administered to patients in the form of tablets,<sup>†</sup> each of which supplied approximately 2.5 mg. of elemental molybdenum and 40 mg. of ferrous iron.

## PROCEDURE

The therapeutic value of M-I complex, as compared with ferrous sulfate, was studied in seventy cases of moderately severe hypochromic anemia among hospitalized individuals who were largely ward patients. Forty-nine patients (Group I) were treated with tablets of M-I complex; the remaining twenty-one patients (Group II)

served as controls and were treated with tablets of excised ferrous sulfate.

According to whether anemia was obviously the result of protracted hemorrhage or was associated with a state of gross malnutrition and not apparently the result of hemorrhage, patients of each group were divided into two sub-groups and designated as having either post-hemorrhagic hypochromic anemia or nutritional hypochromic anemia.<sup>‡</sup> Those with post-hemorrhagic hypochromic anemia were selected for study after preliminary control periods without therapy had demonstrated no improvement in the anemia.

All blood studies were done in duplicate by one experienced technician to insure greater accuracy. The average of each duplicate reading was recorded as the true laboratory finding. Hemoglobin determinations were made by an acid hematin method in which 100 per cent hemoglobin is equivalent to 14.5 Gm. per cent. Following the diagnosis of hypochromic anemia and the start of treatment in each case, examination of the blood was made usually at intervals of three to four days during the course of study. The rate of hemoglobin regeneration was regarded as the yard-stick of therapeutic efficacy of the iron medication.

## RESULTS

The degree of anemia in both groups of patients at the beginning of treatment was comparable, the average initial hemoglobin in Group I being 8.41 Gm. per cent and that in Group II, 8.18 Gm. per cent. The average daily intake of elemental iron in Group I was approximately 230 mg. (as M-I complex) and, in Group II, approximately 380 mg. (as ferrous sulfate). Both M-I complex and ferrous sulfate were administered to patients in divided daily dosage of four to eight tablets.

The patients in Group I responded to treatment with M-I complex in a strikingly favorable manner. Normal hemoglobin levels were attained by all patients in this group within a period of time ranging from 9 to 31 and averaging 13.7 days. The average daily increase in hemoglobin for the group was 0.36 Gm. per cent. On the other hand, the therapeutic response to ferrous sulfate in patients of Group II was definitely less favorable. In a period ranging from 15 to 24 and averaging 20.7 days, during which the results of treatment with ferrous sulfate were observed, only two patients attained a hemoglobin level as high as 12 Gm. per cent, a value considered to be a low normal. Normal hemoglobin values were not reached in the remaining seventeen patients

<sup>‡</sup>The term, "nutritional hypochromic anemia," is used in deference to the gross malnutrition of these patients in whom, it is recognized, factors such as undetected previous hemorrhage, altered gastrointestinal function and chronic infection were possibly of greater importance than poor diet in the causation of anemia.

\*Department of Pharmacology, Tufts College Medical School.

<sup>†</sup>Supplied by White Laboratories, Inc., Newark, N. J.



TABLE 1  
Individual Response to Treatment with Molybdenum-Iron Complex

| Case No.                            | Initial Hemoglobin |       | Days of Treatment | Therapeutic Intake of Fe++ (in Gm.) | Total Hemoglobin Increase |       | Average Daily Hemoglobin Increase |       | Per Cent Utilization of Fe++ |
|-------------------------------------|--------------------|-------|-------------------|-------------------------------------|---------------------------|-------|-----------------------------------|-------|------------------------------|
|                                     | Per Cent           | Gm. % |                   |                                     | Per Cent                  | Gm. % | Per Cent                          | Gm. % |                              |
| POST-HEMORRHAGIC HYPOCHROMIC ANEMIA |                    |       |                   |                                     |                           |       |                                   |       |                              |
| 1.                                  | 60                 | 8.70  | 16                | 3.744                               | 23                        | 3.34  | 1.43                              | .207  | 15.3                         |
| 2.                                  | 45                 | 6.52  | 31                | 9.672                               | 35                        | 5.08  | 1.12                              | .162  | 9.0                          |
| 3.                                  | 38                 | 5.51  | 28                | 8.736                               | 51                        | 7.40  | 1.82                              | .263  | 14.4                         |
| 4.                                  | 68                 | 9.86  | 21                | 8.914                               | 22                        | 3.19  | 1.09                              | .158  | 11.1                         |
| 5.                                  | 52                 | 7.54  | 16                | 3.744                               | 38                        | 5.51  | 2.37                              | .343  | 25.3                         |
| 6.                                  | 52                 | 7.54  | 18                | 5.616                               | 35                        | 5.08  | 1.94                              | .281  | 15.5                         |
| 7.                                  | 52                 | 7.54  | 21                | 6.552                               | 37                        | 5.37  | 1.76                              | .255  | 14.1                         |
| 8.                                  | 55                 | 7.98  | 19                | 5.928                               | 29                        | 4.21  | 1.52                              | .220  | 12.2                         |
| 9.                                  | 46                 | 6.67  | 22                | 6.864                               | 35                        | 5.08  | 1.59                              | .230  | 12.7                         |
| 10.                                 | 38                 | 5.51  | 20                | 6.240                               | 38                        | 5.51  | 1.90                              | .284  | 15.2                         |
| 11.                                 | 62                 | 8.99  | 16                | 3.744                               | 28                        | 4.06  | 1.74                              | .252  | 18.6                         |
| 12.                                 | 61                 | 8.85  | 12                | 2.808                               | 19                        | 2.76  | 1.58                              | .229  | 16.9                         |
| 13.                                 | 46                 | 6.67  | 26                | 8.112                               | 38                        | 5.51  | 1.46                              | .211  | 11.7                         |
| 14.                                 | 48                 | 6.96  | 16                | 4.992                               | 38                        | 5.51  | 2.37                              | .343  | 19.0                         |
| 15.                                 | 69                 | 10.01 | 12                | 1.248                               | 25                        | 3.63  | 2.08                              | .301  | 50.0                         |
| 16.                                 | 64                 | 9.28  | 9                 | 1.404                               | 28                        | 4.06  | 3.11                              | .450  | 49.8                         |
| 17.                                 | 58                 | 8.41  | 9                 | 2.808                               | 33                        | 4.79  | 3.66                              | .530  | 29.3                         |
| 18.                                 | 64                 | 9.28  | 9                 | 2.106                               | 29                        | 4.21  | 3.22                              | .466  | 34.5                         |
| 19.                                 | 71                 | 10.30 | 6                 | 1.404                               | 23                        | 3.34  | 3.83                              | .555  | 40.9                         |
| 20.                                 | 58                 | 8.41  | 12                | 3.744                               | 38                        | 5.51  | 3.16                              | .458  | 25.3                         |
| 21.                                 | 60                 | 8.70  | 9                 | 2.106                               | 31                        | 4.50  | 3.33                              | .482  | 36.7                         |
| 22.                                 | 60                 | 8.70  | 12                | 2.808                               | 32                        | 4.64  | 2.66                              | .385  | 27.7                         |
| 23.                                 | 66                 | 9.57  | 9                 | 2.106                               | 25                        | 3.63  | 2.79                              | .404  | 29.6                         |
| 24.                                 | 49                 | 7.11  | 15                | 4.680                               | 39                        | 5.66  | 2.60                              | .377  | 20.8                         |
| 25.                                 | 70                 | 10.15 | 9                 | 2.106                               | 21                        | 3.05  | 2.33                              | .337  | 24.9                         |
| 26.                                 | 63                 | 9.14  | 12                | 2.808                               | 30                        | 4.35  | 2.50                              | .362  | 26.7                         |
| 27.                                 | 62                 | 8.99  | 17                | 3.978                               | 31                        | 4.50  | 1.82                              | .263  | 19.4                         |
| 28.                                 | 61                 | 8.85  | 9                 | 2.106                               | 28                        | 4.06  | 3.11                              | .450  | 33.2                         |
| 29.                                 | 50                 | 7.25  | 12                | 1.872                               | 36                        | 5.22  | 3.00                              | .435  | 48.0                         |
| 30.                                 | 52                 | 7.54  | 12                | 3.744                               | 37                        | 5.37  | 3.08                              | .446  | 24.7                         |
| 31.                                 | 63                 | 9.14  | 10                | 2.340                               | 23                        | 3.34  | 2.30                              | .333  | 24.5                         |
| 32.                                 | 63                 | 9.14  | 18                | 4.212                               | 29                        | 4.21  | 1.61                              | .233  | 17.2                         |
| 33.                                 | 56                 | 8.12  | 12                | 3.744                               | 31                        | 4.50  | 2.58                              | .374  | 20.6                         |
| 34.                                 | 51                 | 7.40  | 15                | 4.680                               | 39                        | 5.66  | 2.60                              | .377  | 20.8                         |
| 35.                                 | 58                 | 8.41  | 13                | 4.056                               | 31                        | 4.50  | 2.38                              | .345  | 19.1                         |
| 36.                                 | 61                 | 8.85  | 9                 | 2.106                               | 24                        | 3.48  | 2.66                              | .385  | 28.4                         |
| 37.                                 | 59                 | 8.56  | 10                | 2.340                               | 28                        | 4.06  | 2.80                              | .406  | 32.0                         |
| NUTRITIONAL HYPOCHROMIC ANEMIA      |                    |       |                   |                                     |                           |       |                                   |       |                              |
| 38.                                 | 68                 | 9.86  | 9                 | 2.106                               | 26                        | 3.77  | 2.88                              | .417  | 30.8                         |
| 39.                                 | 58                 | 8.41  | 11                | 2.574                               | 34                        | 4.93  | 3.09                              | .448  | 33.0                         |
| 40.                                 | 61                 | 8.85  | 12                | 1.872                               | 31                        | 4.50  | 2.58                              | .374  | 41.3                         |
| 41.                                 | 60                 | 8.70  | 10                | 1.560                               | 29                        | 4.21  | 2.90                              | .420  | 46.4                         |
| 42.                                 | 61                 | 8.85  | 12                | 2.808                               | 34                        | 4.93  | 2.83                              | .410  | 30.2                         |
| 43.                                 | 58                 | 8.41  | 10                | 2.340                               | 31                        | 4.50  | 3.10                              | .449  | 33.1                         |
| 44.                                 | 61                 | 8.85  | 9                 | 2.106                               | 31                        | 4.50  | 3.33                              | .482  | 36.7                         |
| 45.                                 | 66                 | 9.57  | 10                | 1.560                               | 28                        | 4.06  | 2.80                              | .406  | 44.8                         |
| 46.                                 | 62                 | 8.99  | 12                | 1.872                               | 33                        | 4.79  | 2.75                              | .398  | 44.0                         |
| 47.                                 | 61                 | 8.85  | 12                | 2.808                               | 33                        | 4.79  | 2.75                              | .398  | 29.3                         |
| 48.                                 | 52                 | 7.54  | 13                | 3.042                               | 41                        | 5.94  | 3.15                              | .456  | 33.6                         |
| 49.                                 | 64                 | 9.28  | 9                 | 2.106                               | 30                        | 4.35  | 3.33                              | .482  | 35.6                         |

TABLE 2  
Individual Response to Treatment with Ferrous Sulphate

| Case No.                            | Initial Hemoglobin |       | Days of Treatment | Therapeutic Intake of Fe++ (in Gm.) | Total Hemoglobin Increase |       | Average Daily Hemoglobin Increase |       | Per Cent Utilization of Fe++ |
|-------------------------------------|--------------------|-------|-------------------|-------------------------------------|---------------------------|-------|-----------------------------------|-------|------------------------------|
|                                     | Per Cent           | Gm. % |                   |                                     | Per Cent                  | Gm. % | Per Cent                          | Gm. % |                              |
| POST-HEMORRHAGIC HYPOCHROMIC ANEMIA |                    |       |                   |                                     |                           |       |                                   |       |                              |
| 1.                                  | 53                 | 7.68  | 24                | 11.520                              | 18                        | 2.61  | .75                               | .108  | 3.91                         |
| 2.                                  | 56                 | 8.12  | 19                | 9.120                               | 17                        | 2.46  | .89                               | .129  | 4.66                         |
| 3.                                  | 52                 | 7.54  | 20                | 9.600                               | 20                        | 2.90  | 1.00                              | .145  | 5.20                         |
| 4.                                  | 49                 | 7.10  | 23                | 11.040                              | 23                        | 3.34  | 1.00                              | .145  | 5.20                         |
| 5.                                  | 53                 | 7.68  | 22                | 5.160                               | 10                        | 1.45  | .45                               | .065  | 4.84                         |
| 6.                                  | 53                 | 7.68  | 22                | 10.560                              | 20                        | 2.90  | .90                               | .130  | 4.73                         |
| 7.                                  | 49                 | 7.10  | 24                | 5.520                               | 24                        | 3.48  | 1.00                              | .145  | 10.80                        |
| 8.                                  | 56                 | 8.12  | 23                | 8.280                               | 21                        | 3.05  | .91                               | .131  | 6.34                         |
| 9.                                  | 61                 | 8.85  | 20                | 7.200                               | 16                        | 2.32  | .80                               | .116  | 5.55                         |
| 10.                                 | 54                 | 7.83  | 19                | 9.120                               | 21                        | 3.05  | 1.10                              | .159  | 5.75                         |
| 11.                                 | 60                 | 8.70  | 21                | 5.340                               | 20                        | 2.90  | .95                               | .137  | 9.36                         |
| 12.                                 | 58                 | 8.41  | 24                | 8.640                               | 15                        | 2.17  | .62                               | .089  | 4.34                         |
| 13.                                 | 56                 | 8.12  | 24                | 11.520                              | 24                        | 3.48  | 1.00                              | .145  | 5.20                         |
| 14.                                 | 64                 | 9.28  | 18                | 4.440                               | 15                        | 2.17  | .83                               | .120  | 8.44                         |
| 15.                                 | 59                 | 8.56  | 16                | 5.760                               | 15                        | 2.17  | .93                               | .134  | 6.51                         |
| 16.                                 | 63                 | 9.14  | 16                | 5.760                               | 12                        | 1.74  | .75                               | .108  | 5.20                         |
| 17.                                 | 64                 | 9.28  | 15                | 5.400                               | 13                        | 1.88  | .86                               | .124  | 6.01                         |
| 18.                                 | 59                 | 8.56  | 23                | 8.280                               | 18                        | 2.61  | .78                               | .113  | 5.43                         |
| NUTRITIONAL HYPOCHROMIC ANEMIA      |                    |       |                   |                                     |                           |       |                                   |       |                              |
| 19.                                 | 61                 | 8.85  | 15                | 4.320                               | 10                        | 1.45  | .66                               | .095  | 5.78                         |
| 20.                                 | 49                 | 7.10  | 21                | 10.080                              | 20                        | 2.90  | .95                               | .137  | 4.96                         |
| 21.                                 | 56                 | 8.12  | 18                | 8.640                               | 12                        | 1.74  | .66                               | .095  | 3.47                         |

TABLE 3  
Average Results of Treatment with Molybdenum-Iron Complex and with Ferrous Sulphate

|                              | No. Cases | Initial Hemoglobin |       | Days of Treatment | Therapeutic Intake of Iron (in Gm.) | Total Hemoglobin Increase |       | Average Daily Hemoglobin Increase |       |
|------------------------------|-----------|--------------------|-------|-------------------|-------------------------------------|---------------------------|-------|-----------------------------------|-------|
|                              |           | Per Cent           | Gm. % |                   |                                     | Per Cent                  | Gm. % | Per Cent                          | Gm. % |
| GROUP I: Hypochromic Anemia  | 49        | 58                 | 8.41  | 13.7              | 3.528                               | 31                        | 4.56  | 2.48                              | .360  |
| A. Post-Hemorrhagic          | 37        | 57                 | 8.27  | 14.6              | 3.950                               | 31                        | 4.54  | 2.35                              | .340  |
| B. Nutritional               | 12        | 61                 | 8.85  | 10.8              | 2.229                               | 32                        | 4.61  | 2.96                              | .428  |
| GROUP II: Hypochromic Anemia | 21        | 56                 | 8.18  | 20.3              | 7.871                               | 17                        | 2.51  | .83                               | .120  |
| A. Post-Hemorrhagic          | 18        | 57                 | 8.21  | 20.7              | 7.903                               | 18                        | 2.59  | .86                               | .125  |
| B. Nutritional               | 3         | 55                 | 8.02  | 18                | 7.680                               | 14                        | 2.03  | .76                               | .109  |

Treatment: Group I — Molybdenum-Iron Complex  
Group II — Ferrous Sulfate

during the period of observation. The average daily increase in hemoglobin in Group II was 0.12 Gm. per cent, significantly lower than the average daily increase of 0.36 Gm. per cent in Group I.

Per cent utilization of iron was also notably different in the two groups of patients. The percentage of orally administered iron utilized in the formation of hemoglobin was estimated according to the method reported by Fullerton,<sup>8</sup> in which a 1 per cent rise in hemoglobin represents an iron utilization of 25 mg. Calculated in this manner, the daily utilization of iron by patients treated with M-I complex (Group I) varied from 9.0 to 50.0 per cent, while those treated with ferrous sulfate (Group II) had a daily utilization of the metal ranging from 3.5 to 10.8 per cent. Since the average intake of therapeutic iron by patients in Group II was greater than in Group I, the percentage of utilization would naturally be somewhat less in the former but not sufficiently so to account for the substantial difference in utilization in the two groups as calculated.

The individual results of treatment with M-I complex are presented in Table 1 and the results in the control patients, treated with ferrous sulfate, in Table 2. The average response to treatment of both groups of patients is summarized in Table 3.

It is important that an iron preparation, orally administered to patients with hypochromic anemia, not only be therapeutically effective but also tolerated without undue gastrointestinal distress. Among the forty-nine patients of Group I who were treated with M-I complex, only one complained of mild distress in the form of abdominal cramps, which disappeared with reduction of the dose of the preparation. Of the twenty-one patients treated with ferrous sulfate, however, six complained of gastrointestinal disturbances from the medication that necessitated its discontinuance in one but were alleviated in the remaining five by decreasing the dose.

#### COMMENT

The rate at which hemoglobin formation occurs in the treatment of hypochromic anemia is roughly in direct proportion to the severity of the anemia. In moderately severe anemia with hemoglobin values of 7.25 Gm. per 100 cc. (50 per cent) or less, daily increases in hemoglobin of 0.14 Gm. per 100 cc. (1 per cent) or more for several weeks are regarded as satisfactory; the rate

of hemoglobin formation then slows progressively as the hemoglobin approaches normal.<sup>9</sup>

In the patients of Group II the rate of hemoglobin regeneration in response to treatment with ferrous sulfate averaged 0.12 Gm. per cent daily, which can be properly regarded as a satisfactory therapeutic response. It is obvious, then, that the average rate of hemoglobin formation in those patients treated with M-I complex (0.36 Gm. per cent daily) is unusually rapid.

An equally unusual feature of the observed therapeutic response to M-I complex was the almost uniform rate of hemoglobin formation throughout treatment in each patient. The progressive slowing of hemoglobin formation, which one expects to observe as hemoglobin values approach normal, was conspicuously absent in the response to treatment with M-I complex and definite retardation of hemoglobin formation usually occurred only after normal values had actually been reached.

From our observation it seems clear that M-I complex is an unusually effective agent for the treatment of hypochromic anemia and is well tolerated in adequate dosage. No effort has been made in this study to determine the mode of action of the molybdenum component of this preparation. However, it is believed that the therapeutic response to M-I complex observed in our patients, is a true example of potentiation of the therapeutic action of iron, which manifestly is brought about either by increased absorption or by more complete utilization of iron. The exact mechanism by which such potentiation is accomplished is a problem, investigation of which is beyond the scope of this report.

#### SUMMARY

1. Among a total of seventy hospitalized and mostly ward patients with moderately severe, posthemorrhagic or nutritional hypochromic anemia, forty-nine patients (Group I) were treated with a specially prepared complex of molybdenum sesquioxide and ferrous sulfate and twenty-one (Group II) with ferrous sulfate alone.

2. The degree of anemia in both groups of patients at the beginning of treatment was comparable, the average initial hemoglobin in Group I being 8.41 Gm. per cent and in Group II, 8.18 Gm. per cent.

3. The response to treatment in Group I was unusually satisfactory; normal hemoglobin levels were attained by all patients in this group in an average time



of 13.7 days and the mean daily increase in hemoglobin for the group was 0.36 Gm. per cent.

4. Only two patients of Group II attained normal hemoglobin levels in response to treatment with ferrous sulfate in a period of time averaging 20.7 days and the mean daily increase in hemoglobin for this group was 0.12 Gm. per cent.

5. The percentage utilization of iron, calculated as described, was significantly greater among patients of Group I than in Group II.

6. The molybdenum-iron complex used in this study seems to be unusually effective and well tolerated in the treatment of hypochromic anemia. The therapeutic response in patients treated with this preparation is apparently an example of true potentiation of the hematopoietic action of iron, although the exact manner in which such potentiation is accomplished has not been determined.

#### REFERENCES

1. Kato, K., and Iob, V.: Influence of Cobalt on Iron Transportation and Storage: A Chemical and Histological Study. *Am. J. Clin. Path.*, 10: 751, 1940.

2. Orton, J. M., Smith, A. H., and Mendel, L. B.: Relation of Calcium and of Iron to the Erythrocyte and Hemoglobin Content of the Blood of Rats Consuming a Mineral Deficient Diet. *J. Nutrition*, 12: 373, 1936.

3. Patek, A. J.: Chlorophyll and Regeneration of the Blood. *Arch. Int. Med.*, 57: 73, 1936.

4. Whipple, G. H., Robscheit-Robbins, F. S., and Walden, G. B.: Blood Regeneration in Severe Anemia. *Am. J. Med. Sci.*, 179: 628, 1930.

5. Witts, L. J.: The Therapeutic Action of Iron. *Lancet*, 1: 1, 1936.

6. Hart, E. B., Steenbock, H., Waddell, J., and Elvehjem, C. A.: Iron in Nutrition. VII. Copper as a Supplement to Iron for Hemoglobin Building in the Rat. *J. Biol. Chem.*, 77: 797, 1928.

7. Hahn, P. F.: Metabolism of Iron. *Medicine*, 16: 249, 1937. — Wintrobe, M. M.: *Clinical Hematology*. Lea & Febiger, Phila., 1942.

8. Fullerton, H. W.: The Treatment of Hypochromic Anemia with Soluble Ferrous Salts. *Edinburgh Med. J.*, 41: 99, 1934.

9. Heath, C. W., Strauss, M. B., and Castle, W. B.: Quantitative Aspects of Iron Deficiency in Hypochromic Anemia: Parenteral Administration of Iron. *J. Clin. Invest.*, 11: 1293, 1932. — Goodman, L., and Gilman, A.: *The Pharmacologic Basis of Therapeutics*. Macmillan Co., N. Y., 1941.

### SURGEONS NOW ADVISE "RISE, WALK" ROUTINE

*Of recent years, newspapers have brought to the public's attention in understandable language, news of new pharmaceuticals and new technics in treatment. A fair example of a "medical news story" is the following from the Minneapolis (Minnesota) Tribune of late June 1946.*

Staying in bed for days after a serious operation usually does more harm than good to the patient, doctors at University hospital\* have found.

While European doctors, for many years, have followed the lead of a Chicago gynecologist in getting their patients out of bed for a few minutes on the day following an operation, most American doctors have been unconvinced of the soundness of the routine.

Doctors in the surgery department at University hospital decided to test the plan for themselves.

They had watched army and navy doctors successfully use the "out of bed in a hurry" treatment on wounded servicemen, and some civilian hospitals, too, had begun to advocate the routine because of overcrowded conditions and staff shortages.

The experiment at University hospital was conducted with two sets of patients, all of whom had undergone abdominal operations.

The first group of 50 patients was operated on in 1942; the second group in 1945.

Patients in the first group were allowed to get up a few minutes about the eleventh day of hospitalization. The average patient in the second group was up briefly on the third day, but an effort had been made to get him up on the first day.

No patient in either group was urged to walk if he felt too ill to do so, or if complications had set in following his operation.

When the experiment was completed, the doctors recorded some conclusive results.

Patients allowed to get up a short time following an operation suffered no harmful effects. Any complications which set in were caused by the extent of the patient's disease and surgery.

Improvements of the general strength and morale of the patient was evident, and a decrease in postoperative discomforts, such as gas pains, was marked.

The duration of the patient's hospital stay was reduced by an average of five days.

Some doctors outside University hospital thought early ambulation prevented embolism—blood-clotting in the veins—and reduced the danger of postoperative pneumonia.

Although the experiment was limited to patients with abdominal operations, university doctors more recently have approved the routine for almost all surgery patients.

\* (Hospital at University of Minnesota.)

# A Report on the Use of Two Thousand Units of Dried Plasma Under a State-Wide Health Department Program\*

Melvin E. Koons, M.Sc., M.P.H.†

Grand Forks, North Dakota

THE purpose of this paper is to give a report on the use of dried plasma which was distributed through a state-wide program for use in civilian medical practice by the North Dakota State Health Department. Statistics are based on the first two thousand reports regarding the use of plasma received in the North Dakota Blood Plasma Laboratory.

When the free plasma service was first instituted in North Dakota, there was some doubt as to how much plasma would be used by the medical profession in its routine practice. A preliminary survey of the use of plasma in the state showed that very little was being used by hospitals in the larger urban centers and practically none in the smaller rural hospitals. Then, too, there was no plasma available to individual physicians located in rural areas where hospitals are not easily accessible. When time is an important factor, transfusions could be started without removing the patient to a hospital if plasma were available.

At the beginning of the state program, approximately fifteen hospitals had limited supplies of commercial dried plasma and small liquid plasma banks. Prior to the war the medical profession at large had little opportunity for personal experiences with the use of plasma. Very few doctors used plasma for transfusions because its value had not been adequately proven nor had the results of its use appeared too extensively in the literature. Then, too, the use of commercial plasma was restricted somewhat by its high cost, which for many patients limited its use. The successful use of plasma by the Armed Forces during the war period has resulted in a widespread demand that this material be made available to the civilian population. At about the time when plasma was being utilized and its value recognized by the medical profession, the North Dakota program was started.

The original investigations with plasma were done on the basis that plasma could be used as a substitute for whole blood. However, work in recent years has shown that plasma is a therapeutic agent in its own right. There are definite indications for the transfusion of whole blood, but they are few as compared to the indications for the transfusion of blood plasma. As will be noted later, 50 per cent of the plasma used in North Dakota is for the treatment of shock cases with post-operative cases in the majority.

Strumia and McGraw<sup>1</sup> summarize the indications for

plasma as follows: (1) shock with little or no hemorrhage; with severe hemorrhage, plasma for immediate relief, followed by whole blood if warranted; (2) burns (whole blood contraindicated because of hemoconcentration); (3) infections—as a means to supply specific and non-specific immune bodies (supplemented by whole blood when severe anemia is present); (4) hypoproteinemias, nutritional, hepatic, nephrotic, and from various other causes; (5) cerebral edema, such as accompanies injuries, toxemias, and so on (plasma in concentrated form); (6) certain blood dyscrasias, such as those with hemolytic tendencies, those with low prothrombin content, et cetera.

Table 1 shows a complete classification of the reports received on the use of the first two thousand units of plasma; these units were used on 1065 patients. One cannot predict how the next two thousand units will be used; however, the distribution in regard to the clinical condition may well follow the pattern set by the first two thousand units. It is interesting to see that 57.7 per cent of the total number of patients receiving plasma were treated for some form of shock and 18.5 per cent were classified as obstetrical patients.

TABLE 1  
Classification of Reports on the Use of Plasma

| Condition for Which Used    | Number of Patients | Per Cent of Total | Number of Units Used | Per Cent of Total |
|-----------------------------|--------------------|-------------------|----------------------|-------------------|
| Shock .....                 | 615                | 57.7              | 1012                 | 50.6              |
| Burn .....                  | 36                 | 3.5               | 112                  | 5.6               |
| Obstetrical .....           | 196                | 18.5              | 306                  | 15.3              |
| Hemorrhage .....            | 38                 | 3.6               | 69                   | 3.5               |
| Hypoproteinemia .....       | 76                 | 7.1               | 336                  | 16.8              |
| Infection .....             | 40                 | 3.7               | 63                   | 3.1               |
| Communicable Diseases ..... | 9                  | 0.8               | 22                   | 1.1               |
| Miscellaneous .....         | 25                 | 2.3               | 40                   | 2.0               |
| Not classified .....        | 30                 | 2.8               | 40                   | 2.0               |
| Total .....                 | 1065               | 100.0             | 2000                 | 100.0             |

Table 2 shows the total number of deaths occurring in the group of patients who received plasma. Here

TABLE 2  
Classification of Deaths in Treated Group

| Type of Condition            | Total Patients Receiving Plasma | Number of Deaths | Per Cent Deaths |
|------------------------------|---------------------------------|------------------|-----------------|
| Shock (all types) .....      | 615                             | 45               | 7.3             |
| Burn .....                   | 36                              | 7                | 19.4            |
| Obstetrical .....            | 196                             | 5                | 2.5             |
| Hemorrhage (all types) ..... | 38                              | 7                | 18.4            |
| Hypoproteinemia .....        | 76                              | 9                | 11.8            |
| Infection .....              | 40                              | 8                | 20.0            |
| Communicable Diseases .....  | 9                               | 4                | 44.4            |
| Miscellaneous .....          | 25                              | 2                | 8.0             |
| Unclassified .....           | 30                              | 3                | 10.0            |
| Total .....                  | 1065                            | 90               | 8.4             |

\*This is a follow-up of an article by the same author entitled, "Free Plasma Service in North Dakota," which appeared in the January 1946 issue of JOURNAL LANCET.

†Director, Division of Laboratories, North Dakota State Health Department.



again, no inference can be drawn as to the significance of these figures, as there is no comparable group which did not receive plasma. We, of course, would like to believe that the death rate would have been higher if plasma had not been used and there is no doubt but that plasma helped to save the lives of a certain number of these patients, as plasma is frequently given as a life-saving measure.

Table 3 gives an analysis of the shock cases for which approximately 50 per cent of the two thousand plasma units were used.

Blood, or a blood substitute, is essential as a therapeutic measure in all conditions characterized by a reduced circulating blood volume. It is also true that there may be many instances where plasma is used as a preliminary first aid measure with later whole blood transfusions being necessary. This is especially so in traumatic shock accompanied by hemorrhage.

Elliott,<sup>2</sup> in 1936, suggested the use of plasma for treatment of traumatic shock. He believed that the blood volume restoration was important to maintain osmotic pressure as a function of the plasma proteins. In the treatment of shock it is an accepted fact that the blood volume must be brought back to normal as rapidly as possible.

Plasma was recommended in 1939 as an ideal substitute for whole blood in shock and hemorrhage from war wounds by Tatum, et al.<sup>3</sup> This recommendation may well be applied to civilian cases with the same excellent results. Authorities<sup>4</sup> have stated that "Plasma appears to be from all standpoints the ideal material for the permanent re-establishment of proper circulation in secondary shock."

The death rate of 7.3 per cent, as shown in Table 3, is not high when one considers the type of cases involved. The death rate in traumatic shock was the highest, which could be expected, as this group contains all of the accident cases where death may have been attributable to a number of things.

In checking over the reports, it was noted that many of the postoperative deaths were in patients beyond sixty years of age.

TABLE 3  
Analysis of Shock Cases

| Classification                     | Number of Patients | Number of Units Used | Deaths    | Per Cent Deaths |
|------------------------------------|--------------------|----------------------|-----------|-----------------|
| Postoperative shock                | 327                | 532                  | 18        | 5.5             |
| Postoperative hemorrhage           |                    |                      |           |                 |
| with shock                         | 22                 | 36                   |           |                 |
| Operative shock                    | 35                 | 56                   |           |                 |
| Operative shock with homorrhage    | 3                  | 5                    |           |                 |
| Preoperative shock                 | 2                  | 2                    |           |                 |
| Preoperative shock with hemorrhage | 2                  | 2                    |           |                 |
| Prophylactic shock:                |                    |                      |           |                 |
| Postoperative                      | 16                 | 26                   |           |                 |
| Preoperative                       | 2                  | 2                    |           |                 |
| Operative                          | 31                 | 45                   |           |                 |
| Traumatic shock:                   |                    |                      |           |                 |
| With marked hemorrhage             | 88                 | 173                  | 9         | 10.2            |
| Without marked hemorrhage          | 82                 | 120                  | 17        | 20.1            |
| Spinal anesthesia shock            | 2                  | 6                    |           |                 |
| Coronary occlusion shock           | 2                  | 3                    | 1         | 50.0            |
| Shock with anoxemia                | 1                  | 4                    |           |                 |
| <b>Total</b>                       | <b>615</b>         | <b>1012</b>          | <b>45</b> | <b>7.3</b>      |

Table 4 shows an analysis of the obstetrical cases which received plasma. A total of 196 patients was treated with 306 units of plasma. Over 50 per cent of these cases was treated for postpartum hemorrhage.

Tisdall,<sup>5</sup> in 1941, reported on the use of plasma in obstetrics. He pointed out that obstetric hemorrhage and shock require immediate and adequate replacement of blood volume. This can adequately be taken care of by the transfusion of plasma, although there may be cases where later whole blood transfusions are valuable.

The highest death rate in the obstetrical cases occurred in the ectopic pregnancy patients. Both deaths were ruptured cases. Since the 196 cases treated in this group constituted 18 per cent of the total number, this table seems to bear out the conclusion that plasma does have a place in obstetrical cases and should be available for use in all hospitals.

TABLE 4  
Analysis of Obstetrical Cases

| Classification                    | Number of Patients | Number of Units Used | Deaths   | Per Cent Deaths |
|-----------------------------------|--------------------|----------------------|----------|-----------------|
| Ectopic pregnancy                 | 15                 | 27                   | 2        | 13.3            |
| Spontaneous abortion              | 21                 | 27                   |          |                 |
| Incomplet abortion                | 7                  | 11                   |          |                 |
| Threatened abortion               | 2                  | 3                    |          |                 |
| Miscarriage with hemorrhage       | 6                  | 8                    |          |                 |
| Postpartum hemorrhage             | 112                | 176                  | 2        | 1.8             |
| Postpartum toxemia                | 1                  | 1                    |          |                 |
| Postpartum infection              | 2                  | 6                    |          |                 |
| Prepartum hemorrhage              | 2                  | 2                    |          |                 |
| Placenta praevia                  | 20                 | 36                   | 1        | 5.0             |
| Abruptio placenta with hemorrhage | 3                  | 4                    |          |                 |
| Excessive vaginal bleeding        | 3                  | 3                    |          |                 |
| Pre-eclamptic                     | 1                  | 1                    |          |                 |
| Difficult labor                   | 1                  | 1                    |          |                 |
| <b>Total</b>                      | <b>196</b>         | <b>306</b>           | <b>5</b> | <b>2.5</b>      |

In most cases of hemorrhage, plasma finds its usefulness as a preliminary and expedient method, generally followed by whole blood transfusions. Table 5 gives an analysis of hemorrhage cases in which plasma has been used.

TABLE 5  
Analysis of Hemorrhage Cases

| Classification               | Number of Patients | Number of Units Used | Deaths   | Per Cent Deaths |
|------------------------------|--------------------|----------------------|----------|-----------------|
| Intestinal hemorrhage        | 4                  | 5                    | 1        | 25.0            |
| Uterine hemorrhage           | 5                  | 6                    | 1        | 20.0            |
| Prostatic hemorrhage         | 1                  | 1                    | 1        | 100.0           |
| Bladder hemorrhage           | 1                  | 1                    |          |                 |
| Internal hemorrhage          | 1                  | 1                    |          |                 |
| Stomach ulcer (hemorrhage)   | 9                  | 16                   |          |                 |
| Gastric hemorrhage           | 13                 | 30                   | 4        | 30.7            |
| Duodenal ulcer (hemorrhage)  | 1                  | 3                    |          |                 |
| Endocarditis with hemorrhage | 2                  | 3                    |          |                 |
| <b>Total</b>                 | <b>38</b>          | <b>69</b>            | <b>7</b> | <b>18.4</b>     |

Ward,<sup>6</sup> in England, first proposed the use of human blood plasma as a substitute for whole blood in hemorrhage cases. He observed that death was due to a loss of fluid rather than to loss of cells and suggested replacement of depleted fluid with citrated plasma. At about the same time Rous and Wilson<sup>7</sup> successfully treated experimentally produced hemorrhage in animals with plasma injection. In the treatment of hemorrhage, their theory was that a return to normal level of plasma vol-

ume was the most important factor, the cells remaining in sufficient quantity. Therefore, it is essential that blood volume be re-established as soon as possible following the hemorrhage. With plasma available, this emergency measure may be taken in the home, immediately, before the patient is removed to the hospital.

In the thirty-eight patients treated there was a death rate of 18.4 per cent, the greatest number of deaths occurring in gastric hemorrhage cases. One can readily see that while the number of cases treated was not high, there is a variety of hemorrhagic conditions in which plasma can be used to good advantage.

Table 6 gives an analysis of the hypoproteinemia cases which were treated with plasma. Seventy-six patients received a total of 336 units of plasma, with a death rate of 11.8 per cent.

Treatment of these cases is an attempt by the physician to restore the normal protein content of the plasma. Hypoproteinemic conditions may be brought about when the protein intake is insufficient or when there is a chronic loss of protein. Generally a tissue edema results from this decrease in the protein content of the plasma and by transfusing plasma the condition can be markedly improved in a short while.

That plasma is indicated in a variety of those cases where protein levels are low is also shown in Table 6. The large number of unclassified cases were not followed up. The reports on these merely stated that the patients were treated for hypoproteinemia. If the cause for the protein deficiency had been indicated, it is probable that the list showing the types of conditions would have been more varied.

One case probably should be mentioned, that listed as an enterostomy. This was performed on a man 56 years of age who, before he died, received the amazing total of 77 units of plasma during a period of approximately two months. This is the only nourishment the patient received and the physician reported that the patient showed a definite improvement after the first month and there was some hope that he would recover.

TABLE 6  
Analysis of Hypoproteinemia Cases

| Condition            | Number of Patients | Number of Units Used | Deaths | Per Cent Deaths |
|----------------------|--------------------|----------------------|--------|-----------------|
| Nephrosis            | 7                  | 31                   |        |                 |
| Peritonitis          | 1                  | 2                    |        |                 |
| Carcinoma of stomach | 2                  | 4                    |        |                 |
| Postoperative        | 4                  | 16                   | 2      | 50.0            |
| Infection            | 3                  | 11                   |        |                 |
| Enterostomy          | 1                  | 77                   | 1      | 100.0           |
| Addison's disease    | 1                  | 4                    |        |                 |
| Gastric hemorrhage   | 2                  | 8                    |        |                 |
| Glomerulitis         | 1                  | 6                    |        |                 |
| Celiac syndrome      | 1                  | 4                    |        |                 |
| Senile               | 1                  | 1                    |        |                 |
| Unclassified         | 52                 | 172                  | 6      | 11.5            |
| Total                | 76                 | 336                  | 9      | 11.8            |

Table 7 is an analysis of the use of plasma in cases of infection. As shown in the table, forty cases were treated with 63 units of plasma, with a death rate of 20.0 per cent. Here again, the unclassified cases were not followed up and no evidence is at hand whereby the type of infection could be classified. The table does

show, however, that the use of plasma may well be indicated in many types of infections and would be used more frequently if it were available.

TABLE 7  
Analysis of Infection Cases

| Condition               | Number of Patients | Number of Units Used | Deaths | Per Cent Deaths |
|-------------------------|--------------------|----------------------|--------|-----------------|
| Appendix                | 1                  | 1                    |        |                 |
| Arthritis               | 1                  | 4                    |        |                 |
| Empyema                 | 2                  | 2                    |        |                 |
| Pelvic inflammation     | 1                  | 2                    |        |                 |
| Kidney infection        | 2                  | 5                    |        |                 |
| Postoperative infection | 1                  | 4                    |        |                 |
| Pleurisy with effusion  | 1                  | 1                    | 1      | 100.0           |
| Septic myocarditis      | 2                  | 3                    | 1      | 50.0            |
| Exfoliated dermatitis   | 1                  | 6                    |        |                 |
| Enteritis               | 1                  | 1                    |        |                 |
| Peritonitis             | 4                  | 5                    |        |                 |
| Mediastinitis           | 1                  | 2                    |        |                 |
| Not classified          | 22                 | 27                   | 6      | 27.2            |
| Total                   | 40                 | 63                   | 8      | 20.0            |

Table 8 is an analysis of communicable disease cases for which plasma was used. It is evident that no conclusion can be drawn from this table because of the relatively small number of cases; however, it should be pointed out that plasma may in the future have a more definite place in the treatment of infectious diseases. Convalescent sera has been used with good results in the treatment of certain of the infectious diseases. Pooled normal adult plasma is one-fourth as potent as convalescent sera and if used in adequate dosage equally good results may be obtained. The use of plasma in the treatment of certain of the communicable diseases may warrant more study to determine its value.

TABLE 8  
Analysis of Communicable Disease Cases

| Condition    | Number of Patients | Number of Units Used | Deaths | Per Cent Deaths |
|--------------|--------------------|----------------------|--------|-----------------|
| Pneumonia    | 4                  | 13                   | 2      | 50.0            |
| Typhoid      | 2                  | 2                    | 1      | 50.0            |
| Meningitis   | 1                  | 1                    |        |                 |
| Tuberculosis | 1                  | 2                    |        |                 |
| Unclassified | 1                  | 4                    | 1      | 100.0           |
| Total        | 9                  | 22                   | 4      | 44.4            |

The miscellaneous cases for which plasma was used are analyzed in Table 9. A total of twenty-five patients was treated with 40 units of plasma, with a death rate of 8.0 per cent. This table does no more than illustrate

TABLE 9  
Analysis of Miscellaneous Cases

| Classification          | Number of Patients | Number of Units Used | Deaths | Per Cent Deaths |
|-------------------------|--------------------|----------------------|--------|-----------------|
| Compound fracture       | 1                  | 4                    |        |                 |
| Debility                | 2                  | 2                    |        |                 |
| Fortify liver           | 1                  | 1                    |        |                 |
| Cirrhosis of liver      | 1                  | 2                    | 1      | 100.0           |
| Circulatory collapse    | 3                  | 4                    |        |                 |
| Cerebral apoplexy       | 1                  | 4                    |        |                 |
| Hemophilia              | 1                  | 5                    |        |                 |
| Epistaxis               | 5                  | 5                    |        |                 |
| Diabetic coma           | 2                  | 2                    |        |                 |
| Severe secondary anemia | 2                  | 2                    |        |                 |
| Intestinal obstruction  | 6                  | 9                    | 1      | 16.6            |
| Total                   | 25                 | 40                   | 2      | 8.0             |



further the variety of medical cases in which plasma is a useful therapeutic agent.

No analysis can be made of the burn cases, since reports did not give the degree or extent of injuries. However, it can be pointed out, as listed in Table 1, that thirty-six cases were treated with 112 units of plasma and there have been notations on reports received indicating that the use of plasma resulted in the saving of lives.

Hewitt,<sup>8</sup> in 1941, stated that the more promptly the protein and plasma loss can be stopped in burn cases, the more likely is the patient's chance of survival. In severe or extensive burns, there is a marked loss of the fluid which contains large amounts of plasma proteins. Blood plasma is the quickest and easiest way to restore the blood volume and cut down the severe hemoconcentration and protein loss. Because of the extensive hemoconcentration, the transfusion of whole blood is contra-indicated if plasma is available.

In 1940, Fraquio<sup>9</sup> presented a paper reviewing the use of plasma transfusions. He states that indications for plasma are numerous. In surgery, when time is important, it is indispensable, and in shock with a condition of hemoconcentration, large quantities of plasma are beneficial. The author further states that in hepatic disorders, plasma transfusions are given to maintain protein levels and that plasma can be used in all edemas from the nutritional to the hypoproteinemic type. Plasma therapy is successful in treating gastrointestinal hemorrhages, gastric and duodenal ulcers and lesions of the large intestine. In the past few years the further rationale for the use of plasma in transfusion has been well established by many workers.

REACTIONS REPORTED

Each unit of dried plasma sent out from the processing laboratory includes a blank on which the physician reports the final dispensation of the product. This blank not only requests information regarding the use and benefits derived from plasma, but also regarding the reactions, if any, which occur during administration. Unfortunately, the type of reaction is not reported, that is, whether it is of pyrogenic, urticarial, or hemolytic origin. Reactions are merely reported as moderate or severe.

Table 10 gives the number of reactions reported on the basis of the first two thousand reports. In this series, fifty-one reactions were reported, a reaction rate of 2.55 per cent. Miller and Tisdall<sup>10</sup> reported a reaction rate of 2.96 per cent in a series of 10,000 pooled liquid plasma transfusions. In an excellent discussion of the types of reactions from the administration of liquid plasma, these authors divided the reactions into two general classes, thermal and allergic.

Of the total number of reactions reported, forty-one, or 80.4 per cent, were of a mild type and ten, or 19.6 per cent, were of a severe type. There were no fatalities or near fatalities reported as attributable to plasma transfusions. Of the total of 1,065 patients who received plasma, forty, or 3.7 per cent, experienced some type of reaction.

A small number of reactions may be expected in the

intravenous administration of fluids; however, with caution the reaction rate with plasma can be kept at a low level. It is felt by the author that the reaction rate on the next two thousand reports will be lower, based on the fact that a majority of the reactions reported occurred in the first thousand units used.

Table 10 also shows a very interesting fact regarding the number of pools of plasma involved in the reactions reported. Of the fifty-one reactions reported, the plasma was from forty-four pools. It is further noted that thirty-nine of these reactions, or 88.6 per cent, were from individual pools. All other reports received on units of plasma used from these pools gave no reaction. Only three pools, or 6.9 per cent, gave two reactions, and two pools, or 4.5 per cent, gave three reactions. These figures are good evidence that the reactions obtained are not due entirely to the plasma.

TABLE 10

| Reactions Reported                       |      |        |
|------------------------------------------|------|--------|
| Total number of reports                  | 2000 |        |
| Number of reactions reported             | 51   | 2.55 % |
| Moderate reactions                       | 41   | 80.4 % |
| Severe reactions                         | 10   | 19.6 % |
| Number of patients receiving plasma      | 1065 |        |
| Number of patients experiencing reaction | 40   | 3.7 %  |
| Number of pools involved                 | 44   |        |
| Pools having only one reaction           | 39   | 88.6 % |
| Pools having two reactions               | 3    | 6.9 %  |
| Pools having three reactions             | 2    | 4.5 %  |

One of the most important factors involved in reactions is the preparation of the intravenous equipment. Under the North Dakota program complete intravenous administration sets are furnished with approximately 65 per cent of all plasma units distributed. The larger hospitals furnish their own administration sets. It is a known fact that reactions of the thermal type are largely preventable if scrupulous care is observed in the preparation of all apparatus used in the processing of plasma and the administration sets. This care is essential for the prevention of pyrogen contamination. In our laboratories all distilled water is checked for pyrogens and pilot bottles from each pool of plasma are checked for toxicity before it is released for distribution.

There are certain types of allergic reactions which cannot be prevented because of the protein nature of allergies. In this series of reactions two patients experienced three reactions with plasma from three different

TABLE 11

| Analysis of Cases Showing Reactions |                   |        |       |                   |
|-------------------------------------|-------------------|--------|-------|-------------------|
| Classification                      | Type of Reaction: |        |       | Patients Involved |
|                                     | Moderate          | Severe | Total |                   |
| Postoperative shock                 | 5                 | 3      | 8     | 7                 |
| Postoperative hemorrhage            | 3                 |        | 3     | 2                 |
| Traumatic shock with hemorrhage     | 2                 | 1      | 3     | 2                 |
| Traumatic shock without hemorrhage  |                   |        | 2     | 2                 |
| Ectopic pregnancy                   | 1                 |        | 1     | 1                 |
| Postpartum hemorrhage               | 10                |        | 10    | 9                 |
| Miscarriage                         | 1                 |        | 1     | 1                 |
| Burn                                | 4                 |        | 4     | 3                 |
| Hypoproteinemia                     | 7                 | 6      | 13    | 7                 |
| Infection                           | 2                 |        | 2     | 2                 |
| Obstruction of bowel                | 1                 |        | 1     | 1                 |
| Internal hemorrhage                 | 1                 |        | 1     | 1                 |
| Hemophilia                          | 1                 |        | 1     | 1                 |
| Ulcer with hemorrhage               | 1                 |        | 1     | 1                 |
| Total                               | 41                | 10     | 51    | 40                |

pools, and five patients experienced two reactions with plasma from ten different pools. These patients probably would have shown a reaction with any unit of plasma injected.

Table 11 gives an analysis of the cases showing a reaction. Examination of these figures shows that the reactions were not confined to any one particular type of medical case. The largest number of reactions was obtained in cases of hypoproteinemia and postpartum hemorrhage.

#### CONCLUSIONS

1. Plasma furnished under a state-wide program free of charge will be utilized in an efficient manner by the medical profession and plays an important role in civilian life.

2. Plasma is used to good advantage as a therapeutic agent in a large variety of medical cases.

3. A state-wide plasma program helps to save the lives of many patients and makes convalescence smoother in others.

4. Reactions from the administration of pooled dried human plasma are fairly infrequent and usually of a mild nature.

#### BIBLIOGRAPHY

1. Strumia, M. D., et al.: Frozen and Dried Plasma for Civil and Military Use. *J.A.M.A.*, 116: 21, 2378 (May 24), 1941.
2. Elliott, J.: Blood Plasma. *South. Med. and Surg.*, 98: 643 (Dec.), 1936.
3. Tatum, W. L., Elliott, Jr., and Nessel, N.: A Technique for the Preparation of a Substitute for Whole Blood Adaptable for Use During War Conditions. *Mil. Surg.*, 18: 481 (Dec.), 1939.
4. Strumia, M. M., et al.: The Use of Citrated Plasma in the Treatment of Secondary Shock. *J.A.M.A.*, 114: 1337 (April 6), 1940.
5. Tisdall, L. H.: Plasma in Obstetrics. *Am. J. Obst. and Gyne.*, 42: 5, 889 (Nov.), 1941.
6. Ward, G. R.: Ed. Letter, *Brit. M. J.*, 1: 301 (Mar. 9), 1918.
7. Rous, P., and Wilson, G. W.: Fluid Substitutes for Transfusion after Hemorrhage. *J.A.M.A.*, 70: 4 (Jan. 26) 1918.
8. Hewitt, W. R.: Treatment of Burns. *J. Miss. St. Med. Assoc.*, 38: 6, 191 (June), 1941.
9. Fraquio, V. A.: Transfusion de Plasma Sanguineo. *Boletín de la Asociación de Damas de la Covadonga*, Vol. XI, Nums 9, 10, 11, 12, p. 107, 1940.
10. Miller, E. N., Tisdall, L. H.: Reactions to 10,000 Pooled Liquid Human Plasma Transfusions. *J.A.M.A.*, 128: 12 (July 12), 1945.

#### STATISTICS ON PUBLIC HEALTH WORKERS

Data gleaned from public health reports published in May of this year concerning the training program conducted by state health departments during the period 1936 to 1944 under Title VI of the Social Security Act reveal the following items of interest concerning the states of North Dakota, Montana, and Minnesota:

1. The five institutions most frequently selected by participants in the program were, in the order named: University of Michigan, George Peabody College, and the Universities of Minnesota, Vanderbilt, and Pennsylvania.

2. On an average, 6.3 persons were trained for each 100,000 inhabitants. Corresponding ratios for the forty-eight states ranged from 1.5 in Ohio to 26.6 in North Dakota.

3. By professional category, the representation of physicians among all trainees from a state ranged from 1.6 per cent in Montana to 47.1 in Alabama. Conversely, the percentage of Montana's trainees who were nurses was 95.2, in contrast to 22.2 for Alabama, and 18.3 for Puerto Rico.

4. Personnel outside the medical, nursing, and sanitation fields made up 50.9 per cent of all those trained in North Dakota. That this proportion was exceptionally high is indicated by the corresponding percentage for all States and Territories, 9.4. One brief course in vital statistics, provided for clerks who were to carry on that activity in various parts of the State, made up the training received by a majority of these "other" workers in North Dakota.

#### COOPERATION OF SOCIAL SERVICE ASSOCIATIONS AND PUBLIC HEALTH GROUPS IN DIAGNOSING TUBERCULOSIS EARLY

The main problem in the control of tuberculosis is that of early diagnosis. As the next step, however, treatment should be provided without delay. It is the duty of the physician to educate the patient and his family in the infectiousness of the disease and of the value and necessity of immediate care. A patient may delay proper attention at home, postpone seeking admission to the sanatorium or continue to work after the diagnosis because necessary home adjustment has not been made. To meet these situations requires the cooperation of public or voluntary social service and welfare associations and of public health nursing and medical groups. If such problems are taken care of, patients will be prompted to accept medical treatment as soon as the diagnosis has been made. The possibility of progression of the disease can then be diminished and the morbidity and mortality of advanced tuberculosis thereby avoided.—"The Early Diagnosis of Minimal Pulmonary Tuberculosis," I. B. BOBROWITZ, M.D., and RALPH E. DWORK, M.D.: *The New England Journal of Medicine*, Jan. 3, 1946.



# Looking Ahead in Health Service

Ralph I. Canuteson, M.D.\*

Lawrence, Kansas

**T**WENTY-FIVE years ago a group of men, stirred by common interests, met in Chicago. They were participating in the evolution of the health service as a recognized adjunct in progressive colleges. No longer could the physical welfare of students be passed over as no responsibility of college administrators. If education was to be the tool for better living it could not concentrate on the mind alone. This was the belief of this early group, and so, feeling the need for common grounds for discussion of the many problems they were encountering, they drew up plans for our American Student Health Association.

It must be a satisfaction to the members of that charter group to witness the healthy growth of the Association and the college student health movement along the lines they proposed.

Considering the origins of individual health services, one cannot fail to be impressed by the variety of basic organizations, but all with similar aims, from which in time by a process of cutting and fitting, our present college health service pattern grew. Actually today in comparing one health service with another, it is almost impossible to find identical twins. Neither do we find any health service that will not fit, like a piece in a jig-saw puzzle, into some definite area of the basic health program plan, a plan approved by our organization and by other groups interested in this field. This health service blue-print did not then spring into existence spontaneously. Rather, it unfolded by process of trial and error in response to specific needs for promotion and maintenance of health of college students.

Oldest perhaps of the cornerstones of a health program was physical education, and later its offsprings, intercollegiate and then intramural sports. Apparently this one activity did not satisfy the growing interest in physical welfare of college students, and so the next step was, almost simultaneously, the introduction of classes in personal hygiene, forerunner of what we prefer to call health education today, and emphasis on the factors making for healthful living or environmental hygiene.

Perhaps the youngest and lustiest of the quartet of promoters and guardians of health of college students was the medical service, a relatively late-comer. In some colleges this was organized by the students themselves to assure them protection against the hazards of having no one to care for them in the relatively frequent epidemics of earlier years. In more colleges, however, the health program originated with one of the other services. In only a few late organizations was an over-all plan introduced at one time. Provision for any type of pre-paid medical care was a radical departure in the field of medicine, and it was not immediately accepted as an

ethical procedure. The value in health promotion and maintenance and in applied health education gradually became apparent. However, even today there are some colleges that avoid incorporating medical services, other than the simplest first-aid and routine physical examinations, into their college health program.

It is difficult to say what binds together these four basic groups into a unified health program, but perhaps the medical service, properly staffed, represents the hub of the over-all plan. In no way does this reflect upon the importance of the other participating groups, nor does it assume that without one group a health program cannot function. Recent experience with the wartime physical fitness program, however, accentuates the necessity of correlating all the tools we have in maintaining satisfactory standards of health and functional performance.

And so our blue-print, with administrative approval and sympathetic support, specifies that any factors affecting the health, physical or mental, of college students falls within the province of the college health program. There may be no formal departmental organization incorporating the interested groups, but closest correlation is essential to handle the everyday problems that are present at the health service. Many of these problems would not enter the office of a private physician. Many of them need no therapy in terms of drugs, but they need a type of therapy that is just as important and often more productive of good than drugs.

To illustrate, take the case of a boy who decides to quit college. He reports to his dean that he is making this move because he doesn't feel well. The dean, with many years of experience behind him, is not satisfied with the reasons given. He refers the boy to the health service, where in the course of the consultation, and examination, it develops that the boy is physically healthy, but is discouraged about his classwork, has few friends and no recreation, and his living conditions are conducive neither to good work nor reasonable comforts. The health service refers him, with a record of his physical examination, to the guidance clinic, and arranges for him to go to the physical education department for help in getting into recreational activities, to the dean of men for a change in living quarters and then back to the first dean for re-arrangement of class schedule. This friendly help encourages the boy to stay in school and he is soon readjusted and doing well.

This simple example illustrates the need for utilization on a cooperating basis of the many departments involved in student health, the fact that it is unnecessary to have them all incorporated in one large department when free exchange is practiced, and the increasing part the medical service plays in a college health program as an advisory agent or clearing center for problems not usually

\*President, American Student Health Association.

considered medical and too early to fall into the psychosomatic group.

Forward movement is apt to be devious if we do not pause occasionally for a backward look to help establish our bearings. And so I have given this brief survey of the evolution and aims of our present day health service programs. Now I want to mention, just as briefly, some of the areas in which we should concentrate more attention in these immediate years.

For want of a better term, public relations is used to designate an activity that should be given attention. We do not need to be shown the value of a health service in a college organization, nor in the field of medicine. We know that our work encompasses medical service, that is a protection to individual students and to the entire college population, and that it includes: aid in physical development through physical exercise classes and recreational activities; health education in formal courses and through the media of physical education, medical service and campus public-health; and guidance in conjunction with departments set up for that purpose, in private consultations on health problems and by contributing health information to the over-all picture necessary in advising a student properly.

But in the general medical profession, among college administrators and educators, and even in groups doing work not too far removed from ours, there is still considerable lack of understanding about the value and function of a college health service. This is not peculiar to college health programs alone, but as in other fields, acquaintance develops understanding and respect.

The most congenial cooperation among the interested departments is possible in any school, and becomes a necessity if full advantage is taken to provide an optimum health program with a minimum of duplication and confusion.

In the coming years we should, as individuals and as an organization, direct efforts toward interpreting our work as well as toward doing a good job.

The first world war provided an impetus for expansion of college health programs. The information on the state of health of young men was startling and aroused public interest. Between the two wars public health and health service groups moved steadily forward, often against the inertia of subsiding public enthusiasm for health. Again, data from the Selective Service examinations whipped up a froth of interest and recriminations culminating in establishment of a physical fitness program that was only a temporary, inadequate substitute for a long time program.

College health service staffs were depleted and in many cases health services became almost nonexistent. In the first postwar lull we can again take stock, and we are encouraged by the things we find.

Many schools are organizing health service programs; many others are reorganizing and restaffing. In this period of return to peacetime status more attention is being paid to health than in any other time in our history. It is true that not all proposals are timely nor are they well thought out nor well received, but there is interest in general improvement of health standards.

As we participate in this reorganization of college health programs, it is extremely important to see that the highest standards are maintained in staff appointments and in service rendered. It is not sufficient to provide the equal of service rendered elsewhere in the community; as members of educational institutions we should set higher standards than the common level.

To maintain good quality staff members in any of the divisions of the health program there must be enthusiasm for the work and adequate training for the position on the part of the individual. In return, good working conditions and opportunities for professional improvement and advance must be offered. In the final analysis, the department is only as good as the staff that runs it.

In the area of undeveloped opportunities in health service, attention to the physically handicapped merits more attention. With more careful ear and eye examinations much could be done to reduce disability in these functions. Return of an older age group that has been subjected to unusual traumata to the ears accentuates the need for more interest in the prevention and alleviation of hearing defects. The least a college health service can do in this line is maintain efficient hearing tests and direct students with early hearing defects to specialists who are interested in preventive work. Health services have long been interested in vision defects, but less attention is paid to the ear.

Popular interest reinforces health service activities in provision of help for young people with emotional problems. Again, the effects of the war and an older age group on college campuses impress us more and more with the urgency of high-class guidance and psychiatric help as a basic part of the health program.

In the files of health services are gold mines of data on acute illnesses and minor complaints much of which would be the starting point in the study of degenerative diseases. Not infrequently we get a request for a record on a former student who is now incapacitated with a disease in middle life and are interested to find that, in retrospect, there were physical findings that now fit the present picture. Few health services are equipped to make even limited use of their old records and data. An opportunity exists for extensive use of this material in research.

On the side of administration of the health program come the problems of organization and financing. Health services have for many years provided prepaid medical care with considerable success and many difficulties. In appraising changes in medical practice, study of health service experience would be of great help in setting up modified plans of medical service within the realm of that considered ethical and not detrimental to the progress of medicine.

The questions of health insurance to cover college health service needs, and the extent to which faculty and employees enter into a college health program, as in industrial medicine, await answers in the very near future.

I could list other areas little developed in the health service program, but these suffice to illustrate the opportunities still before us. Health service programs are integral in a college organization. They have the opportunity to influence for the best the student's attitude toward development of good health and toward the agencies that provide him with health education, protection against health hazards, and medical care. It is our duty and opportunity to maintain the highest professional standards in our relations with the college student so that his college training will act as a yardstick for measuring his later attitudes toward health practices.



# Future Prospects for Physicians

Judith Grunfel

Bureau of Labor Statistics, U. S. Department of Labor

THE health deficiencies of our population were brought home to us during the war period when about 40 per cent of all men of military age were found to be ineligible for military service because of physical and mental disabilities. This shocking discovery has reinforced a growing realization that many Americans need better medical attention. The requests for additional physicians will come from many sources. Higher earnings by the workers of the country will bring greater demands for medical services. The Veterans Administration will underscore the need for medical care and doctors. With these facts in view, it appears that the outlook for physicians and medical students is very bright indeed.

Despite this, it will not be easy for the people of this country to get the kind of medical service which they expect. For, though the medical profession in the United States is the fourth largest among professional occupations, the long-term rate of increase in the medical labor force has not kept pace with the increase in population.

The Bureau of Labor Statistics of the U. S. Department of Labor recently completed a study of the medical profession as it is at present and the outlook for this profession in the near future. This study shows the increase in the number of physicians as compared to the increase in population, the geographic location of physicians, the higher standards of the medical schools and the number of medical students now in these schools.

During the three decades before the war, the number of physicians increased more slowly than the total population of the country. The increase between 1910 and 1940 in the number of physicians was only 13.4 per cent compared with a 43.2 per cent increase in population over the same period. This decrease in numbers of physicians relative to population is somewhat mitigated by improvements in means of transportation which is of particular importance in rural areas.

The relatively slow growth of the profession in the three decades preceding the war resulted from the fact that a large proportion of the graduates from accredited medical schools were needed merely to replace those dying or retiring. The proportion of physicians over the age of 65 rose from 7.9 per cent in 1920, to 11.5 per cent in 1940, and in the latter year nearly half the physicians reported as actively employed were over 45 years of age, the point beyond which the average patient load begins to decrease.

Opinions vary in the medical profession with respect to the number of physicians to be trained. Dr. Williard C. Rappelye, former director of the Commission on Medical Education, in hearings before a Senate Committee in 1944, expressed the opinion that the number of physicians available "is entirely adequate for the medical needs of peacetime and that there is no justification for any substantial increase in the output of the medical schools."

On the other hand, there are those physicians who feel just as strongly that there is a growing need for additional doctors. They give expression to this view by editorials such as appeared in the March 9, 1939, issue of the *New England Journal of Medicine* which stated:

"It is sometimes claimed that the medical profession is overcrowded. The proponent of this claim is usually a member of the medical profession and the ground for the complaint is that there are many doctors, far too many, who are not able to make a comfortable living. If one employs in other fields the line of reasoning which has led to this conclusion, one may well declare that the United States, not to speak of the earth, is overcrowded . . .

"From bare statistical comparisons with other countries one might conclude, as has been done, that the United States has too many doctors per thousand of population, and also by the same token, too many telephones, too many automobiles, too many bathtubs. It is a fact that no one knows how many physicians there should be in the United States and any arbitrary limitations might prove to be a serious mistake. Perhaps if there were better physicians, even more would be needed to care adequately for the population. Our health is far from perfect."

There are wide disparities among the various parts of the country in the number of physicians relative to population, not only as between States, but also as between rural and urban areas. Furthermore, in a study made by the U. S. Public Health Service it was shown that in those States with the highest ratios of population to physicians, there was a considerably higher ratio of older physicians with lower service capacity. This deficit of younger physicians should be kept in mind in considering the population-physician ratios in the States in which numbers of physicians were decreasing during the two decades before the war. The table on the page following this shows State population in relation to numbers of physicians for 1920-1940:

The population-physician ratio ranged from 511 persons per physician in the State of New York in 1940 to 1,635 persons in Mississippi. A major factor affecting distribution of physicians is purchasing power as reflected in income levels. In the four states with the lowest per capita income, there were, on the average, 1,456 persons per physician as compared with an average of 683 persons in the six states with a per capita income of over \$800. Population-physician ratios are also more favorable in predominantly urban States than in predominantly rural States with similar per capita income payments. Studies have revealed a striking increase in the number of physicians practicing in urban centers and a corresponding decline in the number engaged in rural practice since the beginning of this century.

The availability of hospital facilities and proximity of medical schools also affect the geographical distribution of physicians. The eighteen States in which there were no approved four-year medical schools up to July 1945 are, with some exceptions, at a disadvantage as compared with five States at the top of the list which have twenty-six approved schools. These five states had 42 per cent

TABLE —State Populations in Relation to Numbers of Physicians, 1920-40

| State                                                  | Percent of increase in population, 1920-40 | Percent of increase or decrease in number of physicians, 1920-40 | Population per physician |       |
|--------------------------------------------------------|--------------------------------------------|------------------------------------------------------------------|--------------------------|-------|
|                                                        |                                            |                                                                  | 1920                     | 1940  |
| <b>Increase in population, decrease in physicians:</b> |                                            |                                                                  |                          |       |
| Alabama.....                                           | 20.6                                       | -17.9                                                            | 1,036                    | 1,523 |
| Arkansas.....                                          | 11.3                                       | -28.9                                                            | 743                      | 1,161 |
| Colorado.....                                          | 19.5                                       | -7.3                                                             | 530                      | 684   |
| Georgia.....                                           | 7.9                                        | -22.4                                                            | 879                      | 1,222 |
| Idaho.....                                             | 21.5                                       | -14.0                                                            | 900                      | 1,271 |
| Indiana.....                                           | 17.0                                       | -9.3                                                             | 685                      | 883   |
| Iowa.....                                              | 5.6                                        | -17.9                                                            | 674                      | 867   |
| Kansas.....                                            | 1.8                                        | -18.7                                                            | 696                      | 871   |
| Kentucky.....                                          | 17.8                                       | -17.1                                                            | 785                      | 1,115 |
| Maine.....                                             | 10.3                                       | -19.2                                                            | 696                      | 951   |
| Mississippi.....                                       | 22.0                                       | -19.4                                                            | 1,081                    | 1,635 |
| Missouri.....                                          | 11.2                                       | -17.4                                                            | 583                      | 758   |
| Nebraska.....                                          | 1.5                                        | -18.8                                                            | 667                      | 834   |
| Nevada.....                                            | 42.4                                       | -5.9                                                             | 506                      | 766   |
| New Hampshire.....                                     | 10.9                                       | -11.7                                                            | 698                      | 876   |
| Oklahoma.....                                          | 15.2                                       | -15.3                                                            | 767                      | 1,043 |
| South Carolina.....                                    | 12.8                                       | -7.1                                                             | 1,239                    | 1,505 |
| South Dakota.....                                      | 1.0                                        | -22.5                                                            | 979                      | 1,276 |
| Tennessee.....                                         | 24.7                                       | -15.4                                                            | 723                      | 1,066 |
| Vermont.....                                           | 1.9                                        | -18.4                                                            | 623                      | 778   |
| Wyoming.....                                           | 29.0                                       | -12.7                                                            | 748                      | 1,105 |
| <b>Increase in population, increase in physicians:</b> |                                            |                                                                  |                          |       |
| Arizona.....                                           | 49.4                                       | +47.2                                                            | 877                      | 890   |
| California.....                                        | 1,01.6                                     | +60.9                                                            | 503                      | 630   |
| Connecticut.....                                       | 23.8                                       | +44.6                                                            | 803                      | 685   |
| Delaware.....                                          | 19.5                                       | +20.7                                                            | 811                      | 803   |
| District of Columbia.....                              | 51.5                                       | +41.6                                                            | 357                      | 382   |
| Florida.....                                           | 95.9                                       | +43.4                                                            | 677                      | 925   |
| Illinois.....                                          | 21.8                                       | +7.6                                                             | 604                      | 683   |
| Louisiana.....                                         | 31.4                                       | +20.6                                                            | 924                      | 1,006 |
| Maryland.....                                          | 25.6                                       | +25.1                                                            | 616                      | 619   |
| Massachusetts.....                                     | 12.1                                       | +18.2                                                            | 642                      | 608   |
| Michigan.....                                          | 43.3                                       | +37.7                                                            | 821                      | 855   |
| Minnesota.....                                         | 17.0                                       | +20.0                                                            | 840                      | 819   |
| New Jersey.....                                        | 31.8                                       | +68.8                                                            | 901                      | 704   |
| New Mexico.....                                        | 47.6                                       | +1.2                                                             | 854                      | 1,245 |
| New York.....                                          | 29.8                                       | +55.9                                                            | 614                      | 511   |
| North Carolina.....                                    | 39.6                                       | +20.8                                                            | 1,197                    | 1,383 |
| Ohio.....                                              | 19.9                                       | +8                                                               | 647                      | 770   |
| Oregon.....                                            | 39.1                                       | +12.4                                                            | 631                      | 781   |
| Pennsylvania.....                                      | 13.5                                       | +13.6                                                            | 765                      | 785   |
| Rhode Island.....                                      | 18.0                                       | +25.3                                                            | 817                      | 770   |
| Texas.....                                             | 37.6                                       | +2.7                                                             | 765                      | 1,025 |
| Utah.....                                              | 22.5                                       | +7.8                                                             | 876                      | 995   |
| Virginia.....                                          | 16.0                                       | +9.6                                                             | 962                      | 1,018 |
| Washington.....                                        | 28.0                                       | +5.4                                                             | 683                      | 830   |
| West Virginia.....                                     | 29.9                                       | +5                                                               | 850                      | 1,099 |
| Wisconsin.....                                         | 19.2                                       | +22.5                                                            | 947                      | 922   |
| United States.....                                     | 24.6                                       | +14.2                                                            | 729                      | 795   |

<sup>1</sup> Source: Census of Population 1920, Occupations; Census of Population 1940, United States Summary; Vol. II, The Labor Force, Parts 3, 4, 5, Table 13. Percentages have been computed.

of the entire student enrollment in this country and 44 per cent of the graduates between June 1944 and June 1945. The extent to which availability of hospitals affects location of physicians is illustrated by the fact that in 1939 there were only sixty-seven physicians per 100,000 population in counties without general or allied special hospitals as contrasted with 157 for counties in which there were 250 hospital beds or more. Construction of modern hospital facilities in the numerous areas now lacking them may offer attraction for considerably more physicians, and persons planning to enter the profession should bear this in mind.

#### POSTWAR DEMAND

Now what about the outlook for physicians for the next few years? As was previously noted, the effective demand for the services of physicians depends to a great extent on income levels. If substantially full employment were achieved, the increase in the demand for physicians would be great. However, in this study made by the Bureau of Labor Statistics, no attempt was made to estimate the increase in the numbers of physicians re-

quired to meet the demands of the population for medical services if full employment were achieved. Instead, allowance is merely made for the increase in population from 1940 to 1950, on the assumption that the ratio of the general population to the number of doctors serving it by 1950 would be no different from 1940. *To the extent that greater income may mean increased demand for physicians' services, the estimates presented herewith understate the prospective effective demand.*

The health deficiencies of the population shown by the findings of the Selective Service doctors stimulated considerable public interest in the provision of adequate medical service according to need. Some of this interest resulted in privately sponsored programs of financing medical care, including prepayment plans, and publicly sponsored health programs, involving such suggestions as insurance under social security, the further development of preventive medicine, and the construction of additional hospitals, health centers and maternity clinics.

The President in his message to Congress on November 19, 1945, recommended Federal aid for construction of additional hospitals and health centers within the reach of every community, expansion of public health, maternal and child health services and "facilities that are particularly useful for the prevention of disease, mental as well as physical." Federal support of a broad program to strengthen medical education and research; and finally a system for general pre-payment of medical costs to assure all Americans ready access to necessary medical, hospital and related services. Should this program materialize, there will be large increases in the demand for physicians in hospitals for civilians, in teaching, and in medical research.

The importance attached to grants in the States for construction of additional hospitals is reflected in pending bills. The manning of additional hospitals for civilians planned during the war to be constructed after the war was estimated to require 8,300 physicians. Planning by various private organizations for extension of medical care through pre-payment schemes also points to an increased demand for physicians.

The Servicemen's Readjustment Act of 1944 authorized appropriations for expansion of the present hospital facilities of the Veterans Administration, which will require additional physicians. The Veterans Administration will also require additional physicians for administrative work such as rating the extent of disabilities of



veterans for purposes of compensation and adjudicating claims. A conservative estimate of the increase between 1940 and 1950 in physicians needed by the Veterans Administration for all purposes is nearly 4,000.

In addition there will be a greater demand for physicians for the armed forces. If the armed forces should be maintained above 1940 levels, there would be an increased need for physicians because of the lower ratio of population to physicians kept in the armed forces. There are no official estimates of the size of the postwar armed forces to be maintained, but the number of physicians needed may be suggested by the fact that between 12,000 and 16,000 physicians would be required to serve 2.5 million men, depending on whether peacetime or wartime ratios are to be assumed. This indicates that about 10,000 to 14,000 more physicians would be needed after than before the war for the armed forces, if a military establishment of that magnitude may be assumed.

The additional postwar demand for physicians arising from medical care of veterans, expanded armed forces, planned construction of new hospital facilities for civilians, and population increase may be roughly estimated as follows for about 1950:

|                                                                                                                             | Number of<br>Physicians |
|-----------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Veterans Administration .....                                                                                               | 4,000                   |
| Expanded peacetime armed forces<br>(assuming 2,500,000) .....                                                               | 10,000-14,000           |
| Medical care for civilians at prewar levels,<br>allowing for growth in population .....                                     | 10,200                  |
| Extension of medical care above prewar levels,<br>staffing proposed new hospitals and health<br>centers for civilians ..... | 8,300                   |
| Total increase, 1940-50, in physicians needed .....                                                                         | 32,500-36,500           |

#### SUPPLY IN RELATION TO ADDITIONAL DEMAND

In estimating the changes in the medical labor force by 1950 as compared to that of 1940, it is necessary to take into consideration the numbers trained and the re-

placement needs caused during the decade by deaths and retirements of physicians.

An increase in graduations was made possible during the war period by accelerated training and by deferments of premedical and medical students from induction into the armed forces; but the change in the deferment policy affecting premedical students may have the ultimate effect of reducing the number of graduates in 1948 and 1949. There were 36,197 graduates from approved medical schools during the six academic years ending June 1945. In addition, 18,202 freshmen, sophomores and juniors were enrolled in the academic year 1944-45. It is estimated that the total number of graduates from 1940 to 1950 will be from 55,000 to 60,000.

If one considers the fact that about 38,000 physicians will either die or drop out of the profession because of age during the ten year period, the net increase in the number of physicians available for service will be between 17,000 and 22,000. The increase in demand over the decade, conservatively estimated above at between 32,500 and 36,500 will therefore exceed the growth in the number of physicians by at least 10,500 under the most favorable conditions and by more than 19,500 under less favorable circumstances. Despite the limitations of any estimate, the prospective deficit of physicians is bound to assume considerable proportions, resulting from a combination of long-term trends in the training and age distribution of physicians, and the effects of the war on demand and supply.

With an increasing ratio of older physicians, the output of graduates from accredited schools in the prewar decade exceeded deaths and retirements from the profession by not more than 1,000 each year. At prewar rates of training it would take a number of years to alleviate the situation, particularly in the twenty-one states with rising population and decreasing numbers of physicians between 1920 and 1940.

---

#### PENICILLIN AND SYPHILIS

Much remains to be learned about penicillin; its composition and mode of action, and its ultimate place in the treatment of syphilis. Despite the most encouraging clinical evidence of its very real value in sterilizing early lesions, and its great apparent usefulness against syphilis in pregnancy, and central nervous system syphilis, it cannot yet be said that penicillin is more effective than arsenical-bismuth therapy from the standpoint of producing "cures". Several years of observation on several thousands of patients treated under the various schedules will be necessary before a dependable evaluation can be made. The experience with penicillin species "K" emphasizes the interdependence of industry, laboratories, treatment sources, and public and private agencies in promoting the control of syphilis.—*Journal of Venereal Disease Information.*

# Biliary Obstruction in the Newborn with Recovery

Edmund C. Burke, M.D.

and

Erling S. Platou, M.D.

Minneapolis, Minnesota

THE problem of biliary obstruction in the newborn has become less obscure in the past decade. Since 1891, when this entity was first presented, the number of cases reported has increased to nearly three hundred. Of the treatment offered for congenital atresia of the biliary tract in the newborn, only surgical intervention has to date produced anywhere near satisfactory results. No uniformly satisfactory treatment has been evolved for the minority of cases of extrabiliary obstruction which are due to an actual plugging of patent ducts. The differentiation of anomalous conditions of the ducts from those where only a mechanical plugging of the lumen occurs has been difficult from a diagnostic standpoint.

Our object in presenting two cases of biliary obstruction in the newborn with recovery, is to offer a method of differentiating a condition amenable only to surgical intervention from one which can be corrected, in some cases by medical treatment.

In some instances there exists a stenosis rather than an atresia. The common duct becomes plugged with organized bile. In such instances the mere removal of the plug producing the obstruction will return the infant to normalcy.

Ylppo has stated that bile pigments are absent from biliary secretions until the fifth or sixth month of fetal life, and from then on present only in small amounts. Likewise, Strauss, Gross and Kyman<sup>1</sup> feel that in some instances where jaundice is absent for a time and meconium normal during the first few days after delivery, the biliary tract must have been partially patent at birth.

Shortly before and after birth it is possible for viscous biliary secretions in the fetus to become inspissated and organized in atretic or inflamed biliary ducts and thereby produce an obstruction. In this case it is theoretically possible to effect a cure without surgical intervention. The two cases presented seem to fall into this group. The first case was reported by Alway and Platou in 1939.<sup>2</sup>

## REPORT OF CASES

*Case 1.* W. Mc., male, 10 weeks old, was admitted to hospital July 25, 1938, because of jaundice and failure to gain weight. He was born five weeks prematurely following the normal first pregnancy of a 32-year-old mother. Both parents were healthy and had negative serology. There was no history of jaundice in infancy in either family. The birth weight was 5 pounds, 13 ounces. The placenta, vernix, and general physical examination were reported normal, but on the second day after birth, jaundice was noted in the infant. This became progressively more intense, and shortly before admission, assumed a greenish hue. Birth weight was not regained for five weeks and at ten weeks, the infant's weight was 7 pounds, 12 ounces. The stools, which were

described as having been "greasy and almost white" since birth, were passed three to four times daily. The urine was said to be dark yellow and "foamy." During the first five weeks he was breast fed; for the next two weeks he received one-half and two-thirds raw milk with dextrimaltose and thereafter evaporated milk and Karo. In the week prior to admission the infant became listless, had frequent emeses and often refused its feedings. Tremors of the arms and legs were noticed prior to admission, but at no time was temperature elevation discovered.

When admitted to the hospital, the baby appeared greenish-yellow in color, had a marked loss of muscle turgor and moderate dehydration. The deeply icteric skin presented no petechiae, purpura, or other lesions. The eyes were expressionless with deeply stained sclerae. The nose, throat, ears, heart and lungs were found normal. The liver was enlarged and firm, the edge being 4 centimeters below the costal margin in the mid-clavicular line. The spleen was palpable but not large. Neurologically nothing abnormal was noted. The striking physical signs were jaundice and athrepsia. The stools were acholic and the urine stained the diaper brownish-yellow. The temperature was normal and cultures of blood and urine were negative. No evidence of infection could be found.

On admission the hemoglobin was 60 per cent, leukocyte count 12,000 with the differential of neutrophils 34 per cent, lymphocytes 63 per cent, monocytes 2 per cent. Erythrocyte fragility was normal. No erythroblastosis was found at the time of admission or in subsequent examination. The bleeding time was 4 minutes, clotting time being 4 minutes, 30 seconds. Icterus index was 52 and the van den Bergh reaction was prompt direct. On two occasions a four-day stool specimen showed no bile pigment. Microscopic examination of the stool with fat stain showed the greater portion to be fat globules. Urinalyses were negative except for the presence of urobilin. Both Mantoux and Wassermann tests were negative.

During the 78-day period of hospitalization the infant had several attacks of fever and diarrhea and was almost moribund at times. The infant had alternate periods of deep jaundice during which the stools were moderately firm, and periods of severe diarrhea with slightly less jaundice. The treatment was principally dietary.

The diet consisted of low fat or fat-free milk with calcium caseinate plus large doses of synthetic vitamins, vitamin K included. Magnesium sulfate, egg-yolk, and bile salts were given at intervals. Apple powder, when added to the formula, was strikingly effective in controlling diarrhea. Five transfusions of about 50 cc. each were



given and intravenous glucose and parenteral fluids were administered as indicated. Several times during the hospital course, surgical intervention was considered but the infant's condition positively denied us such a risk. Toward the latter part of his hospitalization the dietary problem abated somewhat and banana and cereal were tolerated. About this time the jaundice lessened in degree, the stools became yellow and a four-day stool specimen showed an average of 700 milligrams of urobilinogen per day. The infant was discharged on September 10, 1938, weighing 11 pounds and 14 ounces. The jaundice had disappeared almost completely, feedings were tolerated well and diarrhea cleared up.

In the above case it was concluded that the obstruction was produced by a plug of inspissated bile in the ducts. Probably a stenosis was also present. The four-day stool determinations were of considerable value in following the course of the patient and the relenting of the obstruction. Surgery probably would have been undertaken had it not been for the poor physical state of the patient. During the period of intensive nutritional build-up and following the test meal of magnesium sulfate-bile salts-egg yolk, symptoms disappeared and the patient showed remarkable recovery.

*Case 2.* R. B., a white male infant, was born May 13, 1945, one week prematurely, weighing 6 pounds, 15½ ounces following spontaneous delivery. His condition after delivery was good and he was apparently a normal infant. No abnormalities of cord or placenta were noted.

During the eighth month of pregnancy the father had contracted lues which was manifested by a second-stage generalized eruption. He underwent intensive treatment with penicillin which was effective. At no time did the mother develop a positive Wassermann.

The infant's hemoglobin (May 14) was 131 per cent, or 22.2 grams, and 2 normoblasts per 100 white blood cells were noted. The infant's blood was Rh positive, as was the mother's.

On the 15th of May puffiness of the eyelids and a short systolic murmur over the tricuspid area were noted, but otherwise there were negative findings. On the 16th, several cyanotic episodes were noted, the first of which lasted 15 minutes, and following the second episode the color remained poor. Continuous oxygen was administered. Convulsive twitchings were occasionally noted on the 17th. The hemoglobin was then 104 per cent, or 17.5 grams. A blood sugar determination showed 230 milligrams per cent and a urinalysis gave the following findings: red cells 100-200, white cells, 10-25, bile stained casts, of which one third were granular casts, and an occasional cast of the cellular type.

Cyanotic spells continued to occur, the infant appeared listless and on the 18th a small amount of blood was present in the stool. An X-ray film of the chest failed to support the diagnosis of a congenital heart lesion, but an increase in bronchovascular markings resembling bronchitis was observed. Repeated urinalyses showed red cells, white cells, and bile-stained casts. The hemoglobin on the 19th was found to be 110 per cent, or 18.6 grams.

Feedings consisted of nursery formula supplemented by the subcutaneous administration of Hartman's solution. The patient's weight reached a low of 6 pounds, 2 ounces, the fourth day following delivery. On the 22nd, the urine was grossly bile-stained, contained red cells, 2-4, pus cells, 8-10, and occasional granular casts. A urine culture on the 24th reported *Staphylococcus albus*, pneumococci, and occasional short-chained nonhemolytic streptococci. The urine continued to show the presence of bile. The patient had not shown any elevation of temperature to date. The skin showed a generalized vesicular eruption but no icterus was noted.

On the 25th the child was very flaccid and had a generalized vesicular eruption, more marked on the neck. The extremities were edematous. The pharynx showed a residual pharyngitis with marked injection of the lower tonsillar poles. The liver and spleen were slightly enlarged. The conclusion reached at this time was a systemic infection with attendant pyelonephritis.

The throat culture revealed a *staphylococcus albus* organism. Subsequent urinalysis showed the urine to be free from red and white blood cells, but bile was still present in the urine. The Kline test was negative and X-rays of the long bones for lues were negative. June 3rd it was noted that the sclerae were icteric and on the 9th the skin was observed to have an icteric hue. Hepatitis was suspected and bile was found in the urine in increasing amounts. A trace of albumin was likewise found on periodic urinalysis.

Plasma was given intravenously, and fortified Hartman's solution was given subcutaneously. Glucose, 10 per cent in normal saline, was given orally between feedings. Immune globulin, 0.8 cc., was given intramuscularly. Stools were creamy-colored but the patient's condition improved, bile disappeared from the urine and he was discharged on the 19th weighing 8 pounds, ½ ounce, though some icterus persisted.

The patient was readmitted on June 25th with a history of daily temperature of 100° rectally. The physical examination at this time showed a very icteric six-week-old child, temperature of 101.2° rectally, in a moderately good state of nutrition. No deformities were observed except a hemangioma on the scrotum approximately 0.75 centimeter in diameter. The liver was palpable 1 to 1.5 centimeters below the right costal margin. The spleen was just barely palpable in the left upper quadrant. The remainder of the physical examination revealed no contributory findings. The urine was grossly dark-colored and the stools were soft, yellow, and foul smelling. The hemoglobin was 89 per cent and the leukocyte count was 18,000.

The icterus index on the 25th was 140. The qualitative van den Bergh showed a prompt direct reaction, 75 per cent of the maximum color developing in one minute. Blood cultures were negative.

The patient was given nursery formula supplemented with Hartman's solution and vitamins. Penicillin was given intramuscularly, 2000 units *stat.* and 500 units every two hours. Immune globulin was given intramuscularly on July 16th and daily for five days.

The cephalin-cholesterol flocculation test was negative.

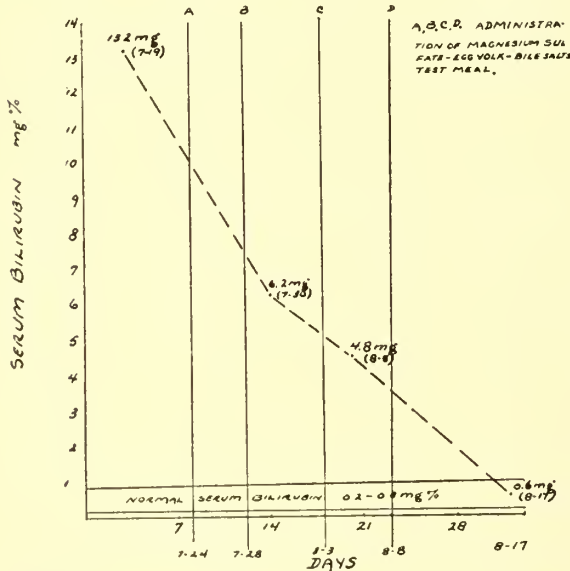
The serum bilirubin (on July 19th) was reported at 13.3 milligrams; prothrombin time was 18.6 seconds, the control being 16.5 seconds. The four-day stool collection showed 1.7 milligrams of urobilinogen per 100 grams of stool. The serum bilirubin on August 6th was reported as 4.8 milligrams per cent.

At this time before resorting to surgery, 2 drams of 50 per cent magnesium sulfate followed in half an hour by a raw egg yolk and 5 grains of Fel Bovis were given on a fasting stomach via gavage. This treatment was repeated on July 28th and August 3rd, and additional laboratory data were obtained. The serum bilirubin fell to a total of 6.2 milligrams per cent on July 30th and a subsequent four-day stool specimen showed 9.7 milligrams of urobilinogen per 100 grams of stool. The serum bilirubin on August 6th was reported as 4.8 milligrams per cent.

The patient was discharged on August 9, 1945, weighing 9 pounds, 8 ounces. Since discharge his course has been uneventful and a complete recovery is indicated by his entirely normal state six months later.

In the second case it is noted that the course was made more complicated by the early appearance of pyelonephritis which led us to suspect a hepatitis. Later, however, the patient's course resembled that of an extrabiliary obstruction. Again, with laboratory aids and the use of the cephalin-cholesterol flocculation test of Hanger<sup>3</sup> the diagnosis of an obstruction became more feasible.

The chart shows graphically the relation of the fall of the serum bilirubin to administration of the test meal.



Before surgery was to be attempted, the patient's physical state was improved by a dietary regimen, parenteral fluids and large dosages of vitamins. The idea of a test meal was fostered as a last resort before surgical intervention and results were startling. The serum bilirubin decreased and the output of feces urobilinogen increased. The magnesium sulfate-egg yolk-bile salts meal was re-administered several times and recovery followed a course of continual improvement.

The cholagogue action of the egg-yolk and bile salts, together with the smooth muscle response produced by the magnesium sulfate, were perhaps of some aid in bringing about the release of the obstruction.

In infants with congenital obstruction of the biliary tract the icterus may or may not be noted from birth. The absence of jaundice after birth with normal meconium may be due to ducts that are at least partially patent at birth. As contended by Ylppo, however, the reason for the late onset of jaundice may be the small amounts of bile pigment elaborated. If the capacity of the liver for storage of bile pigment has been exceeded, jaundice results.

Stools, usually acholic, may at first contain bile because of passage through deeply stained intestinal walls. Hicken and Crellin<sup>4</sup> state that the presence of bile in the stools need not preclude the patency of bile ducts but may be the result of cholemic blood oozing from intestinal walls. The quantitative urobilinogen in 100 grams of a four-day stool specimen may drop below 5 milligrams in an obstruction such as might be found in carcinomatous obstruction. Watson<sup>5</sup> has made use of this relationship of the amount of urobilinogen in the stool to the degree of obstruction in aiding the diagnosis as to cause of the obstruction. Accepted normal values and variations are listed in the table.<sup>6</sup>

TABLE

|                       | Fecal Urobilinogen        | Urinary Urobilinogen      | Urinary Bilirubin |
|-----------------------|---------------------------|---------------------------|-------------------|
| Normal:               |                           |                           |                   |
| Adult                 | 50-250 mg. per day        | 1-2 mg./day               | None              |
| Infants, to 2 years   | 2.5 mg./day               |                           |                   |
| Children, 3-11 years  | 2.6 mg./day               |                           |                   |
| Hemolytic Jaundice    | Increased                 | Increased                 | None              |
| Obstructive Jaundice  | Trace or none             | None                      | Increased         |
| Hepatogenous Jaundice | Trace, normal or positive | Trace, normal or positive | Increased         |

The urine is dark-colored due to the presence of large amounts of urobilinogen and the presence of bile pigments may be detected by any of the various tests available. A prompt direct van den Bergh test is believed by Watson to be a valuable indicator of early escape of pigment through the kidneys. The one-minute van den Bergh test was found to be more significant than the later (15-minute) results. In some patients a low threshold for the pigments must be suspected. Occasionally, the morning urine specimen may show the presence of bilirubin while later specimens will fail to show the presence of the pigment.

Laboratory adjuvants in the study of jaundice in infants are many. The usual urinalyses and feces determination for detection of bile pigments are necessary. Other laboratory aids in diagnosis are: serum bilirubin, icterus index, van den Bergh determinations, direct and indirect, the four-day stool quantitative determinations for urobilinogen and also of considerable importance is the cephalin-cholesterol flocculation test of Hanger. A more recently developed test is the thymol turbidity test. The thymol turbidity test is based upon the concept that glob-



ulins are precipitated more or less readily by phenolic compounds. Thymol has been found the most satisfactory of any of a number of phenolic compounds tested. (A saturated aqueous solution of thymol buffered with barbitone and sodium barbitone to a pH of 7.8).

The degree of turbidity is measured after half an hour with formazin standards devised by Kingsbury and associates. Normal sera ranges from 0-4 units. The test offers several advantages not available through the use of the cephalin-cholesterol flocculation test, namely, simplicity and the short time required for the completion of the test.

Watson and Rappaport<sup>7</sup> compared the Hanger test with the Maclagen test in liver diseases. These workers concluded that the Maclagen thymol turbidity test was a reliable and simple test of liver function and in the majority of cases directly paralleled the Hanger test.

The van den Berg test in obstruction of the bile ducts is positive, direct, and not biphasic. The quantitative urobilinogen in normal stool varies from 40-280 milligrams per day and in an obstruction of the bile ducts the values may fall nearly to 0 milligrams depending on the amount of obstruction existing.

The Hanger cephalin-cholesterol flocculation test deserves particular emphasis in the study of obstruction of bile tracts. Hanger demonstrated that emulsions of sheep brain cephalin and cholesterol are flocculated by the sera of jaundiced patients with hepatocellular damage. Some investigators discredit the value of the Hanger test in the differential diagnosis of various types of jaundice. Nadler and Butler<sup>8</sup> have concluded that the determinations give negative results in normal individuals and rarely, if ever, positive results in patients without hepatic diseases. They feel that this test is a more sensitive indicator of active liver parenchymatous disturbance than are the various liver function tests and that the cephalin-cholesterol flocculation test is the best available indicator in the prognosis of hepatic disease.

Hanger's test is of particular significance in the differentiation of congenital obstruction from the obstruction produced by hepatitis of infectious origin. Cases of jaundice due to congenital obstruction of the extrahepatic ducts give negative or faintly positive results, while those cases of jaundice associated with hepatitis show strongly positive reactions.

The flocculation test mechanism probably depends upon the capacity of an altered globulin constituent of serum to become affixed to colloidal elements of the emulsion. In hepatocellular disease associated with an obstruction, flocculation fails to occur because of the inability of the fixation of serum globulin factors to the colloidal elements. The thymol turbidity test is believed by some investigators to be even more delicate.

We wish to emphasize the value of these tests in diagnosis and urge preliminary trials of a test meal of magnesium sulfate-egg yolk and bile salts. The test meal can be used in cases diagnosed as congenital obstruction of the bile ducts with the hope that an obstructive plug may be removed from the ducts. The test meal is given by gavage on a fasting stomach. The 50 per cent solu-

tion of magnesium sulfate should be given before the egg yolk-bile salts mixture. Approximately 2 drams of magnesium sulfate will suffice. The egg yolk is given raw after testing and the dosage of bile salts is 15 grains. The test meal may be repeated if necessary but the course of the patient should be followed by repeated laboratory procedures, as previously mentioned. An increased output of feces urobilinogen and a fall in the serum bilirubin is the indicator of relenting obstruction.

If, after several attempts, the results are not indicative of the release of obstruction, surgical intervention must be undertaken as soon as possible. Ladd<sup>9</sup> advises surgical intervention before the fourth month because of the possibility of error in diagnosis and if congenital obstruction of the bile ducts does exist, time may and should be taken to reach high nutritional levels in these patients. The mortality without operation is 100 per cent except in that type of case which we have presented, namely, obstruction due to inspissated bile.

Some cases with obstruction due to a plug of bile in the ducts will prove refractory to medical treatment and it is for these cases that Ladd advises use of the simple technique of injecting saline into the gallbladder and distending the ducts. This enables identification of tiny structures as well as the possibility of removing bile plugs and debris from the ducts.

Hicken and Crellin have placed emphasis on the technique of cholangiography. This can be carried out in a manner similar to that employed at operation on adults.

#### CONCLUSIONS

1. Two cases of biliary obstruction in the newborn with recovery are presented.
2. In both cases obstruction was attributed to a plug of inspissated bile.
3. Cephalin-cholesterol flocculation tests have been used as adjuvant to the diagnosis of congenital obstruction of the bile ducts in the newborn. The thymol turbidity test is mentioned as a recent development in detecting liver impairment.
4. The use of magnesium sulfate-egg yolk-bile salts test meal was thought to contribute to diagnosis and recovery.

#### BIBLIOGRAPHY

1. Strauss, A., Gross, Jr., and Kyman, S.: Congenital Atresia of the Common Bile Duct; case report. *Ann. Surg.*, 117: 723-727, 1943.
2. Alway, R. H., and Platou, E. S.: Biliary Obstruction in the Newborn with Recovery. *Minn. Med.* 22: 707-708, 1939.
3. Hanger, T. M.: Serological Differentiation of Obstruction from Hepatogenous Jaundice by Flocculation of Cephalin and Cholesterol Emulsion. *J. Clin. Investig.* 28: 261, 1939.
4. Hicken, N. F., and Crellin, H. G.: Congenital Atresia of the Extrahepatic Bile Ducts. *Surg., Gyn. and Obst.*, 71: 437-44, 1940.
5. Watson, C. J.: Regurgitation Jaundice; Clinical Differentiation of Common Forms, with Particular Reference to Degree of Biliary Obstruction. *J.A.M.A.*, 114: 2437, 1940.
6. Platou, R. V., and Nadler, S.: Jaundice in Infancy and Childhood. *Journal Lancet*, Vol. LXV, No. 5, p. 188, 1945.
7. Watson, C. J., and Rappaport, Capt. E. M.: A Comparison of the Results Obtained with the Hanger Cephalin Cholesterol Flocculation Test and the Maclagen Thymol Turbidity Test in Patients with Liver Disease. *J. of Lab. and Clin. Med.*, Vol. 30, No. 12, pp. 983-992, 1945.
8. Nadler, S. B., and Butler, M. E.: Cephalin Cholesterol Flocculation Test in Jaundiced Patients. *Surg.*, 11: 732-738, 542.
9. Ladd, W. E.: Congenital Obstruction of the Bile Ducts. *Ann. Surg.*, 102: 742-751, 1935.

## . . . MEET OUR CONTRIBUTORS . . .

DR. WINFRED W. ARRASMITH of Casper, Wyoming, has practiced there for eight years. His specialty is internal medicine. He is a graduate of Iowa State University (B.S.), and Northwestern University Medical School, Chicago, (M.D., 1922), with graduate work at the Annual Clinics, American College of Physicians, since 1928. He is a fellow of the American College of Physicians, diplomate of the American Board of Internal Medicine, member of the American Medical association, and Wyoming State Medical association.

DR. RALPH I. CANUTESON is president of the American Student Health association, and director of the University of Kansas health service at Watkins Memorial hospital, Lawrence, Kansas. He is also vice-president of the Kansas Tuberculosis and Health association, and member of the American Medical association, Kansas Medical society, American Public Health association, American State Hospital association, American Trudeau society, and Mississippi Valley Conference on Tuberculosis. His newest office is chairman of Planning Committee, Third National Conference on Health in Colleges.

DR. MELVIN KOONS of Grand Forks, North Dakota, has been with the North Dakota State Health department for twelve years and associate professor of public health at the University of North Dakota since 1942. Dr. Koons was a contributor to the January 1946 issue of JOURNAL LANCET.

DR. ERLING PLATOU, well-known Minneapolis pediatrician, and clinical professor of pediatrics at the University of Minnesota, was special editor of the May 1946 issue of JOURNAL LANCET.

DR. EDMUND C. BURKE, who has been assistant to Dr. E. S. Platou, is a recent graduate of the University of Minnesota Medical School with degrees of B.S., M.B., and M.D. He was a pediatrics resident at Northwestern hospital for nine months. He is soon to enter military service in the Medical Corps of the Army.

MISS JUDITH GRUNFEL is Chief of the Professional Occupations section, Bureau of Labor Statistics, U. S. Department of Labor, Washington, D. C. She is an economist, Ph.D., and has contributed to many distinguished economic and social science periodicals.

DR. OLIVER E. SARFF, of Minneapolis, was graduated from the University of Minnesota in 1928 with degrees of B.S., B.M., and M.D. He did graduate work at the Minneapolis General hospital and the University of Iowa. His specialty is urology. He is a member of the Hennepin County Medical society, Minnesota State Medical association, and American Medical association.

DR. JAMES C. HEALY, acting head of the Department of Pharmacology, Tufts Medical School, Boston, Massachusetts, was graduated from this College in 1927 with degrees of Ph.G. and M.D. He has practiced in Boston for 15 years and his specialty is immunology. He is a member of the Massachusetts Medical Society.

## Book Reviews

**Ambulatory Proctology**, by ALFRED J. CANTOR, M.D. Cloth. 513 pages. 281 illustrations. New York: Paul B. Hober, Inc. \$8.00.

*Ambulatory Proctology* is a most difficult book to review since there is so much in the text to confuse the reader. The Preface to the text has been excellently written and presents a clear picture to the reader of the specialty of proctology and of the author's conception of what the specialty should be.

Had the author chosen a title for his book other than *AMBULATORY Proctology*, much of the confusion would not arise. Dr. Beaumont S. Cornell, who has written the Foreword, asks the reader to note the author's definition of "ambulatory". The author then defines ambulatory proctology as any surgery, minor or major in character, after which the patient may, without undue risk, leave the office. The author does not state to which destination the patient is to go after leaving the office but the reader must assume that it is the patient's home. The author then proceeds to cover the field of rectal and bowel pathology and the treatment thereof.

It is inconceivable that Dr. Cantor would wish to create the impression that it is feasible or even possible to send a patient home after doing an extensive resection of the coccyx and sacrum for a rectal tumor or that it would be well to treat a patient anywhere except in a hospital for an extensive cellulitis and "phlegmon" of the pelvis, erysipelas, retrorectal or pelvic abscess or after the surgery incidental to an extensive perirectal fistula. Not only will the man with experience be confused upon reading these statements, but the beginner is apt to be led astray.

In the paragraphs on anatomy, the author's enthusiasm takes him beyond his subject and carries him into a discussion of pathology. The chapter on diagnosis is very sketchy and incomplete. Dr. Cantor has wisely included a chapter on Pediatric Proctology. This chapter is well done but it is certain that definite exceptions could be taken to some of the ideas expressed.

In the chapter on pruritus ani, the author is again carried away by his enthusiasm for the tattoo treatment accompanied by anal neurotomy. The chapter on the injection treatment of hemorrhoids is very well written and covers the subject in an excellent manner.

*Ambulatory Proctology* has a definite place in the library of the proctologist. It is not a book to be recommended to the beginner or to the general practitioner who occasionally treats rectal disease. W. B.

### AMERICAN STUDENT HEALTH ASSOCIATION

Dr. Mary Fisher DeKruif, for many years Director of Student Health, Wellesley College, Wellesley, Massachusetts, died on May 8, 1946.

Dr. Edgar Fauver, for many years Director of Physical Education and later University physician at Wesleyan University, Middletown, Connecticut, died on April 8 of this year.

Dr. Dana L. Farnsworth, Director of Student Health at Williams College, has been appointed to the post of Director of the Medical Department at Massachusetts Institute of Technology. His duties there start in September of this year.

Dr. Robert R. Snook has been appointed Director of the Student Health Service at Kansas State College, effective February 1, 1946, to succeed M. W. Husband, M.D., who resigned.





# The JOURNAL LANCET

Serves the *Medical Profession of*  
MINNESOTA, NORTH DAKOTA, SOUTH DAKOTA AND MONTANA

Official Journal of the American Student Health Assn., Great Northern Railway Surgeons' Assn., Minneapolis Academy of Medicine, Montana State Medical Assn., North Dakota Society of Obstetrics and Gynecology, North Dakota State Medical Assn., Northwestern Pediatric Society, Sioux Valley Medical Assn., South Dakota Public Health Assn., South Dakota State Medical Assn.

## ADVISORY COUNCIL

### North Dakota State Medical Assn.

Dr. A. E. Spear, *Pres.*  
Dr. Philip G. Arzt, *Pres.-Elect*  
Dr. L. W. Larson, *Secy.*  
Dr. W. W. Wood, *Treas.*

### North Dakota Society of Obstetrics and Gynecology

Dr. E. H. Boerth, *Pres.*  
Dr. Paul Freise, *Vice Pres.*  
Dr. G. Wilson Hunter, *Secy.-Treas.*

### Minneapolis Academy of Medicine

Dr. Karl W. Anderson, *President*  
Dr. Russell W. Morse, *Vice Pres.*  
Dr. J. C. Miller, *Secretary*  
Dr. Ragnvald S. Ylvisaker, *Treasurer*  
Dr. Henry E. Hoffert, *Recorder*

### South Dakota State Medical Assn.

Dr. F. S. Howe, *Pres.*  
Dr. H. R. Brown, *Pres.-Elect*  
Dr. J. L. Calene, *Vice-Pres.*  
Dr. Roland G. Mayer, *Secy.-Treas.*

### South Dakota Public Health Assn.

Dr. J. M. Butler, *Pres.*  
Dr. C. E. Sherwood, *Vice Pres.*  
Dr. Gilbert Cottam, *Secy.-Treas.*

### Sioux Valley Medical Assn.

Dr. D. S. Baughman, *Pres.*  
Dr. Will Donahoe, *Vice Pres.*  
Dr. R. H. McBride, *Secy.*  
Dr. Frank Winkler, *Treas.*

### Montana State Medical Assn.

Dr. S. A. Cooney, *Pres.*  
Dr. M. A. Shillington, *Pres.-Elect*  
Dr. R. F. Peterson, *Secy.-Treas.*

### Northwestern Pediatric Society

Dr. G. B. Logan, *Pres.*  
Dr. Geo. Kimmel, *Vice Pres.*  
Dr. Northrop Beach, *Secy.-Treas.*

### Great Northern Railway Surgeons' Assn.

Dr. W. W. Taylor, *Pres.*  
Dr. R. C. Webb, *Secy.-Treas.*

### American Student Health Assn.

Dr. Ralph I. Canuteson, *Pres.*  
Dr. Glenadine Snow, *Vice Pres.*  
Dr. G. T. Blydenburgh, *Secy.-Treas.*

## BOARD OF EDITORS

DR. J. A. MYERS, *Chairman*

Dr. J. O. Arnson  
Dr. A. B. Baker  
Dr. D. S. Baughman  
Dr. Ruth E. Boynton  
Dr. Gilbert Cottam  
Dr. H. S. Diehl  
Dr. L. G. Duntlap  
Dr. Ralph V. Ellis  
Dr. W. A. Fansler

Dr. A. R. Foss  
Dr. James M. Hayes  
Dr. A. E. Hedback  
Dr. E. D. Hitchcock  
Dr. R. E. Jernstrom  
Dr. A. Karsted  
Dr. L. W. Larson  
Dr. W. H. Long  
Dr. O. J. Mabee

Dr. J. C. McKinley  
Dr. Irvine McQuarrie  
Dr. Henry E. Michelson  
Dr. C. H. Nelson  
Dr. N. J. Nessa  
Dr. Martin Nordland  
Dr. J. C. Ohlmacher  
Dr. K. A. Phelps  
Dr. C. E. Sherwood

Dr. M. A. Shillington  
Dr. J. C. Shirley  
Dr. E. Lee Shrader  
Dr. E. J. Simons  
Dr. J. H. Simons  
Dr. S. A. Slater  
Dr. W. P. Smith  
Dr. S. E. Sweitzer

Dr. W. H. Thompson  
Dr. E. L. Tuohy  
Dr. M. B. Visscher  
Dr. O. H. Wangensteen  
Dr. S. Marx White  
Dr. H. M. N. Wynne  
Dr. Thomas Ziskin,  
*Secretary*

LANCET PUBLISHING CO., *Publishers*, 84 South Tenth Street, Minneapolis 2, Minnesota

MINNEAPOLIS, MINNESOTA, JULY, 1946

## STRENUOUS HOLIDAYS

Americans as a whole are an aggressive people. Whether it is a "hangover" from the necessities of our pioneer struggles for existence during the early days of this country we do not know, but certain it is that the tempo continues in high gear in spite of our present condition of comparative opulence.

In other countries when a train reaches its destination and comes to a stop at the station, that's when the passengers get up and walk out. With us, you may have noticed, they begin to huddle at the end of the coach as soon as the city limits are discernible from a distance. We are so eager to be fast, big and first. A motor race is of no interest unless a previous record is smashed and a life or two sensationally sacrificed in the attempt. It would seem equally appropriate that many of our modern entertainments should begin as in days of old with the gladiator's "We who are about to die, salute you." Men of different nationalities were asked to write some-

thing about the elephant. The German wrote a scientific dissertation of six volumes on the biology of the elephant. The Frenchman wrote about the elephant's love life. The Englishman wrote on hunting the elephant. The American wrote on how to grow bigger and better elephants.

Before fireworks were outlawed in these parts, every Fourth of July celebration had to be bigger and better than the preceding one, and in consequence each was more destructive to many unfortunate participants. The prediction was made by the National Safety Council from the Chicago headquarters that there would be 130,000 casualties from the celebration of the Independence Day this year. We have every reason to assume that they will turn out to be bigger but not better. The elimination of fireworks alone cannot stop the carnage. Let us hope that the safety council may be successful in directing the holiday spirit of the future into paths of saner celebration.

A. E. H.

## VACCINATION AND TUBERCULOSIS

Recently in some parts of the country the lay press presented statements concerning promise afforded by BCG in the control of tuberculosis. Probably this will result in large numbers of persons making inquiries from their physicians concerning vaccination against tuberculosis. BCG (bacillus Calmette-Guerin) is a living bovine type of tubercle bacillus which Calmette planted on ox-bile-potato medium in 1908. By 1921 this strain had been transplanted 230 times, and was thought to have become so avirulent that it would not produce progressive tuberculous lesions in the tissues of animals or humans. However, this organism still liberated tuberculo-protein and so sensitized the tissues as to cause characteristic reactions to tuberculin.

BCG was first administered to cattle by Calmette and Guerin in 1913. When the experiment was concluded, three of the control and two of the vaccinated animals had developed tuberculosis of clinical significance. In due time the United States Bureau of Animal Industry conducted experimental work with BCG on a large scale and under well controlled conditions on the cattle of America. By 1931 two of the Bureau's expert scientific workers reported that every vaccinated, as well as every control animal, contracted tuberculosis in each of three experiments. There was very slight, if any, difference in the character and extent of the tuberculous lesions in favor of the vaccinated animals over the controls. They said: "These results corroborate the Bureau's previously published findings and demonstrate that the use of BCG does not prevent animals from contracting tuberculosis when exposed and that lesions, once established, do not tend to resolve."

Special committees on tuberculosis of the American Veterinary Medical Association and the United States Livestock Sanitary Association issued reports in 1931, similar to those of the Bureau of Animal Industry. In 1934 Watson, of Ottawa, Canada, summarized the results of his ten years of experimental work with BCG among cattle, which showed that the incidence of tuberculosis in the aggregate was exactly the same in the vaccinated and unvaccinated animals. The lesions of the vaccinated cattle showed a marked tendency toward caseo-purulent and exudative processes with appreciably less fibrosis than in the unvaccinated group. Dr. W. P. Larson, Chief of the Department of Bacteriology of the University of Minnesota, conducted a large experiment on cattle and reported in 1929 that BCG has no value whatsoever in controlling tuberculosis among cattle. One of America's most famous veterinarians, Van Es, pointed out that BCG did not appear to be the solution of the tuberculosis problem among animals. He said that all of the various methods of vaccination proposed are of European origin, and to a large extent these many efforts and continued search for an immunization method reflect the desperate nature of the tuberculosis situation in western Europe.

Thus, in Canada and the United States extensive experimental work was done among cattle where the results could be determined at will by postmortem examination,

and they were such that BCG was completely discredited and discarded. The vaccine was not only proved to be of no value but served as a definite deterrent in controlling tuberculosis among cattle because it rendered useless the tuberculin test, the most valuable weapon in tuberculosis control among cattle.

After discarding BCG, the veterinarians of Canada and the United States continued with the fundamental procedures which they had previously found so effective, namely, identifying all animals that react to tuberculin and eliminating them from the herds so as to prevent contagious cases from developing. This was so effective that in November 1940 the entire United States was accredited with reference to tuberculosis among cattle.

Soon after Calmette's original experiment with BCG among cattle, he and his followers began introducing these living tubercle bacilli into the bodies of infants and children. In the human body it is impossible to determine the efficaciousness of any immunizing procedure with such promptness and accuracy as can be done in animals. Thus theory and speculation are likely to run rampant and the actual facts are not established until forty or more years after the veterinarians draw their final conclusions. Moreover, the period of childhood is an extremely fruitless age to study the effects of an immunizing agent against tuberculosis. This period of life is notorious for its low incidence of clinical tuberculosis, with the exception of the first year or so when acute reinfection forms, such as meningitis, pneumonia and miliary disease, cause considerable destruction wherever there is a great deal of exposure to adults who have contagious disease.

Since 1922 more than two million children, as well as some adults, have had BCG administered. This transpired mostly in Europe, Africa and Asia, and only to a small degree in the western hemisphere. To date the reports have been extremely confusing. Some of them have shown encouraging results, while others have presented nothing to show any benefit whatsoever resulting from BCG. It has been disheartening to find that in every sizeable group vaccinated with BCG there has been illness and death from tuberculosis. More depressing than this, however, is the fact that of all the studies that have been conducted in different parts of the world to date, not one has been adequately controlled. Any benefit that might appear to have occurred among those vaccinated can usually be explained on the basis of such factors as protection against exposure to contagious cases, while the controls were not so protected.

If BCG were as efficacious in controlling tuberculosis among humans as all physicians would desire it to be, certainly nearly a quarter of a century of trial would not have left the medical profession in a state of confusion. Probably the two most carefully conducted studies on BCG have been carried out in the United States, one in New York and the other among Indians. These studies were reported in national journals in June 1946, and the results are almost diametrically opposed. For example, the observations among Indians are somewhat favorable; whereas, in the New York study there was no significant difference in the subsequent development



of tuberculosis among the vaccinated and the unvaccinated.

Of the large number of reports on BCG among humans since 1922, the most that can be said of any is that it is slightly encouraging. There is not a single report in the literature of the world that has demonstrated its efficacy in an overwhelming manner. There is not a community or a political division in the world having used BCG, that can show accomplishments which in any sense of the word approach those in large areas of the United States where fundamental control procedures have been practiced.

Probably few persons would object to further experiments with BCG in small human groups where tuberculosis is rife and fundamental control measures are not possible. However, to advocate its universal use at this time would be to experiment on our public, to confuse our workers, and delay the ultimate control of the disease by at least half a century. J. A. M.

### SOUTH DAKOTA FORGES AHEAD

Donald Horace Slaughter, M.D., has been selected and has accepted the appointment as Dean of the School of Medicine in the University of South Dakota at Vermillion. Doctor Slaughter has an excellent record, not only as a teacher and research worker but as an outstanding administrator. He was born in 1905, graduated from the State University of Iowa College of Medicine in 1929 and has occupied important teaching and administrative positions since then in Baylor University College of Medicine, later Dean of Students, Southwestern Medical College, Dallas, Texas. He was secured for South Dakota and accepted by the President and the Board of Regents largely through the efforts of J. C. Ohlmacher, M.D., the retiring dean, who has known Doctor Slaughter over a period of years and has watched the growth of his career throughout that time with intimate interest and is convinced that Doctor Slaughter is just the type of man that is needed to develop a good four-year medical school in South Dakota. For his part, Doctor Slaughter is well aware of the difficulties which he will encounter in this development, but is willing to accept the challenge because he is thoroughly "sold" on the belief that South Dakota needs and can have a good four-year school.

Doctor Ohlmacher will remain as head of the department of pathology, Director of the State Health Laboratory and Dean Emeritus. He will continue as head of the department of pathology until he is assured that it will be turned over to competent hands and shall have reached that stage of development which he considers essential. His attitude toward the new arrangement is well set forth in the statement which he made to Governor Sharpe and the Board of Regents at the time President Weeks and he talked to the group on the need for the development of a four-year school. As part of the general written statement which he made at that time Doctor Ohlmacher included the following:

"It is suggested that at the earliest opportunity, the services of a comparatively young, vigorous, well-trained medical dean be procured to assist in the organization

of clinical instruction, including the development of an adequate faculty. I shall continue to do all I can toward the consummation of our objective, the development of an accreditable four-year school, but the many activities and responsibilities which have been imposed on me, my age, and other factors dictate the necessity of injecting new blood into the administration of the School's affairs in this critical period of its development, and of relieving me of considerable of the responsibility I am now carrying. I shall continue to do all I can for the School so long as health permits and so long as I may be permitted to remain identified with its interests and the interests of the University of which it forms a part."

The advantages of the arrangement just outlined are too obvious to justify extended discussion. Not only will the School be benefited by the addition of the appointment but all the valuable experience and intimate knowledge which have accrued through the years of Doctor Ohlmacher's connection will be retained. The outlook for the success of the school is most promising.

G. C.

## News Items

### NEWS FROM SOUTH DAKOTA

The 65th Annual Session of the South Dakota State Medical Association was held in Aberdeen, June 1-4. This being the first postwar meeting, it was dedicated to the physicians of South Dakota who served in the Armed Forces. Authorization was made for a committee on prepaid medical care to draw up a plan of voluntary health insurance subject to the approval of the councillors and the membership. Also authorized was the adoption of a plan whereby veterans with service disabilities can obtain medical care from private physicians at government expense. Other states in this region which have adopted the plan include Minnesota, Michigan, and Iowa.

Redfield was selected as the site for next year's convention. Newly elected officers and councillors are: Dr. F. S. Howe, Deadwood, president; Dr. H. R. Brown, Watertown, president-elect; Dr. J. L. Calene, Aberdeen, vice president; Dr. R. G. Mayer, Aberdeen, secretary-treasurer. Dr. C. E. Robbin, Pierre, was renamed chairman of the council. Councillors elected are: Dr. A. W. Spiry, Mobridge, 11th district; Dr. R. Quinn, Burke, 10th, and re-elected; Dr. R. E. Jernstrom, Rapid City, 9th district, and Dr. D. A. Gregory, Milbank, 12th.

Sunday's meeting heard reports of more than 200 committees, and addresses by Dr. E. C. Andreassen, assistant medical director of the Veterans Administration of Minneapolis, Dr. W. Duncan, Webster, Dr. F. S. Howe, Deadwood, and Dr. F. E. Clough, formerly of Mitchell, now practicing in San Bernardino, California.

The following scientific program was presented on Monday: "Office Practice of Gynecology," Dr. L. Lang, Minneapolis, clinical assistant professor of obstetrics and gynecology at the University of Minnesota; "Complica-

tions in Bilateral Congenital Polycystic Disease of the Kidney," Dr. T. P. Grauer, Chicago, associate professor of urology, Northwestern University; "Importance of Some Remedial Aspects of Heart Disease," Dr. N. C. Gilbert, Chicago, professor of medicine, Northwestern University; "Pathology of the Retinopathy of Chronic Glomerulonephritis and Hypertension," Dr. W. Camp, assistant professor of ophthalmology, University of Minnesota; "Acute Cholecystitis," Dr. A. Ochsner, New Orleans, director of the department of surgery, Tulane University; "Bulbar Type Acute Poliomyelitis—Diagnosis and Treatment," Dr. J. H. Murphy, FAAP, Omaha, associate professor of pediatrics, Creighton University; "Clinical Aspects of Chemotherapy," Dr. W. H. Hall, clinical instructor in medicine at the University of Minnesota; "A Report on the Activities of the Council," Dr. A. W. Adson, Mayo Clinic, member of the council on Medical Service and Public Relations.

Tuesday's scientific program consisted of the following addresses: "Surgical Considerations," Dr. A. Ochsner, New Orleans; "Gross and Microscopic Pathology," Dr. J. R. McDonald, head of the surgical pathology section of the Mayo Clinic; "Therapeutic Radiology," Dr. H. H. Browning of the therapeutic radiology section of Mayo Clinic; "Purpose and Methods of the American Cancer Society," Dr. A. W. Oughterson, New York, medical and scientific director of the American Cancer Society; Public Health and Organized Medicine," Dr. A. B. Price, Kansas City, senior surgeon, USPHS district office; "Psychosomatic Medicine," Dr. G. R. Kamman, St. Paul, assistant clinical professor of nervous and mental diseases, University of Minnesota; "Modern Concepts of Hypertension," Dr. K. G. Kohlstaedt, Indianapolis, director of Lilly Laboratory for Clinical Research, Indianapolis City Hospital; "Management of Breech Delivery," Dr. L. A. Lang, Minneapolis. X-ray films were discussed by Dr. N. J. Nessa of Sioux Falls, and Dr. P. V. McCarthy of Aberdeen.

.....

The Woman's Auxiliary to the South Dakota State Medical Association held their annual state meeting in Aberdeen, June 1-4. Dr. G. Cottam, Pierre, Superintendent of the State Board of Health, spoke on the Wagner-Murray-Dingell Bill.

.....

Doctors from surrounding territories are invited to participate in the ward rounds which are made every Saturday at 9 A.M. at Sioux Valley Hospital, Sioux Falls, and at 10 A.M. at McKennan Hospital, Sioux Falls.

## NEWS FROM MONTANA

Dr. J. L. Mondloch of Butte was reappointed Silver Bow county physician and secretary of the board of health for the fiscal year 1946-47, at a special meeting of the board of county commissioners on May 24.

Dr. Charles P. Brooke, who served four years with the army medical corps, both in this country and overseas, has taken over the practice of Dr. George Armour, for twenty-three years resident physician in St. Ignatius.

## NEWS FROM NORTH DAKOTA

The North Dakota Academy of Ophthalmology and Otolaryngology held its annual meeting at Bismarck, May 28. Dr. H. L. Bair of Rochester, Minnesota, addressed the society on "Newer Therapeutic Measures in Ophthalmology," and Dr. M. T. Lampert of Minot, North Dakota, on "Glaucoma, its Mechanism."

The following officers were elected: Dr. E. D. Perrin of Bismarck, president; Dr. H. L. Reichert of Dickinson, vice president, and Dr. M. T. Lampert of Minot, secretary for the year 1946-47.

The next meeting will be held in Minot.

## DEATHS

DR. NORMAN E. ANDERSON, 65, of Harmony, Minnesota, died June 12 from a heart attack. Dr. Anderson, who had practiced for 40 years at Harmony, was born at LaCrosse, Wisconsin, March 16, 1881.

## Classified Advertisements

### LOCATION FOR PHYSICIAN

Armour, good county seat town in prosperous community in southeastern South Dakota. No physician in entire county. Good office quarters, which have previously been occupied by a physician, are available for immediate occupancy. Address reply to J. A. Liddiard, Sec. Armour Commercial Club, Armour, South Dakota.

### ASSISTANT WANTED

Wanted by well established surgeon in suburb of Twin Cities, an assistant interested in general practice and internal medicine. Excellent opportunity for an adaptable individual. Address Box 843, care of this office.

### PRACTICE FOR SALE

Active general practice in town of 550 north central Minnesota, with house-office combination completely modern, grossing \$15,000.00 yearly. Excellent hospital facilities nearby. Prefer sale house-office cash or terms. Purchase of drugs and equipment optional. Address Box 833, care of this office.

### PHYSICIAN AND SURGEON WANTED

Cooperstown North Dakota invites inquiry concerning location open to good physician and surgeon. Prospect of new thirty bed hospital in near future. Only two doctors in county. For details write, Carl Lingby, Secy. Commercial Club, Cooperstown, No. Dak.

### X-RAY PRACTICE

Exceptional opportunity for X-ray man to establish himself in town of 4200 population; 10,000 in county; no other X-ray machine in town or county. Small investment, on percentage basis. Wiring all in, dark-room ready; rent free to him. Needed badly. For details address Box 842, care of this office.

### FOR SALE

Used equipment in excellent condition, consisting of portable X-ray unit with dark room equipment, Castle sterilizer, automatic thermostatic and humidity control infant incubator, operating table, instrument cabinet and table, metal basin and intravenous stand, and suction pressure portable tonsil machine. For information please contact Dr. R. A. Benke, Kalispell, Montana.



**no bribe,  
no wheedle,  
no threat**



BURROUGHS WELLCOME & CO.  
(U.S.A.) INC.  
9 & 11 EAST 41ST ST.  
NEW YORK 17

The many youngsters who require the appetite-stimulating impetus of the vitamin B complex will take 'Ryzamin-B' No. 2 without bribe, threat, or coaxing. They love—and ask for—this flavorsome, honey-like preparation—as a spread with jam or peanut butter, dissolved in milk, fruit juice or other beverage, or directly from its special measuring spoon. 'Ryzamin-B' No. 2 caters to the finicky palate of young and old.

'Ryzamin-B' No. 2 is a concentrate of oryza sativa (American rice) polishings. Its rich natural vitamin B is enhanced with pure crystalline B factors.

*Only three grams daily provide: Vitamin B<sub>1</sub> (Thiamine Hydrochloride) 3 mgm. (1,000 U.S.P. Units); Vitamin B<sub>2</sub> (Riboflavin) 2 mgm.; Nicotinamide 20 mgm. and other factors of the B complex. Gram measuring spoon with each packing... Tubes of 2 oz. and bottles of 8 oz.*

**'Ryzamin-B'** BRAND

RICE POLISHINGS CONCENTRATE

**No. 2**

WITH ADDED THIAMINE HYDROCHLORIDE,  
RIBOFLAVIN AND NICOTINAMIDE

'Ryzamin-B' registered trademark.

#### ASSISTANCE AVAILABLE

Aznoe's, established in 1896, has available a number of well trained physicians (diplomates of the specialty boards, industrial physicians and surgeons, general practitioners, psychiatrists, tuberculosis specialists and residents). For histories write Ann Woodward, Aznoe's-Woodward Medical Personnel Bureau, 30 North Michigan Ave., Chicago 2, Illinois.

#### SEELERT CELEBRATES SILVER JUBILEE

The Seelert Orthopedic Appliance Company is celebrating its 25th year of business this month. They have recently moved their offices and salesroom to 18 North 8th Street, where larger and more modern quarters are available. Mr. Seelert announced that the firm intends to resume the manufacture of artificial limbs, with plans for production to start about July 15th.

### ALADDIN HEARING AID

Made especially for those who find difficulty in wearing ordinary hearing aids because of accompanying clothes and cord rubbing scratch. The patented *noise eliminator* is the only means yet found to actually bring *noise-free hearing*.

#### SUNDELL ALADDIN COMPANY

123 Baker Arcade  
Minneapolis 2 Minnesota

INVESTIGATE

## LOTIO ALSULFA and TERSUS

#### *In the Treatment of ACNE*

Lotio Alsulfa is of emollient, creamy consistency, dries quickly and adheres to the skin. The sulfur, being in the colloidal form, is highly dispersed and therapeutically active. Lotio Alsulfa, having a Ph 5.5, corresponds to the normal acid coat of the skin.

The Tersus is an acid reacting detergent. Its cleansing property is due to its emulsifying action, removing thereby excessive oily excretion of the skin.

*Samples and literature on request.*

**DOAK CO., INC.**  
CLEVELAND, OHIO

#### IN THE VOMITING OF PREGNANCY

or that occurring as a result of a neurosis or reflexly from relapsed kidney or uterine misplacement

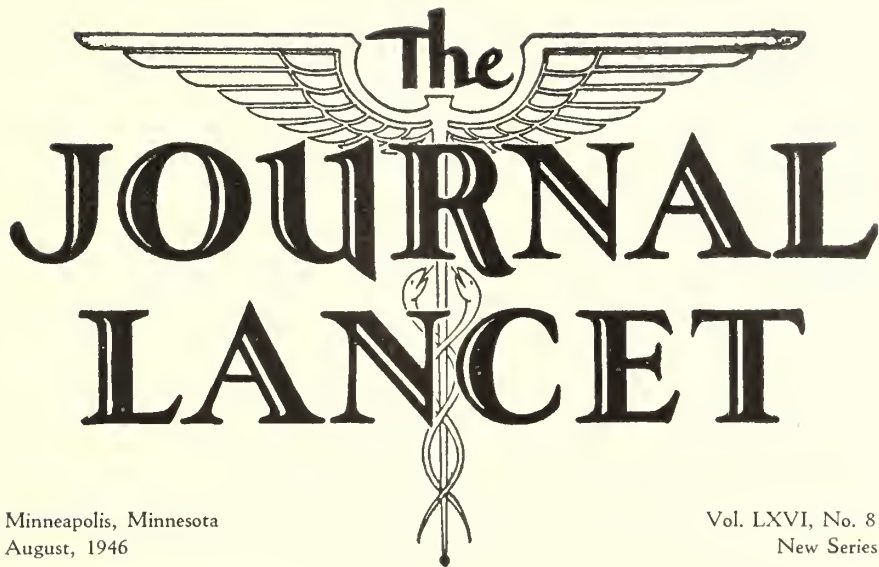
# PASADYNE

will be found highly efficient by reason of its marked sedative powers. Reflex phenomena are a definite indication for PASADYNE.

JOHN B. DANIEL, INC.

ATLANTA, GA.





# The JOURNAL LANCET

Minneapolis, Minnesota  
August, 1946

Vol. LXVI, No. 8  
New Series

## Spontaneous Rupture of a Hydronephrotic Kidney *Report of a Case*

Roland G. Scherer, M.D., F.A.C.S.\*  
Bozeman, Montana

and

John K. Odegard, M.D.†  
San Francisco, California

IN reviewing the literature on renal injuries, one is impressed by the exceedingly rare occurrence of such injuries presented as emergencies. Lazarus found an incidence of 0.05–0.09 per cent of renal injuries of all types, basing his figures on 45,500 admissions to the surgical divisions of three great clinics. Stirling believes "The relative occurrence of all kidney trauma is approximately one in one thousand accidents."

It thus becomes evident that any renal injury arising from no attributable trauma, direct or indirect, is extremely rare.

The term "spontaneous rupture" is perhaps a misleading one because in no instance of the cases reviewed is the spontaneity definitely established. "Spontaneous rupture" *per se* should occur at a moment of absolute rest and in an otherwise normal kidney. In all the cases reviewed the rupture occurred during periods of relative inactivity, but in every instance the kidney involved was found to be diseased. The diseases involved were many and varied and included tuberculosis, abscess, tumor, necrosis of the suprarenal, hemophilia, chronic nephritis, hydronephrosis, infarct, renal arteriosclerosis, with cystic degeneration, and periarteritis nodosa.

Of most importance and particularly applicable to those cases of spontaneous rupture occurring in the second and third decades is hydronephrosis secondary to

ureteral obstruction either due to calculus or aberrant renal vessels as in Henline's series. In these one may visualize quite readily a greatly distended, thin walled kidney which suddenly, and from no apparent cause, ruptures. The precipitating factor or factors in these cases may be so obscure and unimportant as to be disregarded or forgotten by the patient. Increased hydraulic pressure, muscular action and indeed the pressure exerted on the kidney by merely lying quietly in bed have been advanced as factors contributing to the rupture. Player reported a case of rupture which occurred while the patient was crawling through an open window, the injury being caused by simply rolling over the window ledge.

The diagnosis of these injuries which do not involve the parenchyma or large vessels is exceedingly difficult. It is quite apparent that rupture of the kidney pelvis may occur proximal to an obstruction in the ureter which will result in the escape of urine but no blood or at best with only intermittent bleeding. These may go on to form large peri-nephric abscesses with extravasation of urine in the supra-pubic region, scrotum and perineum as reported by Henline. Kretschmer states that "a history of injury, no matter how slight, and the presence of blood in the urine, would seem to be *prima facie* evidence of direct kidney damage." Cohn believes that cystoscopy at the onset is contraindicated but will give useful information later. Certainly a preliminary "scout" flat film of the abdomen followed by excretory pyelog-

\*Consultant in Urology, Fort Harrison Veterans Hospital.

†Written while in the Army as Major, Acting Chief, Surgical Service, Fort Harrison, Montana.

raphy are invaluable aids to diagnosis. The decision as to whether to use cystoscopy may well be left to the judgment of the surgeon. Its use is indicated in borderline cases to determine the function of both the involved and uninvolved kidneys.

Conservatism is the treatment of choice and will suffice in approximately 90 per cent of kidney injuries. Expectantly one gives purely supportive care consisting of fluids by mouth or vein, sedation, narcotics to relieve pain and absolute bed rest until the urine is free of blood. One is impressed by the fact as pointed out by Cohn that a severely injured kidney left *in situ* will undergo atrophy and calcification. Mucharinskij, in his experiment on dogs, found that not only did such atrophy and calcification occur, but that in over one half of his animals interstitial changes were observed in the uninjured kidney commencing with the third week.

Cohn believes that the indication for early operation is "severe uncontrollable primary or early secondary hemorrhage, extravasation of urine, or symptoms of peritonitis due to injury of the peritoneum with the escape of blood and urine into the abdominal cavity." Secondary hemorrhage, suppuration in the perirenal space and infection of the kidney are later indications for surgery according to Kretschmer.

The following case is presented because of its apparent spontaneity and because it represents one of those cases which demanded immediate surgical intervention as a lifesaving measure.

L. G., white, aged 23, ex-serviceman employed as laborer by the Highway Commission, was admitted to the surgical service late on January 8, 1946, via ambulance from an outlying community. He had been in excellent health until midnight, January 5, at which time he began to have a slight pain in his left flank shortly after retiring. The pain was persistent and of a dull aching character which gradually increased in intensity, radiating forward and down toward the bladder region and the middle of the abdomen. On January 6 he noticed that his urine was "coffee colored." He was seen on January 7 by his family physician who made a diagnosis of "kidney stone" and kept him in bed. However, the pain persisted and the urine remained "coffee colored." He was transferred to the hospital by ambulance late on January 8.

His health had been excellent and he had suffered no wound or injuries during his service. Family history was non-contributory. He gave a history of having had two similar attacks during his Army service which were of very short duration (30 minutes to 2 hours) but in neither attack did he notice any blood in his urine nor were they of such severity as to require hospitalization. The last attack prior to the present one was six months before admission. Nausea or vomiting was not a feature of the present attack nor of the two previous episodes. The pain in the left flank was accentuated by movement, coughing, or straining. There was frequency of urination and some tendency to polyuria. There was no history of injury past or present. Pain in left flank and bloody urine were the complaints on admission.

Physical examination: Height 5 feet 11 inches; weight 165 pounds; eyes blue; hair dark brown. Blood pressure 122/70, temperature 100, pulse rate 92. The patient was a very well developed, well nourished, 23-year-old white male who appeared acutely ill and complained of severe pain in his left flank which appeared to be persistent. EENT—negative except for excessive dryness of lips and mucous membranes of the tongue and mouth. Chest—clear to auscultation and percussion. Heart—negative. Abdomen—symmetrical. Slight to moderate distention which appeared to be diffuse. There was an area of erythema on the left flank secondary to the use of a hot water bottle before his admission. There appeared to be some fulness in the left flank which was acutely tender to palpation. Abdomen was soft with no rigidity or guarding. There was no evidence of trauma. Hernia—none. Hydrocele or varicocele—none. Extremities—negative.

He was placed in a semi-Fowler's position, fluids in the form of 10 per cent dextrose in distilled water were given intravenously and pain controlled by narcotics. He was immediately typed and transfused twice before operation, once during surgery and once after operation.

The urine was a deep claret color grossly. Reaction—acid. Specific gravity—1.028. Albumin—4 plus, sugar—negative, mucus, casts, epithelia, cylindroids—none. W.B.C.—few, R.B.C.—packed. Blood count on admission: R.B.C.—3,940,000; W.B.C.—27,450 (polymorphonuclear—93 per cent [4 stabs], lymphocytes—7 per cent). Hemoglobin—13.3 grams (88.6 per cent); color index—1.13; sedimentation rate—25; bleeding time—2 minutes 45 seconds; coagulation time—6 minutes. Blood urea nitrogen—13.08.

X-ray examination of the chest revealed no deviation from the normal in the pulmonary or cardiac shadows. A flat plate of the abdomen revealed the large intestine and a portion of the distal small intestine to be markedly distended with gas which was not significant of obstruction. Detail was obscured in both kidney areas but the right psoas muscle was well outlined and the left not demonstrable. On the left there was an increase in soft tissue density over the kidney area. No opacities suggesting urinary lithiasis were noted right or left. Excretory pyelography revealed good function on the right and practically no function on the left. In the left kidney area large markedly dilated calices were faintly outlined in a large faintly visible kidney mass. Neither pelvis nor ureter on the left was visualized. Bladder shadow appeared normal.

The patient was seen in consultation at 6 P.M., January 9, at which time it was noted that the dullness in the left flank did not shift when the patient was turned on his right side, indicating definitely an extraperitoneal mass. Cystoscopy was believed contraindicated by the patient's condition. In view of the apparent uncontrollable hemorrhage manifested by a rapidly increasing pulse rate, a decreased red blood count in spite of two transfusions, each of 500 citrated blood, the administration of fluids, and the good function of the right kidney, it was felt that immediate surgery, most probably nephrectomy, was imperative. Preoperative diagnosis: Rup-



tured kidney with severe hemorrhage; probably a multilocular non-functioning kidney.

Under spinal anesthesia a classical left lumbar incision was made. The thin perirenal capsule of Gerota was distended with organized hematoma. On exposure the kidney capsule had a dark hemorrhagic color and was markedly distended, the kidney being approximately four times the size of a normal kidney. Active bleeding from the kidney was encountered. As it was impossible to determine the source of this bleeding, and as the cortex of the kidney felt very thin, nephrectomy was decided upon. Because of a short pedicle, the kidney could not be delivered into the wound. Two large clamps were therefore placed on the pedicle of the kidney superiorly and inferiorly and the organ removed. The ureter was ligated and bleeding controlled. The pedicle was ligated with chromic catgut and a portion of the large redundant pelvis, which had been cut across, was removed. The wound was closed in layers over a Penrose drain. Immediate postoperative condition was excellent, the patient having received intravenous fluids and transfusion of whole blood during the operation.

The patient made an uneventful recovery and three months later had gained ten pounds over his initial admission weight. The wound was well healed with no evidence of hernia and the urine was negative.



Pathological description: "Specimen submitted measures approximately 15x9x9 cm. Immediately postoperatively it is collapsed but apparently had been distended with bloody fluid. Careful examination of the pelvis and upper ureter reveals no calcification which would account for the marked dilatation of the pelvis. The dilatation ceases abruptly at the ureteropelvic junction in a manner suggesting the presence, *in vivo*, of an aberrant vessel as the obstructing agent. The capsule is hemorrhagic in appearance. The cortex and medullary substance are markedly thin, measuring approximately .5 cm. The calyces, infundibula and pelves are markedly distended and have the appearance of diverticuli. The mucosa is partly smooth and partly covered with small hemorrhagic nodules. Hemorrhage is apparent beneath the mucosa

and in the kidney substance. The hemorrhage appears to have origin in an area just beneath the mucosa proximal to one of the enlarged calices. It would appear that a rent through the mucosa and into the submucosal renal parenchyma avulsed and ruptured a renal vein. The etiology of the rent is probably an acute exacerbation of the hydronephrotic obstruction. There is no evidence of neoplasm and no marked evidence of inflammation. There is no interruption of the capsule of the kidney and no external findings which would suggest trauma."

During the patient's hospital stay, a further attempt was made to discover a history of injury however remote but he was unable to recall having suffered any either during service or as a civilian.

#### SUMMARY

1. A case is presented of spontaneous rupture of a hydronephrosis secondary to ureteral obstruction, most probably due to an aberrant renal vessel.

2. Rupture occurred while patient was lying quietly in bed and resulted in uncontrollable hemorrhage.

3. Diagnosis was made by examination, excretory pyelography and confirmed at operation and pathological examination of the specimen.

4. Excretory pyelography was especially useful in diagnosis and also in determining the function of the uninvolved kidney.

5. Early recognition and immediate nephrectomy was life-saving in this case.

#### BIBLIOGRAPHY

- Amberger: Spontaneous Rupture of Right Kidney. *Ztschr. f. Urol., Berl. & Leipz.*, 20: 561-63, 1926; Abs.: *J.A.M.A.*, 87: 1251, 1926.
- Beatty, Ralph P.: Hydronephrosis—Spontaneous Rupture. *Pennsylvania Med. Journal*, 38: 806-7, 1935.
- Cohn, Sidney: Subcutaneous Injury of the Kidney. *Internat. J. Med. & Surg.*, 40: 318-20, 1927.
- Connell, F. Gregory: Simple Subparietal Rupture of the Kidney. *Surg., Gynec. & Obst.*, 663-666, (June) 1916.
- Dodge, George E.: Subcutaneous Rupture of the Kidney. *Floyd, E., and Pittman, J. L.: Spontaneous Rupture of a Kidney Due to an Encysted Calculus; Report of a Case. J.A.M.A.*, 97: 98, 99, (July) 1931.
- Freshman, E.: Extravasation of Urine Following Spontaneous Rupture of the Ureteropelvic Junction. *Brit. J. Urol.*, 267-70, (Sept.) 1935.
- Henline, R. B.: Spontaneous Rupture of a Kidney; Report of a Case. *J.A.M.A.*, 83: 1411-14, (Nov.) 1924.
- Keefer, Chester S.: Spontaneous Perirenal Hematoma. *J. Mt. Sinai Hosp.*, 8: 682-691, (Jan.-Feb.) 1942.
- Larks, George: Spontaneous Rupture of a Hydronephrosis. *Brit. J. Surg.*, 29: 354-356, (Jan.) 1942.
- Lazarus, J. A.: Subcutaneous Rupture of a Kidney with Special Reference to Spontaneous Rupture. *Urol. & Cutan. Rev.*, 38: 77-84, (Feb.) 1934.
- Mathe, C. P., and Oviedo, G. F.: Spontaneous Rupture of Hydronephrotic Sac Secondary to Ureteral Stone. *Calif. & West. Med.*, 26: 790-795 (June) 1927.
- Olson, Carl: Spontaneous Hydronephrosis in the Dog, with Osteoid Tissue in the Renal Pelvis. *J. Amer. Veterinary M.A.*, 87: 74-80, (July) 1935.
- Reschke, K.: Rupture of Kidney in Hydronephrosis, *Deutsche Ztschr. f. Chir., Leipz.*, 185: 137-142; Abs. *J.A.M.A.*, 82:2092, 1924.
- Salvin, Arthur A.: Spontaneous Rupture of a Hydronephrotic Kidney Secondary to Calculus Obstruction of Ureter. *Am. J. Surg.*, 41: 288-292, (Aug.) 1938.
- Truesdale, Philemon E.: Injury to the Kidney Without an Open Wound. *Boston M. & Surg.*, (March 17) 1927.

## Serology and Obstetrics II

R. T. La Vake, M.D.

Minneapolis, Minnesota

OBSTETRICIANS who have come to insist upon a routine knowledge of the blood group and Rh status of husband and wife, as well as the Wassermann status, have not been activated by an exaggerated idea of the frequency with which the findings will play an important role. These findings may all be obtained from the one drawing of blood and engender a feeling of reasoned security or preparedness. This routine permits the building up of potential sources of Rh negative blood of every group, which can be used in case of need, in the interests of mother or child.

From an obstetrical standpoint, the patterns of individual blood findings would seem to be the evolutionary genetic results, in whatever inscrutable developmental direction the species is moving, which furnish a mother with a complement of inherited antitoxic substances against the eventuality that she may, according to laws enunciated by Mendel, engender a child containing ancestral substances poisonous to her. When such an eventuality occurs, a toxin antitoxin battle ensues between fetus and mother. The outcome depends upon the relative toxicity of the fetal substance, whether it can gain access to the maternal blood stream through a faulty protective placental barrier in sufficient quantities to do harm, whether the mother is sufficiently protected by inherited antitoxic substances, and, if not, the capacity of her cells to manufacture specific antitoxins. If the mother responds with too strong an antitoxin, the child may be injured or killed.

This is a reason why the O group mother is endowed with the A and B antitoxins, the A group mother with the B antitoxin, and the B group mother with the A antitoxin. To the AB group mother neither the A or the B substance is toxic because she possesses them by inheritance. The Rh negative mother is not protected by inherited antitoxins. An explanation of this fact, drawn from the findings of ontogeny, is that the Rh substance likely entered the species early enough to become inheritable, but too recently for its specific antitoxin to become inheritable. According to Kemp, the A and B substance become demonstrable in the fetus about the 37th day of gestation, yet the fetus' own complement of inherited antibodies or antitoxins does not appear until after birth. From an ontogenic standpoint it would seem that it takes about eight times longer for an intraspecies antitoxin to become inheritable than for a substance or toxin to become inheritable. In considering blood setups, we must remember that we are viewing only an infinitesimal segment in the whole evolutionary line of the species. Many substances may have been bred in and out of the species before the

advent of the A and B and the Rh substances, and from irregular agglutination phenomena today, it is likely that we have not yet reached the limit of the possible substances that now exist, with or without their specific inherited antitoxins.

If, by analyzing the blood setups of husband and wife, one can be quite certain from genetic laws that the child cannot inherit a substance toxic to the mother, one can likewise be quite sure that pregnancy toxemia with associated anemias, premature separation of the normally implanted placenta, or any fetal pathology attributable to toxin antitoxin reaction will not be encountered. Also the chances of spontaneous abortion are much reduced, even in the presence of severe general infection in the mother. This knowledge is helpful in many ways, especially in differential diagnosis. When this ideal setup does not occur, it is possible to estimate the chances that the infant may inherit the mother's blood setup.

Whether or not any manifestations of toxemia occur, the titrating of antibodies will allow one to predict, with fair accuracy, the blood status of the child. The prediction depends on the appearance or increase of Rh antibody titer as regards the Rh substance, and as regards the A and B substances, a significant rise above normal limits of the specific inherited antibody. For example, in an O mother, with an A husband, and the accession of toxemia, such a rise will be found in the A antibody or antitoxin, and the child will prove to be an A group child. Should the A antitoxin titer remain around 1-1000 until the child is born, with the mother evincing manifestations of mounting toxemia, then the rapidity of the recession of the manifestations will vary directly with the rise in the antitoxin titer in the mother at the birth of the child. Separation of the child and placenta has brought about a lowering of toxic insult, and has withdrawn the antitoxin absorptive power of the child. In consequence, the antitoxin accumulates and rises in titer. It is best to take the postpartum titer on the fifth day when it is likely to be at its peak. The antitoxin titer may rise from a few to one hundred or many hundred times its antepartum strength, with a rapidity of recession of toxic manifestations proportional to its rise.

Such findings make us hark back to the clinical work of James Young in 1914 when he stressed the necessity of removing all placental detritus after delivery in toxemias. The toxin antitoxin findings explain the basis of the clinical observations that led to attributing pregnancy toxemia to placental changes. Obviously, the placenta is the firing line of the toxin antitoxin battle and should show some outstanding results.

Since the time of Veit, in 1902, it has been known that villi can break off. If this occurs, the suggestion that a blood spill may occur is logical. These breaks, or even weaknesses, allowing direct antibody attack are likely sealed by what are designated as placental infarcts.

\*This is a follow-up of an article by the same author under the same title in the January 1946 JOURNAL-LANCET.

Read at the May 4, 1946, meeting of the Minnesota Society of Obstetrics and Gynecology, Minneapolis, Minnesota.



Clinical evidence would suggest that these infarcts can operate to the advantage or disadvantage of fetus and mother, according to the time elapsing between their formation and the spontaneous or operative separation of the child from the mother.

These findings give ample evidence of the reasons for success in the past following the separation of the fetus from the mother before permanent or lethal damage was sustained by the mother or the child.

By developing antitoxin in a convenient form we should have at our command at least three specific antitoxins to use in postpartum eclampsia or in the mitigation of further toxic insult after the birth of the child. The exact type of antitoxin necessary can be determined and sought long before its use is required, in most instances. At present, we would be limited to the use of compatible blood from a woman who has just recovered from the same type of pregnancy toxemia or erythroblastotic disaster, and whose antibody is of high titer.

If one is following an antibody titer, he may see the titer with the accession of a maternal infection jump to many times its preinfection level and remain at this higher level until the infection is over. These findings would tend to corroborate the stand, based upon clinical observations alone, that it is wise, from a prophylactic standpoint, to clear up focal infections, such as pyelitis, etc., and caution pregnant women against general infections. Should infection occur, the physician must visualize the increased likelihood of gross infarction with the increased tendency towards abortion or death of the fetus and the accession of toxemia when the infarcts begin to hemolyze. When infection exists, it lessens one's anxiety to know that the expectant mother is carrying a fetus which should not be toxic to her according to serologic data.

As regards the use of blood therapeutically, by transfusion and even by intramuscular injection, it is quite true that before the discovery of the Rh factor by Landsteiner and Wiener, we achieved safety in transfusion by the use of careful grouping and crossmatching, especially the latter. The major consideration is ascertaining that the recipient's blood contains no antibodies, known or unknown, which will agglutinate the cells of the donor. The work of Wiener and Peters, and others, showing the possibility of iso-immunization and subsequent danger of repeated transfusion with the blood of the original donor, and the danger of iso-immunization from pregnancy and its possible effects on the fetus shown by Levine, Katzin, and Burnham, have increased our responsibilities as regards giving transfusions to women.

If a woman is pregnant, or gives a history of having had either a pregnancy or a transfusion, one must consider the Rh setup in her blood, and exercise special care in crossmatching before transfusion. In addition one must recognize the risk of iso-immunizing an Rh negative woman by giving her Rh positive blood. After iso-immunization, she may never be able to bear healthy or viable children by the same, or any other Rh positive male unless he bears heterozygous Rh genes that permit her having an Rh negative child. There is no intention of exaggerating the chances that iso-immunization will

result, or the possibility that the woman's chances of bearing healthy and viable children will be ruined. But, if one has had any experience with erythroblastotic or kindred disasters, he will take his responsibilities, in regard to the Rh factor and transfusion, seriously. The use of transfusion has increased, and, in the interests of diminished morbidity and mortality, its use has not reached the saturation point. But when one sees the Rh factor disregarded in females below the age of menopause, one cannot but fear a marked increase in erythroblastotic and kindred disasters. It is well to emphasize that our serologists have found that transfusion is ten times more likely to iso-immunize a woman than is a pregnancy.

Serologic data in obstetrics would seem to indicate that we should look upon a blood containing the A, B, or Rh substance or substances not inherited by the recipient as basically toxic. Toxic action is most clearly demonstrable in pregnancy toxemia, where it has had a long time to develop and is not obscured by red cell agglutination and red cell detritus, and also in some cases of delayed transfusion deaths. In rapid transfusion deaths, the toxic effect has not been given time to make itself evident or is totally obscured by red cell agglutination and red cell detritus.

This viewpoint, if correct, would make it seem advisable to use nontoxic blood in transfusing infants in the early months of life. The statement is made that any type blood can be used because the danger of agglutination is absent due to weak antibodies. The same has been said also of the intramuscular injection of blood where the danger of agglutination can be avoided. However, definite pathological reactions have been reported following the intramuscular injection of blood. It would seem likely that such phenomena are due to a toxin and not to any agglutinative phenomena.

The attempt has been made to outline the practical as well as the theoretical inferences and conclusions that have been drawn from data as they appear from one viewpoint. These data must withstand the test of corroboration which only time and extensive investigation can furnish. If individual conditions of practice are such that the use of serology is impossible, the following suggestion may be useful: just as one can usually recognize the beginning of pregnancy toxemia by the simple office observation of blood pressure, urine, edema and weight, so one can usually anticipate the possibility of future serious erythroblastotic injury by the routine hemoglobin estimation of newborns. A child with a hemoglobin of 100 or under should be watched carefully and placed in an environment where transfusion is possible. Its parents should have their group and Rh status determined before another pregnancy occurs. As all know, erythroblastotic disaster does not always occur in the first few pregnancies. In one case, a mother bore seven healthy children, followed by erythroblastotic deaths in the eighth and ninth pregnancies. In another, on the other hand, the first two pregnancies resulted in erythroblastotic disasters.

Granted that one knows the group and Rh status of husband and wife and is prepared to test for the acces-

sion or rising strength of antibodies, it seems to be the consensus that it is not expedient to interfere until after the first fetal disaster. Even if a woman does show a mounting titer she may deliver a child that shows no sign of injury or can be saved by transfusion, but which might die from immaturity if separated prematurely. If after one disaster, or a history of a previous erythro-

blastotic disaster, the antibody previously at fault appears or increases in titer, indicating another toxic fetus, the consensus directs separate treatment for the child when it has reached the age of viability. Appropriate donors should be ready for transfusion treatment. The chances of success are much reduced if the Rh antibody is of the blocked variety.

## MEET OUR CONTRIBUTORS

DR. ROLAND G. SCHERER, Bozeman, Montana, has practiced there since 1936. He is a graduate of the University of Minnesota, M.B., 1926, M.D., 1927, and was a Fellow of the Mayo Foundation from 1931 to 1935. His specialty is Urology. He is Chief of Surgery at the Bozeman Deaconess Hospital, consultant in Urology at the Fort Harrison Veterans Hospital, and a member of the Gallatin County Medical Society, Montana State Medical Association, American Medical Association, North Central Urological Association, and a Fellow of the American College of Surgeons.

DR. RAE THORNTON LA VAKE, well-known Minneapolis obstetrician, is a frequent and valued contributor to JOURNAL LANCET.

## Book Reviews

**Home Study Course in Social Hygiene Guidance.** Six chapters by ROY E. DICKERSON, and nine pamphlets by DR. PAUL POPENOE. Los Angeles: American Institute of Family Relations, 1944. \$2.00.

This course consists of six booklets prepared for the American Institute of Family Relations by Roy E. Dickerson and nine pamphlets by Dr. Paul Popenoe. The course is intended primarily for parents but would be helpful to teachers and doctors, in fact anyone interested in the education and guidance of children and youth. The six lessons are: (1) Parental preparation for training the child; (2) The questions children ask or do not ask; (3) Preparing the child for adolescence; (4) Emotional health in adolescence; (5) Some problems in adolescence; (6) Looking ahead to marriage. Helpful suggestions are given about additional books and pamphlets for those readers who desire a fuller treatment of various topics.

Throughout the course Dr. Dickerson emphasizes the parents' responsibility in the education of children and the importance of guidance being based on true, scientific facts and sound, wholesome attitudes. Both Popenoe and Dickerson repeatedly emphasize the necessity of any good teacher of children, whether at home, at school, in church, or in an office, being a happy, well adjusted, emotionally mature person. Preparation for marriage begins in infancy and continues into marriage itself. Sex education is not a subject separate and apart but is intimately tied up with all of life and should be planned within a family in an intergrated manner. The course not only gives help in answering specific questions and imparting factual information concerning sex, but in developing wholesome attitudes toward human relations in general and sexual relations in particular. This excellent series of pamphlets would undoubtedly have more popular appeal if the print were larger and if more attention had been paid to eye appeal. But those seeking sound guidance will not be deterred by such a minor flaw.

K. R.

**Medical Clinics of North America, Mayo Clinic Number, July, 1946.** Philadelphia: W. B. Saunders Co.  
**Surgical Clinics of North America, Mayo Clinic Number, August, 1946.** Philadelphia: W. B. Saunders Co.

The contents of these two forthcoming books are listed here for the information of the many who have been eagerly awaiting their publication.

The July issue contains: Differential Diagnosis of Splenomegaly of Adults, by Dr. Malcolm M. Hargraves; Roentgen Therapy for Leukemia, by Drs. Walter C. Popp and Charles H. Watkins; Treatment of Headache, by Drs. Bayard T. Horton and Dorothy Macy, Jr.; Problem of Blackout and Unconsciousness in Aviators, by Drs. Edward H. Lambert and Earl H. Wood; Clinical Use of Thiouracil, by Drs. Samuel F. Haines and F. Raymond Keating, Jr.; Clinical Administration of Streptomycin, by Drs. H. Corwin Hinshaw and Wallace E. Herrell; Nonsurgical Management of Bronchiectasis, by Dr. Arthur M. Olsen; Thiocyanates in Treatment of Hypertensive Disease, by Dr. Edgar A. Hines, Jr.; Abuse of Sedative Drugs in Practice of Medicine, by Dr. Frederick P. Moersch; Penicillin in Treatment of Syphilis, by Dr. Paul A. O'Leary; Value of Gastroscopy in Diagnosis of Gastric Disease, by Dr. Herman J. Moersch; Medical Problems in Cases of Acute Abdominal Pain, by Dr. J. M. Stickney; Use of the Newer Sulfonamides and Antibiotics in Intestinal Diseases, by Dr. J. Arnold Barger; Use of Various Kinds of Insulin, by Dr. Randall G. Sprague; An Appraisal of Radium Therapy, by Dr. Robert E. Fricke; Chancroid of the Uterine Cervix, by Dr. Lois A. Day; Habitual Abortion, by Dr. Arthur B. Hunt.

The August issue contains a Symposium on Pain in the Shoulder and Arm with an introduction by Dr. H. Herman Young and includes the following articles on the subject: Role of Thoracic Disease in Production of Arm Pain, by Dr. Arthur M. Olsen; Arm Pain Due to Heart Disease, by Dr. Harry L. Smith; Pain in the Upper Extremity Caused by Peripheral Vascular Disease, by Dr. Nelson W. Barker; Neurologic Causes of Pain in Upper Extremities; with Particular Reference to Syndromes of Protruded Intervertebral Disk in Cervical Region and Mechanical Compression of the Brachial Plexus, by Dr. L. M. Eaton; Orthopedic Aspects of Pain in Shoulder and Arm, by Dr. H. Herman Young. The remaining section is entitled Clinics on Other Subjects and includes: Cranioplasty with Tantalum Plate in Postwar Period, by Dr. George S. Baker; Problems of Facial Prosthesis, by Dr. Arthur H. Bulbulian; Malignant Tumors of the Scalp, by Dr. Frederick A. Figi; Malignant Lymphocytic Tumors of Orbit, by Drs. William L. Benedict and Theodore G. Martens; Selection of Patients for Fenestration Operation for Otosclerosis, by Dr. Henry L. Williams; Skin Grafting Methods and Their Indications, by Drs. Gordon B. New and Kenneth D. Devine; Some Technical Aspects of Surgery of Thyroid Gland, by Drs. John deJ. Pemberton and B. Marden Black; Complications and Treatment of Bronchial Adenomas, by Drs. O. Theron Clagett and John H. Payne; Total Gastrectomy: Report of a Patient Surviving for Eight Years, by Dr. James F. Weir; Resection of the Head of Pancreas and Duodenum: Operative Technic, by Dr. John M. Waugh; Total and Subtotal Colectomy with Review of Seventy-Two Cases, by Dr. Claude F. Dixon and Raymond E. Benson; Remarks Concerning Malignant Lesions, Polypoid Disease and Diverticula of Terminal Portion of Large Intestine, by Dr. Louis A. Buie; Proctologic Diagnosis, by Dr. Newton D. Smith; Protruded Intervertebral Disk, by Dr. J. Grafton Love; Further Observations on Treatment of Carcinoma of Prostate by Bilateral Orchestomy, by Drs. Laurence F. Greene and John L. Emmett; Indications for Complete Abdominal Hysterectomy, by Dr. Virgil S. Counseller.



# Transactions of the South Dakota State Medical Association

Sixty-Fifth Annual Session  
Aberdeen, South Dakota  
June 1-4, 1946

## OFFICERS, 1946-47

|                                |       |             |
|--------------------------------|-------|-------------|
| PRESIDENT                      |       |             |
| F. S. HOWE, M.D.               | ..... | Deadwood    |
| PRESIDENT-ELECT                |       |             |
| H. R. BROWN, M.D.              | ..... | Watertown   |
| VICE PRESIDENT                 |       |             |
| J. L. CALENE, M.D.             | ..... | Aberdeen    |
| SECRETARY-TREASURER            |       |             |
| R. G. MAYER, M.D.              | ..... | Aberdeen    |
| EXECUTIVE SECRETARY            |       |             |
| MR. JOHN C. FOSTER             | ..... | Sioux Falls |
| DELEGATE TO A. M. A.           |       |             |
| WILLIAM DUNCAN, M.D.           | ..... | Webster     |
| ALTERNATE DELEGATE TO A. M. A. |       |             |
| H. R. BROWN, M.D.              | ..... | Watertown   |
| CHAIRMAN COUNCIL               |       |             |
| C. E. ROBBINS, M.D.            | ..... | Pierre      |

## COUNCILORS

|                              |       |             |
|------------------------------|-------|-------------|
| FIRST DISTRICT               |       |             |
| J. L. CALENE, M.D. (1947)    | ..... | Aberdeen    |
| SECOND DISTRICT              |       |             |
| M. W. LARSEN, M.D. (1947)    | ..... | Watertown   |
| THIRD DISTRICT               |       |             |
| G. E. WHITSON, M.D. (1948)   | ..... | Madison     |
| FOURTH DISTRICT              |       |             |
| C. E. ROBBINS, M.D. (1947)   | ..... | Pierre      |
| FIFTH DISTRICT               |       |             |
| W. H. SAXTON, M.D. (1948)    | ..... | Huron       |
| SIXTH DISTRICT               |       |             |
| J. H. LLOYD, M.D. (1948)     | ..... | Mitchell    |
| SEVENTH DISTRICT             |       |             |
| L. J. PANKOW, M.D. (1948)    | ..... | Sioux Falls |
| EIGHTH DISTRICT              |       |             |
| E. M. STANSBURY, M.D. (1947) | ..... | Vermillion  |
| NINTH DISTRICT               |       |             |
| R. E. JERNSTROM, M.D. (1949) | ..... | Rapid City  |
| TENTH DISTRICT               |       |             |
| R. J. QUINN, M.D. (1949)     | ..... | Burke       |
| ELEVENTH DISTRICT            |       |             |
| A. W. SPIRY, M.D. (1949)     | ..... | Mobridge    |
| TWELFTH DISTRICT             |       |             |
| D. A. GREGORY, M.D. (1949)   | ..... | Milbank     |
| COUNCILOR AT LARGE           |       |             |
| WILLIAM DUNCAN, M.D. (1947)  | ..... | Webster     |

## STANDING COMMITTEES

|                                 |       |             |
|---------------------------------|-------|-------------|
| SCIENTIFIC WORK                 |       |             |
| F. S. HOWE, M.D.                | ..... | Deadwood    |
| H. R. BROWN, M.D.               | ..... | Watertown   |
| R. G. MAYER, M.D.               | ..... | Aberdeen    |
| PUBLIC POLICY AND LEGISLATION   |       |             |
| F. S. HOWE, M.D.                | ..... | Deadwood    |
| H. R. BROWN, M.D.               | ..... | Watertown   |
| THE COUNCIL                     |       |             |
| PUBLICATIONS                    |       |             |
| R. G. MAYER, M.D.               | ..... | Aberdeen    |
| THE COUNCIL                     |       |             |
| MEDICAL DEFENSE                 |       |             |
| G. W. MILLS, M.D. (1947)        | ..... | Wall        |
| W. G. RIEB, M.D. (1948)         | ..... | Parkston    |
| C. J. McDONALD, M.D. (1949)     | ..... | Sioux Falls |
| MEDICAL EDUCATION AND HOSPITALS |       |             |
| GEOFFREY COTTAM, M.D. (1947)    | ..... | Sioux Falls |
| J. L. CALENE, M.D. (1948)       | ..... | Aberdeen    |
| T. F. RIGGS, M.D. (1949)        | ..... | Pierre      |

## MEDICAL ECONOMICS

|                             |       |            |
|-----------------------------|-------|------------|
| W. A. DAWLEY, M.D. (1947)   | ..... | Rapid City |
| M. W. LARSEN, M.D. (1948)   | ..... | Watertown  |
| M. W. PANGBURN, M.D. (1949) | ..... | Miller     |

## PUBLIC HEALTH

|                                                                    |       |             |
|--------------------------------------------------------------------|-------|-------------|
| A. TRIOLO, M.D. (General Chairman)                                 | ..... | Pierre      |
| <i>Sub-committee on Cancer</i>                                     |       |             |
| O. S. RANDALL, M.D. (1948)                                         | ..... | Watertown   |
| GILBERT COTTAM, M.D. (1947)                                        | ..... | Pierre      |
| H. E. DAVIDSON, M.D. (1949)                                        | ..... | Lead        |
| <i>Sub-committee on Tuberculosis</i>                               |       |             |
| W. L. MEYER, M.D. (1949)                                           | ..... | Sanator     |
| D. S. BAUGHMAN, M.D. (1948)                                        | ..... | Madison     |
| E. M. STANSBURY, M.D. (1947)                                       | ..... | Vermillion  |
| <i>Sub-committee on Mental Hygiene and Child Welfare</i>           |       |             |
| F. W. HAAS, M.D. (1947)                                            | ..... | Yankton     |
| J. D. BAILEY, M.D. (1948)                                          | ..... | Rapid City  |
| G. ZIMMERMAN, M.D. (1949)                                          | ..... | Sioux Falls |
| <i>Sub-committee on Syphilis Control Program, U.S.P.H. Service</i> |       |             |
| GILBERT COTTAM, M.D. (1949)                                        | ..... | Pierre      |
| F. J. TOBIN, M.D. (1947)                                           | ..... | Mitchell    |
| ANTON HYDEN, M.D. (1948)                                           | ..... | Sioux Falls |

## NECROLOGY

|                             |       |           |
|-----------------------------|-------|-----------|
| MAGNI DAVIDSON, M.D. (1947) | ..... | Brookings |
| W. G. MAGEE, M.D. (1948)    | ..... | Watertown |
| R. A. WEBER, M.D. (1949)    | ..... | Mitchell  |

## MEDICAL BENEVOLENCE

|                             |       |             |
|-----------------------------|-------|-------------|
| C. E. SHERWOOD, M.D. (1947) | ..... | Madison     |
| G. A. STEVENS, M.D. (1948)  | ..... | Sioux Falls |
| J. C. SHIRLEY, M.D. (1949)  | ..... | Huron       |

## SPECIAL COMMITTEES

### RADIO BROADCAST

|                       |       |             |
|-----------------------|-------|-------------|
| R. E. JERNSTROM, M.D. | ..... | Rapid City  |
| S. M. HOFF, M.D.      | ..... | Yankton     |
| L. J. PANKOW, M.D.    | ..... | Sioux Falls |

### EDITORIAL

|                       |       |            |
|-----------------------|-------|------------|
| D. S. BAUGHMAN, M.D.  | ..... | Madison    |
| J. C. SHIRLEY, M.D.   | ..... | Huron      |
| J. C. OHLMACHER, M.D. | ..... | Vermillion |
| C. E. SHERWOOD, M.D.  | ..... | Madison    |
| GILBERT COTTAM, M.D.  | ..... | Pierre     |
| WM. DUNCAN, M.D.      | ..... | Webster    |
| F. S. HOWE, M.D.      | ..... | Deadwood   |
| R. G. MAYER, M.D.     | ..... | Aberdeen   |

### MEDICAL LICENSURE

|                      |       |           |
|----------------------|-------|-----------|
| LYLE HARE, M.D.      | ..... | Spearfish |
| J. D. ALWAY, M.D.    | ..... | Aberdeen  |
| GILBERT COTTAM, M.D. | ..... | Pierre    |

### ADVISORY TO WOMEN'S AUXILIARY

|                      |       |         |
|----------------------|-------|---------|
| C. E. SHERWOOD, M.D. | ..... | Madison |
| WM. SAXTON, M.D.     | ..... | Huron   |
| C. E. ROBBINS, M.D.  | ..... | Pierre  |

### ALLIED GROUPS

|                       |       |             |
|-----------------------|-------|-------------|
| F. C. TOTTEN, M.D.    | ..... | Lemmon      |
| R. A. WEBER, M.D.     | ..... | Mitchell    |
| J. A. KITTLESON, M.D. | ..... | Sioux Falls |

### MILITARY AFFAIRS

|                        |       |            |
|------------------------|-------|------------|
| H. E. DAVIDSON, M.D.   | ..... | Lead       |
| I. L. SCHUCHARDT, M.D. | ..... | Aberdeen   |
| A. A. LAMPERT, M.D.    | ..... | Rapid City |

### RADIOLOGY

|                      |       |             |
|----------------------|-------|-------------|
| N. J. NESSA, M.D.    | ..... | Sioux Falls |
| P. V. McCARTHY, M.D. | ..... | Aberdeen    |
| J. H. LLOYD, M.D.    | ..... | Mitchell    |

| SPAFFORD MEMORIAL FUND<br>FOR SCHOLARSHIP AT UNIVERSITY OF SOUTH DAKOTA |             |
|-------------------------------------------------------------------------|-------------|
| J. C. OHLMACHER, M.D.                                                   | Vermillion  |
| MEDICAL SERVICE AND PUBLIC RELATIONS                                    |             |
| G. E. WHITSON, M.D.                                                     | Madison     |
| N. J. NESSA, M.D.                                                       | Sioux Falls |
| WM. SAXTON, M.D.                                                        | Huron       |
| PREPAYMENT AND INSURANCE PLANS                                          |             |
| H. R. BROWN, M.D.                                                       | Watertown   |
| C. E. ROBBINS, M.D.                                                     | Pierre      |
| R. E. JERNSTROM, M.D.                                                   | Rapid City  |
| R. G. MAYER, M.D.                                                       | Aberdeen    |
| C. E. SHERWOOD, M.D.                                                    | Madison     |
| WM. DUNCAN, M.D.                                                        | Webster     |
| COMMITTEE ON UNIVERSITY OF SOUTH DAKOTA<br>FOUR-YEAR MEDICAL SCHOOL     |             |
| C. E. ROBBINS, M.D.                                                     | Pierre      |
| D. S. BAUGHMAN, M.D.                                                    | Madison     |
| F. S. HOWE, M.D.                                                        | Deadwood    |
| NATIONAL LEGISLATION                                                    |             |
| F. S. HOWE, M.D.                                                        | Deadwood    |
| R. G. MAYER, M.D.                                                       | Aberdeen    |
| H. R. BROWN, M.D.                                                       | Watertown   |
| C. E. ROBBINS, M.D.                                                     | Pierre      |
| J. L. CALENE, M.D.                                                      | Aberdeen    |
| RURAL MEDICAL SERVICE                                                   |             |
| A. P. PEEKE, M.D.                                                       | Volga       |
| C. M. KERSHNER, M.D.                                                    | Brookings   |
| M. M. MORRISSEY, M.D.                                                   | Pierre      |
| MILITARY SERVICE                                                        |             |
| FARIS PFISTER, M.D.                                                     | Webster     |
| L. W. TOBIN, M.D.                                                       | Mitchell    |
| STANLEY OWEN, M.D.                                                      | Rapid City  |
| FRANK E. BOYD, M.D.                                                     | Flandreau   |
| ANTON HYDEN, M.D.                                                       | Sioux Falls |
| M. W. PANGBURN, M.D.                                                    | Miller      |
| A. P. REDING, M.D.                                                      | Marion      |
| Advisory to State Board of Health<br>OPHTHALMOLOGY AND OTOLARYNGOLOGY   |             |
| H. D. NEWBY, M.D.                                                       | Rapid City  |
| C. M. KERSHNER, M.D.                                                    | Brookings   |
| O. J. MABEE, M.D.                                                       | Mitchell    |
| ORTHOPEDICS                                                             |             |
| G. E. VAN DEMARK, M.D.                                                  | Sioux Falls |
| OWEN KING, M.D.                                                         | Aberdeen    |
| W. H. KARLINS, M.D.                                                     | Webster     |
| SOCIAL SECURITY                                                         |             |
| N. WELLS STEWART, M.D.                                                  | Lead        |
| A. J. SMITH, M.D.                                                       | Yankton     |
| M. M. MORRISSEY, M.D.                                                   | Pierre      |
| MATERNAL AND CHILD WELFARE                                              |             |
| E. A. PITTENGER, M.D.                                                   | Aberdeen    |
| E. T. LIETZKE, M.D.                                                     | Beresford   |
| L. J. LERAAN, M.D.                                                      | Sioux Falls |
| INDUSTRIAL HEALTH                                                       |             |
| R. B. FLEEGER, M.D.                                                     | Lead        |
| R. J. JACKSON, M.D.                                                     | Rapid City  |
| R. W. MULLEN, M.D.                                                      | Sioux Falls |
| E. M. I. C.                                                             |             |
| R. E. JERNSTROM, M.D.                                                   | Rapid City  |
| A. P. PEEKE, M.D.                                                       | Volga       |
| C. E. LOWE, M.D.                                                        | Mobridge    |

### ANNUAL MEETING OF THE COUNCIL OF THE SOUTH DAKOTA STATE MEDICAL ASSOCIATION

#### First Session, Saturday, June 1, 1946

The first meeting of the council was held in the Alonzo Ward Hotel at 4 P.M., June 1, 1946, and was called to order by the Chairman, Dr. C. E. Robbins. On roll-call the following officers and councilors were present: President, Wm. Duncan, Webster; President-elect, F. S. Howe, Deadwood; Vice President, H. R. Brown, Watertown; Secretary-Treasurer, R. G. Mayer, Aberdeen; Delegate to A.M.A., N. J. Nessa, Sioux Falls; Councilors J. L. Calene, Aberdeen, First District; M. W. Larson, Watertown, Second District; G. E. Whitson, Madison, Third District; C. E. Robbins, Pierre, Fourth District; W. H.

Saxton, Huron, Fifth District; L. J. Pankow, Sioux Falls, Seventh District; E. M. Stansbury, Vermillion, Eighth District. Mr. Karl Goldsmith, Pierre, and Drs. Gilbert Cottam and A. Triolo, Pierre, of the State Board of Health, were also present.

Minutes of the previous meeting held at Huron April 14th were read and approved. Discussion of care of veterans by civilian physicians followed. The secretary read copies of the letter which he had sent to President Weeks and Dean Ohlmacher at the request of the council inviting Dr. Victor Johnson, Secretary of the Council on Medical Education and Hospitals of the A.M.A., to Vermillion to survey plans for the proposed Four-Year Medical School. President Weeks' reply together with a copy of a letter he had received from Dr. Fred C. Zapffe, Secretary of the Association of American Medical Colleges, was read, stating that it would be better to wait until plans had taken a more concrete form. Dr. Duncan read an editorial from the Educational Number of the *Journal* of the A.M.A. regarding new medical schools, and after considerable discussion a motion was made by L. J. Pankow, seconded by J. L. Calene, that a copy of Dr. Victor Johnson's letter to Dr. Duncan be sent to President Weeks with reiteration of the council's request for consideration of our previous letter. Dr. Stansbury moved that the motion made by Dr. Pankow be tabled and presented at a time when Dr. Ohlmacher was present. The motion was seconded by G. E. Whitson and was not carried. The previous motion by Dr. Pankow was carried.

The report of the Committee on Public Policy and Legislation was read by the chairman, Dr. Duncan, and a motion was made by Pankow, seconded by Whitson, and carried that the report be approved. The report of the Secretary-Treasurer was read and a motion was made by Pankow, seconded by Whitson, and carried that the report be accepted and referred to the Committee on Auditing and Appropriations. The chairman appointed G. E. Whitson, Madison; J. L. Calene, Aberdeen; and W. H. Saxton, Huron; to the Committee on Auditing and Appropriations. On motion the meeting adjourned to reconvene at 8 P.M.

#### Second Session, June 1, 1946

The meeting was called to order by the Chairman, Dr. C. E. Robbins, Pierre, and on roll-call the following officers and councilors were present: Drs. Wm. Duncan, F. S. Howe, H. R. Brown, R. G. Mayer, N. J. Nessa, J. L. Calene, G. E. Whitson, C. E. Robbins, W. H. Saxton, J. H. Lloyd, L. J. Pankow, E. M. Stansbury, R. E. Jernstrom.

Dr. Duncan introduced Mr. John F. Barker, Brookings, as a candidate for the position of executive secretary of the South Dakota State Medical Association. Mr. Barker talked to the group on his experience and ideas concerning the duties of an executive secretary and answered numerous questions. After Mr. Barker retired, Mr. John C. Foster, Detroit, Mich., another candidate for the position, was admitted and introduced and he discussed his qualifications and ideas regarding the position.

Dr. Stansbury reported on the attitude of the Yankton District Medical Society in regard to raising the dues, and also the plan for a contract with the Veterans Administration for care of veterans by civilian physicians. He stated they were opposed to the raising of dues because they felt that members would be lost. Dr. Brown said that the Watertown District voted unanimously in favor of the program and increased the dues to \$50.00. Dr. Howe reported that the Black Hills District was unanimously in favor of both the Veterans Program and raising of dues and they felt that if the executive secretary did a good job any members lost would be regained.

The report of the Committee on Publications was read by its chairman, R. G. Mayer. A motion was made by Brown, seconded by Howe, and carried that the report be adopted. On motion the meeting adjourned.

#### Third Session, June 4, 1946

The meeting was called to order by the Chairman, C. E. Robbins, and on roll-call the following were present: Drs. Duncan, Howe, Brown, Mayer, Nessa, Whitson, Robbins, Saxton, Lloyd, Pankow, Stansbury, Jernstrom.

After considerable discussion a motion was made by Stansbury, seconded by Duncan, and carried that the South Dakota State Medical Association employ Mr. John C. Foster as executive secretary. A motion was made by Pankow, seconded by Duncan and carried that the South Dakota State Medical Association enter into a contract with Mr. Foster for a period



of one year at an annual salary of \$3600, plus his necessary office and travel expenses at the rate of 5c per mile. A motion was made by Duncan, seconded by Brown, and carried that the office of the executive secretary be located in Sioux Falls. A motion was made by Duncan, seconded by Lloyd, and carried, that Drs. Pankow and Nessa be appointed to investigate office and housing space in Sioux Falls. A motion was made by Howe, seconded by Duncan, and carried, that Mr. Foster be employed as of July 1, 1946.

A motion was made by Brown, seconded by Howe, and carried, that Mr. Foster be contacted by telephone and asked to wire acceptance, a contract to be drawn up at his convenience. A motion was made by Duncan, seconded by Lloyd, and carried, that the council authorize Drs. Pankow and Nessa any expenses necessary in securing office and housing space for Mr. Foster.

A motion was made by Duncan, seconded by Brown, that Dr. Robbins be re-elected chairman of the council. A motion was made by Howe, seconded by Jernstrom, and carried, that nominations be closed and that a unanimous ballot be cast for Dr. Robbins. A motion was made by Lloyd, seconded by Stansbury, and carried, that R. G. Mayer be re-elected secretary-treasurer for three years. A motion was made by Howe, seconded by Stansbury, and carried that Dr. Duncan be authorized to express the appreciation of the council to Senator Chan Gurney for the work he has done to aid the medical profession by securing the release from military service of doctors from South Dakota. A motion was made by Pankow, seconded by Howe, and carried that the council express its appreciation to the South Dakota Senators and Representatives in Congress for their services to the medical profession. A motion was made by Pankow, seconded by Stansbury, and carried that the secretary-treasurer be allowed the sum of \$200 to cover expenses in attending meetings in the interest of the association during the past year.

A motion was made by Duncan, seconded by Stansbury, and carried that the president, president-elect and secretary-treasurer be empowered to work out details regarding the employment of Mr. Foster as executive secretary. A motion was made by Howe, seconded by Jernstrom and carried that a letter of appreciation be sent to Dr. Gilbert Cottam for the services rendered to the association by his secretary during the 1946 session.

After a brief discussion of plans for a meeting of the Committee on Prepayment and Insurance Plans a motion was made by Howe, seconded by Brown, and carried that the expenses of Mr. C. H. Crownhart, Secretary of the State Medical Society of Wisconsin, be paid to the committee meeting in Huron. On motion the meeting adjourned.

R. G. MAYER, M.D., Secretary

## REPORT OF THE PRESIDENT 1945-46

During the past year I attended meetings with the following district medical societies:

1st district at Aberdeen, 2nd district at Watertown, 3rd district at Volga, 6th district at Mitchell, 7th district at Sioux Falls, 8th district at Vermillion, 9th district at Rapid City and 12th district at Milbank.

Within the state I also attended the annual meeting of the South Dakota State Public Health Association and one meeting of the governor's State Health Committee at Mitchell.

Other meetings attended which directly concerned the business of our association were:

1. The annual North Central Conference last November in St. Paul. At that meeting I was elected president-elect of the conference.

2. A special meeting of the North Central Conference in Minneapolis to consider medical care of World War II veterans' service connected disabilities by a contractual agreement with the South Dakota State Medical Association.

There were several other important meetings to which I was invited, but was unable to attend. All of these were called by our national organization, the American Medical Association, and were held in Chicago. However, South Dakota was represented at all of these gatherings by other officers or committee chairmen, namely Doctor Brown, our vice president, Doctor Mayer, our secretary, and Doctor Peeke, chairman of the Committee on Rural Health.

In addition to attending these gatherings of the medical profession, I have discussed the subject of socialized medicine with several lay groups, including the Sioux Falls Rotary Club, through an invitation from my good friend and past president of our association, Doctor Nessa.

An invitation to speak on the same subject before the annual meeting of the state pharmacists was of necessity declined, but through the assistance of Doctor Pankow, an able speaker from Sioux Falls, Doctor J. A. Nelson, took care of this.

Through these contacts with lay groups, I have reached the conclusion that the people are interested in the subject of socialized medicine, but when our side of it is presented to them they want no part of it. Consequently it might be well to consider the formation of a speakers' bureau in order that a much greater part of the public could be reached in this way.

Throughout the past year I have endeavored to have the present status of the proposed four-year medical school at the University of South Dakota clarified, in order that this house of delegates of our state association would have some definite information wherewith to form an opinion of its chances for success or failure.

With regret, I must report that those in authority at the university have elected to proceed with their plans without seeking the advice of the American Medical Association council on medical education and hospitals. Consequently, on this important subject there is very little to offer except the enthusiasm of Doctors Weeks and Ohlmacher, which has apparently been inspired largely by Doctor Zapffe, secretary of the American Association of Medical Colleges.

In saying this, I am definitely *not* questioning the sincerity of purpose demonstrated by Doctors Weeks and Ohlmacher, but do feel that by this time they should have had at least a preliminary survey of their plans by the council which represents organized medicine in such matters.

Many years ago and for very good reasons, the American Medical Association established a council on medical education and hospitals. Its primary purpose at that time, and this has not changed as of today, was to establish minimum educational standards for medical schools, in order to protect the public from unqualified practitioners.

Through the years since then, they have demonstrated the sincerity of their purpose to such an extent that today there are only two states among our forty-eight which recognize for licensure graduates of a school which is not approved by this American Medical Association council.

Our state association is not only a subsidiary, but an integral part of the American Medical Association. Consequently as delegates to this meeting you definitely have the authority to, and the responsibility of, requesting an immediate investigation of this proposed four-year school by the designated authorities of the American Medical Association's council on medical education and hospitals.

At the several district meetings attended during this year, I have also tried to point out that our secretary's office is greatly in need of additional personnel, and that a full-time executive secretary should be a part of our organization.

In conclusion, and in support of this contention the following is quoted from the last News Letter issued by the American Medical Association's council on medical service and public relations issued May 24, 1946:

"Medical organizations throughout the country are getting back to normal *but that isn't enough.*

Many local medical societies which haven't had regular meetings since the war are getting back on schedule—*but that isn't enough.*

Spring is the usual season for many state and district medical meetings but the *usual meetings are not enough.*

Indeed nothing short of all-out, intense, well directed local medical organizations with active, functioning committees covering each key subject, working as they have never worked before, is going to be enough to accomplish what must be accomplished if American medicine is to meet the obligations placed on it and do the job outlined by the house of delegates, the board of trustees, the council on medical service and public relations and the other councils and bureaus of the American Medical Association."

WILLIAM DUNCAN, M.D.

**SECRETARY'S REPORT—1945-46**

The report of your secretary for the past year will be as brief as possible. As usual, the number of magazines and pamphlets, letters received and answered, ran well into the thousands. Mimeographed letters on various subjects were mailed to the members of the South Dakota State Medical Association during the year, and countless letters, telegrams and telephone calls were exchanged with officers, councilors, district secretaries, members, A.M.A. officers and committee-men, members of Congress, etc., regarding state medical association matters.

Seven medical conferences and meetings were attended. In October I attended the Public Relations Conference called by the Council on Medical Service and Public Relations of the A.M.A., which was held in Chicago. The following subjects were discussed at this conference: legislation, extension of EMIC program, public relations, placement of medical officers, prepaid medical care plans, rural health problems, activating 14 point constructive program of the A.M.A. for medical care, and Veterans Administration plans.

On Feb. 7, 1946, I attended a conference of secretaries and executive secretaries of state medical associations in Chicago called by Medical Exhibitors, Inc., which was very instructive regarding the planning of exhibits at state medical conventions. Many state medical conventions by properly organizing their exhibits pay all of their convention expenses from receipts for exhibit space.

On Feb. 8th and 9th I attended the annual conference of secretaries of state medical associations at Chicago, which was called by the A.M.A. National legislative matters, public relations, rural health problems, care of veterans, medical care prepayment plans, etc., were discussed. On Feb. 10th I attended the national conference on medical service at the Palmer House in Chicago. Among others who talked on various subjects were Mr. Cruikshank, director of the Committee on Health, A. F. of L., who spoke on "What Labor Expects from Medicine," telling how labor is solidly behind the Wagner Bill, and Mr. J. S. Jones, secretary of the Minnesota Farm Bureau Federation, who talked on "What the Farmer Expects from Medicine," stating that the Farm Bureau Federation is opposed to the Wagner Bill. On March 2nd I attended the county officers meeting of the Minnesota State Medical Association in Minneapolis. This was an interesting program to enlighten the officers of the county medical societies on various subjects, such as medical care prepayment plans, blood plasma program, care of veterans, public relations, etc. On March 3rd I attended the North Central Conference in Minneapolis called to discuss the plans of the Veterans Administration for the care of veterans by civilian physicians. South Dakota was also represented at this conference by Drs. Wm. Duncan, H. R. Brown and G. E. Whitson. And this past month I attended the annual convention of the Minnesota State Medical Association in St. Paul. My expenses to the Public Relations Conference in Chicago in October were the only expenses paid for by the State Medical Association.

The officers and council held two meetings in Huron, one on Jan. 27th and one on April 14th. I would like to make several suggestions for the consideration of the officers, councilors, committeemen and members of the association. First, I believe that the rank and file of the members of the South Dakota State Medical Association do not have enough authentic knowledge about what is going on in the state and nation regarding legislative matters, public relations, medical care plans and medical economic. As far as the national problems are concerned, this could be obviated partly if they would only read the editorials and comments and the organization section of the *Journal of the A.M.A.* every week. However, for the state problems, I would like to see a meeting of the district society officers, similar to the meeting which I attended in Minnesota. Incidentally, I also urge the secretaries of the component district societies to be more prompt in sending in their reports, and that their reports be complete, including list of officers and delegates, active or paid-up members, honorary members, members in the armed services, and non-members. It is very difficult to keep records up to date unless all of this information is sent in promptly.

And then I believe it would help if we had a state medical association bulletin published about once a month. News, editorials, comments and reports of committees could be included

which would be of interest to the physicians in South Dakota. I have no doubt that advertisements could be secured which would more than cover the cost involved. However, this could not be successful unless there would be cooperation and work by all those concerned. It could not be a one-man proposition.

And finally, I believe that our committees should function throughout the year and not wait until just before the Annual Convention to get together or write the various committeemen and then make a routine report.

Analyzing the list of medical practitioners in the state makes one feel that we should make more strenuous efforts to induce more physicians to come to South Dakota to practice. There are 353 physicians in active practice in the state. Of these 268 are active (paid-up) members of the South Dakota State Medical Association. Only 149 of the 353 are under 50 years of age, 204 being over 50, 113 being over 65. There are 82 chiropractors and 61 osteopaths practicing in South Dakota.

The following is the analysis of the active membership, showing comparison of last year's figures at convention time, the total membership attained by the close of 1945, and the 1946 figures, not including those in the armed services.

| District              | May 1945   | December 1945 | May 1946   |
|-----------------------|------------|---------------|------------|
| I. Aberdeen           | 28         | 32            | 33         |
| II. Watertown         | 18         | 18            | 20         |
| III. Madison          | 17         | 17            | 18         |
| IV. Pierre            | 15         | 15            | 14         |
| V. Huron              | 0          | 12            | 12         |
| VI. Mitchell          | 22         | 23            | 25         |
| VII. Sioux Falls      | 42         | 44            | 46         |
| VIII. Yankton         | 27         | 28            | 28         |
| IX. Black Hills       | 39         | 43            | 49         |
| X. Rosebud            | 4          | 4             | 4          |
| XI. Northwest         | 7          | 7             | 6          |
| XII. Whetstone Valley | 12         | 13            | 13         |
| <b>Totals</b>         | <b>231</b> | <b>256</b>    | <b>268</b> |

R. G. MAYER, Secretary

**TREASURER'S REPORT—1945-46**

**Checking Account**

|                               |                   |
|-------------------------------|-------------------|
| Balance on Hand, June 7, 1945 | \$3,632.43        |
| Receipts:                     |                   |
| Interest, U. S. Bond          | \$ 12.50          |
| 1945 Dues (22 members)        | 330.00            |
| 1946 Dues (267 members)       | 4,005.00          |
| 1946 Dues (part payment)      | 3.75              |
| <b>Total</b>                  | <b>4,351.25</b>   |
| <b>Total</b>                  | <b>\$7,983.68</b> |

**Disbursements:**

|                                  |                   |
|----------------------------------|-------------------|
| Legislative Fund                 | \$ 500.00         |
| JOURNAL LANCET                   | 708.00            |
| Benevolent Fund                  | 123.50            |
| Delegate Expenses A.M.A.         | 66.83             |
| Expenses Conference (Brown)      | 56.91             |
| Dues—Conf. Presidents            | 10.00             |
| Council Expenses                 | 286.10            |
| Karl Goldsmith, Retainer         | 300.00            |
| Secretary's Salary (11 mo.)      | 550.00            |
| Secretary's Travel Expenses      | 68.35             |
| Secretary's Office Expenses:     |                   |
| Bond                             | \$ 10.00          |
| Bank Charges                     | 3.43              |
| Soc. Sec. Tax                    | 6.00              |
| Postage                          | 4.10              |
| Telegrams                        | 16.90             |
| Stenographic Exp. and Mimeograph | 110.00            |
| Stationery, Cards                | 96.12             |
| Telephone (Duncan)               | 5.80              |
| <b>Total</b>                     | <b>252.35</b>     |
| <b>Total Disbursements</b>       | <b>\$2,922.04</b> |
| Balance on Hand, June 1, 1946    | 5,061.64          |
| <b>Total</b>                     | <b>\$7,983.68</b> |

R. G. MAYER, Treasurer



## A.M.A. DELEGATE'S REPORT TO THE COUNCIL 1944-45

The meeting was called to order, 10 A.M. Monday, December 1, 1945, at Palmer House Hotel, Chicago, Illinois. The roll call showed most members present.

The annual selection of recipient of Distinguished Service Award was voted to Dr. Minot of Boston for his work in pernicious anemia. Dr. Abt and Dr. Carlson of Chicago were close contenders.

The speakers address by Dr. Shoulders of Nashville, Tennessee, was well given and accepted and I am sure those of you who read his address will formulate a mental picture of our new president-elect.

The address by president Dr. Herman Kretschmer of Chicago, followed by the address of president-elect Roger Lee of Boston, were well accepted also and have since been published in *Journal A.M.A.*

The new officers for 1946 are as follows: President, Dr. Roger I. Lee of Boston, Massachusetts; president-elect, Dr. Harrison Shoulders of Nashville, Tennessee; vice president, Dr. William R. Mullovey of San Francisco; secretary, Dr. Olin West of Chicago; treasurer, Dr. J. J. Moore of Chicago; speaker, Dr. Roy Fouts, Omaha, Nebraska; vice speaker, Dr. F. F. Borzell of Philadelphia; editor, Dr. Morris Fishbein, Chicago, and business manager, Will C. Braun, Chicago.

Major General Hawley of Washington was present and delivered an address which was well accepted. He committed himself as definitely against social medicine. He has been in the army 30 years and has a good medical background inasmuch as his father and grandfather were doctors of medicine. He comes from Indiana.

The evening of the first day was devoted to installation of president-elect Lee and presentation of medal to retiring president Herman L. Kretschmer and also presentation of medal to Brigadier General Fred Rankin as representative of the Army Medical Service.

Many resolutions were introduced from the various states, pertaining to the pending health problems, with special reference to compulsory health matters as outlined in President Truman's recent public health program.

At long last, the A.M.A. House of Delegates has scrapped its traditional negative, view-with-alarm attitude and, at the recent Chicago session, formulated a positive, aggressive policy, boldly asserted the position of medicine and inspired new hopes for the future.

Without a dissenting vote, the house instructed the Board of Trustees and the Council on Medical Service and Public Relations to develop immediately "a specific national health program with emphasis upon the nation-wide organization of locally administered prepayment plans." Observers hailed this action as providing a constructive, definite program for American medicine, and as a reply to, and an alternative for, President Truman's recent proposals and the Wagner-Murray-Dingell and Pepper Bills. On every hand, it was regarded as the positive plan which many physicians have been urging for some years.

The National Physicians Commission has also recently become very active relative to the implications of the Wagner Bill and our president, Dr. Duncan, can bring us informative news on this subject.

There was again this year a resolution made by the California delegation to limit the functions of the editor to full-time service on the journal. This brought up rather heated and controversial oratory, especially from the southern states and on ballot as usual the resolution was voted down.

It may well be that with the present change of speaker, the geographical sentiments will become more western and northern in character, in the deliberation of this august body.

Again it was a pleasure for me to represent our state and am sure that my follower will find it likewise.

N. J. NESSA, 1945 A.M.A. Delegate

## PROCEEDINGS OF THE 65TH ANNUAL MEETING OF THE HOUSE OF DELEGATES South Dakota State Medical Association First Session, June 2, 1946

The meeting of the House of Delegates was called to order by president William Duncan, Webster, at 1 P.M., Sunday,

June 2, 1946, in the Alonzo Ward Hotel Ballroom, Aberdeen. Dr. Duncan introduced the two guests present who were candidates for the position of executive secretary of the South Dakota State Medical Association, Mr. John F. Barker, Brookings, S. D., and Mr. John C. Foster, Detroit, Mich.

On roll-call the following were present: President, Wm. Duncan, Webster; president-elect, F. S. Howe, Deadwood; vice president, H. R. Brown, Watertown; secretary-treasurer, R. G. Mayer, Aberdeen; councilors J. L. Calene, Aberdeen; M. W. Larson, Watertown; G. E. Whitson, Madison; C. E. Robbins, Pierre; W. H. Saxton, Huron; J. H. Lloyd, Mitchell; L. J. Pankow, Sioux Falls; E. M. Stansbury, Vermillion; R. E. Jernstrom, Rapid City; C. E. Lowe, Moberg; D. A. Gregory, Milbank; Delegates or Alternate Delegates Leo Graff, Britton; J. D. Alway, Aberdeen; S. J. Walters, Watertown; E. S. Watson, Brookings; M. M. Morrissey, Pierre; Paul Tschetter, Huron; N. J. Nessa, Sioux Falls; C. J. McDonald, Sioux Falls; G. A. Stevens, Sioux Falls; J. A. Nelson, Sioux Falls; A. P. Reding, Marion; V. I. Lacey, Yankton; W. A. Dawley, Rapid City; R. B. Fleeger, Lead; Lyle Hare, Spearfish; W. L. Meyer, Sanator; F. C. Totten, Lemmon; W. H. Karlins, Webster.

The president then called for the minutes of the previous meeting and a motion was made by Whitson, seconded by McDonald, and carried that the minutes of the previous meeting as they appeared in the September 1945 issue of the *JOURNAL LANCET* be approved. The president made the following appointments of committees: Committee on reports of officers, C. J. McDonald, Sioux Falls, A. P. Reding, Marion, Leo Graff, Britton; committee on resolutions and memorials, C. E. Robbins, Pierre, E. S. Watson, Brookings, J. H. Lloyd, Mitchell; committee on nominations, R. E. Jernstrom, 9th district, chairman, J. D. Alway, 1st district, M. W. Larson, 2nd district, G. E. Whitson, 3rd district, M. M. Morrissey, 4th district, W. H. Saxton, 5th district, O. J. Mabee, 6th district, L. J. Pankow, 7th district, A. P. Reding, 8th district, F. C. Totten, 11th district, W. H. Karlins, 12th district; committee on credentials, N. J. Nessa, Sioux Falls, J. L. Calene, Aberdeen, Lyle Hare, Spearfish; committee on amendments to constitution and by-laws, W. H. Saxton, Huron, R. B. Fleeger, Lead, E. V. Auld, Plankinton.

The address of the president and the president-elect followed. The reports of the officers were then given: president Wm. Duncan, president-elect F. S. Howe, vice president H. R. Brown, secretary-treasurer R. G. Mayer, chairman of the council C. E. Robbins. N. J. Nessa, Sioux Falls, read his report as delegate to the A.M.A.

Dr. Gilbert Cottam, superintendent of the State Board of Health, was to report on the hearings held by the Senate Committee on Education and Labor on the Wagner-Murray-Dingell Bill but said that he thought it unnecessary to make such a report as the *Journal* of the A.M.A. published full reports of the entire proceedings. At this time Dr. Duncan read a letter from the personnel officer of the Veterans Administration in Sioux Falls regarding assistance by physicians to disabled veterans. Dr. Einar C. Andreassen, assistant medical director, Veterans Administration, Minneapolis, Minn., then gave a fine address, outlining the work of the Veterans Administration in a general way as well as the medical program and emphasizing the fact that cooperation of the civilian medical profession is sought by the Veterans Administration.

After a short recess Dr. Duncan read a letter from the state representative of the National Foundation for Infantile Paralysis, urging members to attend a meeting of the states in this area to be held in Wyoming. The reports of the Standing and Special Committees were then heard and the following councilors made reports for their districts: J. L. Calene, first district; M. W. Larson, second district; G. E. Whitson, third district; C. E. Robbins, fourth district; W. H. Saxton, fifth district; J. H. Lloyd, sixth district; L. J. Pankow, seventh district; E. M. Stansbury, eighth district; R. E. Jernstrom, ninth district; D. A. Gregory, twelfth district.

Dr. Duncan introduced a past president of the South Dakota State Medical Association, Dr. F. E. Clough, who now resides in California. Dr. Clough gave a short talk about the activities of the medical society in California and what their experiences had been in trying to develop satisfactory programs during the war.

The report of the Committee on Auditing and Appropriations and the Budget was presented by the committee chairman, G. E. Whitson. A motion was made by Howe, seconded by Stansbury, and carried that it be approved. A motion was made by Stansbury, seconded by Lloyd, and carried that Dr. B. A. Bobb, formerly of Mitchell, be made an honorary member and be recommended to honorary fellowship in the American Medical Association. A motion was made by Howe, seconded by Stansbury, and carried that those members named by district medical secretaries as honorary members be elected as honorary members of the South Dakota State Medical Association.

A motion was made by Jernstrom, seconded by Robbins, and carried that the annual dues be raised to \$50.00 for 1947 and that the council be empowered to make adjustments to members as they see fit, with Reding and Lacey, delegates of the Yankton district voting "No". A motion was made by Howe, seconded by Robbins, and carried that the South Dakota State Medical Association enter into a contract with the Veterans Administration to care for service-connected disabilities of veterans. On motion the meeting adjourned.

### Second Session, June 3, 1946

The meeting was called to order by the president, Dr. Wm. Duncan, and on roll-call the following were present: Duncan, Howe, Brown, Mayer, Calene, Larson, Whitson, Robbins, Saxton, Lloyd, Pankow, Stansbury, Jernstrom, Graff, Alway, Walters, Watson, Nessa, McDonald, Stevens, Nelson, Reding, Lacey, Dawley, Fleeger, Hare, Meyer, Totten, Karlins.

Before proceeding with the regular order of business Dr. Duncan introduced Dr. Goldie Zimmerman, Sioux Falls, who told the group about the survey being conducted by the American Board of Pediatrics with the cooperation of several other organizations to find out the conditions of child health in our state. Dr. Triolo, executive secretary of this committee in South Dakota, endorsed the comments made by Dr. Zimmerman and explained that the object of this survey is to get the facts, as there are no true and accurate statistics concerning child health, which has led to many comments regarding the inadequacy of child health. He said that questionnaires with explanatory data will be sent to each physician individually in South Dakota and asked the House of Delegates to give the survey its official approval. A motion was made by Whitson, seconded by Karlins, that the House of Delegates officially approve the survey being conducted by the American Board of Pediatrics of child health conditions in South Dakota and urge the cooperation of all physicians in the state. The motion was carried.

The chairman of the Nominating Committee, R. E. Jernstrom, made the following nominations:

President—F. S. Howe, Deadwood.

President-Elect—H. R. Brown, Watertown; J. D. Alway, Aberdeen.

Vice President—J. L. Calene, Aberdeen; W. H. Karlins, Webster.

Delegate to A.M.A.—William Duncan, Webster.

Alternate Delegate to A.M.A.—H. R. Brown, Watertown.

Councilors—9th District—R. E. Jernstrom, Rapid City.

10th District—R. J. Quinn, Burke.

11th District—A. W. Spiry, Mobridge.

12th District—D. A. Gregory, Milbank.

A letter was read by Dr. Jernstrom from Rapid City extending an invitation to the Association to hold their 1947 meeting there. A motion was made by Pankow, seconded by Robbins, and carried that the by-laws be suspended and that unanimous ballot be cast for Dr. Brown as President-Elect, Dr. Calene as Vice President, the delegates and councilors as presented by the nominating committee. A motion was made by Whitson, seconded by Lloyd, and carried that the invitation from Rapid City be accepted and that the annual meeting be held in Rapid City in 1947. The report of the Credentials Committee was given by Dr. Nessa and a motion was made by Stansbury, seconded by Lloyd, and carried that the report be adopted.

The report of the Committee on Amendments to Constitution and By-Laws was presented by Dr. Saxton, who stated that the committee had taken no action on the matter of alternate councilors. A motion was made by Whitson, seconded by Stansbury and carried that the report be accepted. It was moved by Pankow, seconded by Calene, that the Committee

on Amendments to Constitution and By-Laws be instructed to bring in at the next session of the House of Delegates a suitable amendment which will enable a district society to have representation on the council by an alternate in the unavoidable absence of the regular councilor. It was moved by Stansbury, seconded by Morrissey, that the motion of Pankow be tabled. Carried. The Committee on Reports of Officers recommended that the reports be accepted. Motion carried.

The chairman of the Committee on Resolutions and Memorials, C. E. Robbins, then presented the report of his committee. The committee wished to commend the scientific program and extend thanks to Drs. Duncan, Howe and Mayer for their efforts in arranging it. It was moved by Stansbury, seconded by Lloyd, and carried that the report be adopted. The committee recommended that the matter of House Bill No. 21 be referred to the Legislative Committee, with authority to act as they deem best. They further recommended that the council appropriate funds as necessary to prosecute violators and contact the osteopaths and chiropractors as stated in report of Committee on Public Policy and Legislation. The committee recommended that the matter of sending a bi-monthly bulletin to all physicians be left to the council. It was moved by Whitson, seconded by Saxton, and carried that the report be accepted. The committee recommended that the report of the Committee on Medical Economics be referred to the Legislative Committee for any necessary action. They felt that the enabling act should not be necessary if the "Wisconsin" plan for pre-payment insurance be adopted. A motion was made by Whitson, seconded by Calene, that the report be approved. Carried.

The committee recommended that the resolution regarding the passage at the next general election of the bill known as Senate Bill No. 62 be adopted. It was moved by Whitson, seconded by Lloyd, that the report be accepted. Carried. The committee recommended that the resolution regarding operation of the mobile x-ray unit be adopted. It was moved by Jernstrom, seconded by Whitson, that the report be accepted. Carried.

The committee recommended that the report on county or district full-time modern public health service be achieved be accepted and the resolution adopted. A motion was made by Saxton, seconded by Howe, and carried that the report be accepted. The committee recommended that the report of the Committee on Cancer be adopted and that the council be authorized to appoint this committee as suggested. Motion was made by Stansbury, seconded by Whitson, and carried that the report be accepted. The committee moved that the report of the Committee on Syphilis Control be accepted. Motion seconded by Howe and carried. The committee moved that the report of the Committee on Necrology be accepted, pending confirmation of the report from Dr. Cottam's office. Motion seconded by Lloyd and carried. The committee moved the acceptance of the report of the Committee on Medical Benevolence and recommended that the secretary be instructed to send check to the Benevolent Fund for 50c per member. Motion seconded by Stansbury and carried. The committee moved the acceptance of the report of the Radio Committee. Motion seconded by Lloyd and carried. The committee moved acceptance of the report of the Committee on Military Affairs. Motion seconded by Whitson and carried. It was moved by the committee that the report of the Committee on Radiology be accepted. Motion seconded by Stansbury and carried. It was moved that the report of the Committee on Medical Service and Public Relations be accepted. Motion seconded by Howe and carried.

The committee recommended that the present Committee on Prepayment and Insurance Plans, including President Duncan, be authorized to go ahead and set up such a plan to be ratified by the Council and House of Delegates. Motion seconded by Calene and carried. At this time Dr. A. W. Adson, of the Council on Medical Service and Public Relations, A.M.A., spoke a few minutes regarding prepayment and insurance plans. He stated that there are a number of plans in operation. The type of benefits should be determined and the committee should meet with a committee of the insurance group, express their wants and discuss premium structure. This plan should be endorsed by the State Society. Any plan supported by the State Medical Association should receive the endorsement of



the A.M.A. If we are to meet the federal challenge it is necessary that you have a plan which will meet with the approval of the public. The voluntary plan is the best from the business point of view.

It was recommended that the report of the Committee on Crippled Children be accepted. Motion seconded by Jernstrom and carried. It was moved that the report of the Committee to Study Reasons for Rejection of Selectees in South Dakota be accepted, with thanks to Dr. Triolo and Department of Health for these statistics. Motion seconded by Stansbury and carried.

It was moved that the report of the committee on the four-year medical school at the University of South Dakota be accepted and that the State Association write to Dr. Victor Johnson to investigate the school. Motion seconded by Lloyd. Dr. Stansbury suggested that we leave the matter of the medical school up to the President and moved that the motion to accept the report be tabled. This was followed by a discussion regarding the Medical School and the motion to accept the report carried.

It was moved that the report of the Committee on National Legislation be accepted and that the House of Delegates go on record as definitely opposed to the Wagner-Murray-Dingell Bill, and endorsing the National Physicians Committee. Motion seconded by Howe and carried. It was moved that the report of the Editorial Committee be accepted. Seconded by Whitson and carried. It was moved that the report of the Committee on Medical Defense be accepted. Motion seconded by Stansbury and carried. It was moved that the report of the E.M.I.C. Committee be accepted. Seconded by Lloyd and carried. It was moved that the report of the Committee on the Spafford Memorial Prize be accepted. Seconded by Stansbury and carried. On motion the report of the Committee on Education and Hospitals was accepted, seconded by Howe and carried. The committee moved that the report of the Committee on Rural Health be accepted and recommended that the South Dakota State Medical Association use its best influence to promote the passage of the Hospital Licensure Bill at the referendum next fall. Motion seconded by Whitson and carried.

Under new business Pankow moved that Article 9 of the constitution be amended to add after the word "council" the words "or regularly elected alternate councilor." The motion was seconded by Calene. This matter will be presented to the proper committee and come up for consideration at the next annual session. On motion the meeting adjourned.

**Chairman of Council's Report to House of Delegates**

During the current year two meetings of the council were held, the first on January 27 at Huron. Dr. M. W. Larson of Watertown was elected to fill the unexpired term of Dr. H. R. Brown of the Watertown district. The death of R. V. Overton of Winner left the Rosebud district without a councilor. It was thought unadvisable to replace him at this time, but the Rosebud district was asked to elect someone to be seated at the June 1946 meeting.

A report on the plans for the four-year medical school was made by Dr. J. C. Ohlmacher, Dean, and President I. D. Weeks of the University. The council went on record as supporting this four-year medical school plan only in case a class "A" school was assured. Doctor Brown reported on the national conference on prepayment plans which he attended in Chicago in November. Doctors Duncan and Robbins reported on the National Conference called by the National Physicians Committee in St. Louis. The purpose of this conference was to instruct two representatives from each medical society on the procedure to follow in combating the Wagner-Murray-Dingell Bill.

At the second meeting held in Huron on April 14, 1946, the main topic of discussion was the proposed contract with the Veterans Administration. Doctors Duncan, Brown, Whitson and Mayer had recently attended a meeting in Minneapolis relative to this matter. It was the consensus of the meeting that a uniform fee bill be arranged with the Veterans Bureau to conform with the four other neighboring states, to care for service-connected disability of veterans. The matter of hiring a full-time executive secretary came up. The council decided to have a vote of each district as to whether other doctors would be willing to have the dues raised to \$50.00 to care

for the expenses of the secretary. It was decided that the prospective candidates for this position be asked to meet with the council and the house of delegates in Aberdeen in June.

The matter of the four-year medical school again came up and it was decided that the council request President Weeks of the University and Doctor Ohlmacher, Dean of the Medical School, to invite Dr. Victor Johnson, secretary of the Council on Medical Education of the American Medical Association, to Vermillion to survey the plan of the proposed four-year medical school and to meet with representatives of the University and representatives of the South Dakota State Medical Association. It was decided to hold the 1946 meeting in Aberdeen, June 1 to 4.

C. E. ROBBINS, M.D., Chairman of Council

**Report of Committee on Auditing and Appropriations**

The committee on Auditing and Appropriations met at 10:30 P.M., June 1, 1946, and found the books of the treasurer correct. The following budget was adopted and is presented for approval:

|                                      |                  |
|--------------------------------------|------------------|
| Estimated Income .....               | \$4,500.00       |
| Estimated Disbursements:             |                  |
| Retainer Fee—Attorney .....          | \$ 300.00        |
| Secretary's Salary .....             | 600.00           |
| Journal Lancet .....                 | 750.00           |
| Secretary's Office Expenses .....    | 300.00           |
| Secretary's Traveling Expenses ..... | 150.00           |
| Council Meetings Expenses .....      | 300.00           |
| Benevolent Fund .....                | 150.00           |
| Legislative Fund .....               | 500.00           |
| North Central Conference .....       | 50.00            |
| Expenses for State Meeting .....     | 1,000.00         |
| Miscellaneous .....                  | 325.00           |
|                                      | <hr/>            |
|                                      | Total \$4,425.00 |

GEO. E. WHITSON, M.D., Chairman  
 JOHN L. CALENE, M.D.  
 W. H. SAXTON, M.D.

**Report of Committee on Credentials**

The Committee on Credentials makes the following report:

1. Number of officers present—4.
2. Delegate to A.M.A. present.
3. Alternate delegate to A.M.A. absent.
4. All councilors present and each district represented except district 10.
5. Councilor at large absent.
6. Number of delegates present—15.
7. Total number of members registered by 4 P.M., June 3rd—144.
8. Number of guests present—21.
9. Women's Auxiliary—27.

N. J. NESSA, M.D., Chairman  
 JOHN L. CALENE, M.D.  
 LYLE HARE, M.D.

**REPORTS OF STANDING COMMITTEES**

**Committee on Public Policy and Legislation**

The subject of public policy can be covered briefly by recommending that our State Association inaugurate an active public relations program according to the recommendations of the American Medical Association. The details of how such a program should be carried out have been published by the American Medical Association and so are readily available and will not be repeated in this report.

Furthermore it is recommended that our association co-operate in every way possible with the American Medical Association, and especially follow the leadership of the Council on Medical Service and Public Relations. In doing this the single, most important step, to be taken immediately is the establishment of some type of voluntary prepaid medical insurance which would be available throughout the state, and which would meet the minimum requirements for such insurance recently established by the American Medical Association.

Concerning state legislation, it is the wish of this committee that every individual member more fully realize and accept his responsibility in such matters. Mr. Goldsmith, our attorney and lobbyist, has repeatedly said the most effective way to in-

fluence legislation is for every individual physician to personally contact his own representative and senator and express his views.

At the last legislative session a particularly obnoxious bill was passed, largely because of indifference on the part of the majority of our members. We refer to what was known as House Bill No. 21, and which provides that the trustees of a county hospital shall not discriminate between licensed doctors. This means that osteopaths, chiropractors, optometrists, etc., cannot be excluded from the staff of a county hospital. At the present time, there are only one or two hospitals affected by this law, but if and when the Hill-Burton bill is passed by Congress, it is quite likely that more county hospitals will be established. At any rate the law establishes a dangerous precedent and so this committee recommends that our Association do its utmost to have this law amended, modified or better yet, nullified at the next State legislative session.

Several years ago the State Association was instrumental in having a Basic Science Law passed. However, no provision was made to adequately finance investigation and prosecution of violators. Consequently, it is recommended that the State Association appropriate sufficient funds from its treasury for this purpose and that the Secretary contact the State Osteopathic Association and the State Chiropractic Association to determine whether or not they are willing to do likewise.

WILLIAM DUNCAN, M.D., Chairman

#### Committee on Medical Defense

In 1940 the medical defense committee of that year brought in a report that was tabled. Among other things this report recommended that in each district of the State Association one member would be appointed who would investigate any malpractice suits brought to court in his district. No further action was taken on this report.

In March 1945 an insurance company, with which the majority of the members of the southeastern part of the state were insured, notified its policyholders in South Dakota that it would no longer write malpractice insurance in this state. The reason given was that it had taken and was taking too many losses in this state. The Medical Defense Committee for the year 1945 recommended to the House of Delegates that the tabled motion of 1940 be reviewed and reported at the next meeting.

The present committee has reviewed this motion and believes it no longer feasible to act on its recommendations for the following reason: in 1942 our Supreme Court adopted a rule which became effective Jan. 1, 1943. This rule provided that whenever in a civil or criminal proceedings issues arise upon which the Court deems expert evidence is desirable, the Court, on its own motion, or on the request of any party, may appoint one or more experts, not exceeding three, to testify at the trial. If in a malpractice suit the Court, or either of the parties wished an investigation made by a noninterested medical practitioner, the machinery is set up by this order for the calling of such an expert and such expert or experts might, when so authorized by the court, make a physical examination. After the examination the experts may be required to file a written report.

The present Committee believes this to be a big advance in malpractice court procedure and eliminates the necessity of acting on the 1940 report. It is also the intention of this Committee by this report to call attention to the new rules of the State Supreme Court.

C. J. McDONALD, M.D., Chairman

#### Committee on Medical Economics

This is an election year and the members of the South Dakota State Medical Association should get in touch with the candidates for the State Legislature and endeavor to find out their attitude toward organized medicine. There will be the usual crop of bills introduced into the legislature from the various cults. These will require opposition.

We feel that the enabling act which was introduced at the last legislative session (but did not pass) should be introduced again and passed if possible. This will permit District groups to furnish medical care on a group basis.

The contract with the Veterans Administration for care of men with service connected disabilities should be accepted by the State Medical Association.

Due to the unfavorable position of organized labor, it is probable that the Wagner-Murray-Dingell bill is a dead issue for this year but the members of the State Medical Society should write personal letters to the senators and congressman from South Dakota making known their opposition to this bill.

We believe immediate steps should be taken by the component district societies to revise their minimum fee schedules.

D. A. GREGORY, M.D., Chairman  
W. A. DAWLEY, M.D.  
M. W. LARSON, M.D.

#### Committee on Public Health RESOLUTIONS

Submitted by Chairman of Committee, A. Triolo, M.D.

*Whereas*, there was passed by the 1945 legislature a bill known as Senate Bill 62, designated in the Session Laws of South Dakota, 1945, as An Act Defining and Regulating Hospitals, Maternity Homes, Sanatoriums, Rest Homes, Nursing Homes, Boarding Homes, and Related Institutions; To Provide for the Granting, Suspending, and Revoking of Licenses Therefor; to Provide for Penalties for a Violation Thereof; and to Repeal Chapter 27.12 of the South Dakota Code of 1939. This bill was passed by both houses almost unanimously, was signed by Governor Sharpe and received the endorsement of the State Osteopathic Association at their annual convention in Sioux Falls in May 1945. Since then, however, petitions based on false premises were circulated in every county in the state and received sufficient signatures to satisfy the legal requirements to enable the Secretary of State to pronounce these petitions valid and satisfactory for a referendum of the act in question. This act will therefore appear on a ballot at the general election this fall and the action of the State Legislature either approved or rescinded according to the vote, Therefore,

*Be it resolved*, that the South Dakota State Medical Association approves the purpose of this bill and recommends that the members of the association make every effort to secure its passage at the next general election.

*Whereas*, the State Board of Health has been able to secure funds to purchase and operate mobile units for the purpose of making a complete survey by mass radiography of the chest to all in the state who are willing to have such examination made without cost to the patient, and in every case where any evidence of a pathological change is noted the patient is referred to his or her family physician with instructions to have further examinations made and accept the advice of the family physician as to whatever treatment is deemed best.

*And whereas*, this is purely a case-finding effort on the part of the State Board of Health to locate every person suffering from pulmonary tuberculosis with a view to the eradication of the disease as far as it is possible, and in no case does the State Board of Health assume the functions of the family physician or those having radiological equipment and expense of the follow-up of such cases as may be located, Therefore,

*Be it resolved*, that the South Dakota State Medical Association agrees to sanction this work of the State Board of Health as above outlined and is confident that the case-finding work of the State Board of Health is in the interest of the general public and is in no way derogatory to the private practice in medicine, surgery, and radiology.

*Whereas*, a major inadequacy, in the civilian health protection, exists consequent upon the failure of most counties in the state to provide even minimum necessary sanitary and other preventive services for health by full time professionally trained medical and auxiliary personnel on a merit system basis, supported by adequate tax funds from local and state, and where necessary, from federal services. Therefore,

*Be it resolved*, that the South Dakota State Medical Association is willing to use all appropriate resources and influence of the association to the end that at the earliest possible date complete coverage of the state's area and population by county or district full time modern Public Health Service be achieved.

#### Sub-Committee on Tuberculosis.

We are pleased that during the past year the Attorney General of the state of South Dakota has ruled that patients may be quarantined at the state sanatorium without any additional legislation. This gives us a means of compelling patients with



active tuberculosis to remain in quarantine, or be subject to immediate arrest. This does not give anyone the power to compel a patient with an active tuberculosis to enter the sanatorium, but the Attorney General feels that it is possible to quarantine them once they have entered the sanatorium. This has had a definite effect on several patients already. Some who have indicated a desire to return home where they will be a menace, have reversed their opinion and have agreed to continue isolation. In most instances after becoming acclimated and studying the situation under calm conditions they have decided that the wisest course is to remain under isolation. They have appreciated being compelled to remain so that their families would be protected.

It would be well to review the section of the regulations published by the State Board of Health pertaining to quarantine for tuberculosis. "Regulation No. 22, Section 2, Quarantine." Any individual afflicted with tuberculosis of the lungs in a communicable form, diagnosed by a licensed physician, as shown by x-ray or the presence of tubercle bacilli in the sputum, in order to protect others from becoming infected, may be quarantined on his premises by the local Board of Health, the Health Officer on the direction of the State Board of Health, the State Health Officer, or by the full time Medical Health Officer of any city or county.

The Attorney General concludes with this statement, "I am, therefore, of the opinion that patients residing in the state sanatorium and receiving treatment for tuberculosis may be placed under quarantine in such institution in the manner and subject to the provisions of said Board of Health Regulation No. 22."

It will be appreciated that some cases of tuberculosis of the lungs are in a non-communicable or inactive form. Such cases could be allowed to remain at home under proper supervision. This is particularly true if there are no small children in the home. In some very few instances it is possible that the patient will also learn to dispose of his sputum in such a manner that there is very little danger of infecting others. In such instances, if the disease is very far advanced, and if there are no children in the family, living in the home for the short remaining time could be considered. It is merely desired to control the individual who has no regard for the rights of others.

It is the feeling of this committee that additional legislation is not needed at this time.

During the past year two portable photofluorographic units have been ordered by the State Board of Health. These units and the funds to operate them, both supplies and personnel, have been allocated to South Dakota as a portion of the appropriation of the United States Public Health Service. The first unit ordered was to be a self-contained unit with trailer and generator. This unit probably will not be delivered until later in the summer. The second unit is a mobile unit carried in a station wagon or panel truck. It is necessary to have a source of power and a room in which to set it up. This unit should be very valuable for large schools and industries. The second unit should be in operation about May 1st. It is planned to cover as much of the state as possible with these units. The films are to be returned to the sanatorium for developing and reading. At this time it is planned that the interpretation of the plate will be carried on by the sanatorium staff. A report will be forwarded to the State Board of Health at Pierre, and a report on all positive cases will be sent to the local physician. This report will merely indicate that some pathology is present and that the patient should have a clinical examination together with a 14"x17" x-ray. It is requested that the 14"x17" plate be returned to the sanatorium for examination so that our records may be completed.

This committee feels that a very intensive educational program is necessary in the state. This should be carried on through lay organizations by some one particularly trained in this field. This would be of great value preceding the use of the photofluorographic units in a community.

W. L. MEYER, M.D., Chairman  
D. S. BAUGHMAN, M.D.

#### Sub-Committee on Cancer

Due to the fact that the members on this committee are so far removed from one another, it has been necessary for each

individual to carry on his own campaign and is therefore making an individual report of his own.

Dr. Gilbert Cottam is making a report of the public health work in cancer and I am giving the report for the Field Army for the American Cancer Society in this state. The report of Dr. Gilbert Cottam, superintendent of the State Board of Health, follows:

As a member of the sub-committee on cancer I beg to state that the efforts of the State Board of Health in cancer control have been largely directed along educational lines. We have published in our monthly bulletin, South Dakota *Health Highlights*, a series of excellent articles by Dr. J. C. Ohlmacher and have made frequent reference to the subject in various issues of the same publication which has a mailing list of approximately 2,500. We have also shown educational films of cancer control to various lay groups and have furnished speakers on the subject whenever requested.

Dr. R. E. Jernstrom recommends the following: (1) That efforts be made to establish tumor clinics in South Dakota. (2) That the State Association cooperate as fully as possible with the South Dakota Field Army of the American Cancer Society.

The report of the Field Army of the American Cancer Society was handed to me by the State Commander, Mrs. Lucille Dory and is as follows: Field Army Report 1946. Ten counties completely organized as to county organization, financial and educational. Five counties organized as to financial status, giving the educational coverage to the county in cooperation with the use of campaign literature.

School program has been introduced in several schools. Every school in Todd county has used the textbook. Other schools are Deadwood, Lead, Watertown, and Doland.

65,000 pieces of literature have been distributed this year.

Papers by clubwomen, and many talks by doctors and county commanders have been given.

Every radio station in the state has carried programs on cancer.

The Field Army News has been sent to every doctor and dentist in the state, asking that they put the paper on their reading table so that others may read the work of the field army.

That the word about cancer is slowly spreading over the state has been proven by the fact that 63 counties have had contributions from them.

The State Campaign for cancer funds for use in this state and nationally is now drawing to a close. It must be pointed out that 60 per cent of all funds donated in this state will remain here and 40 per cent will go to the national organization. The quota set for South Dakota was \$25,000. Up to this time, outside of Sioux Falls, about \$12,000 has been contributed. We hope that when the full report comes in that we will have reached our goal.

I feel that when Mr. George Sexauer, state campaign chairman, and Mrs. Lucille Dory have the state completely organized, that it will be an easy matter to raise any given amount set up by the national organization in this state. I feel that the organization should be completed by the time the campaign for 1947 appears.

It has been suggested by Mr. Sexauer, that a State Cancer Commission be organized in this state, whose authority it will be to pass upon the expenditure of all monies in this state. It is proposed that this commission be composed of five laymen and five physicians. It is hereby recommended that the five physicians be composed of four physicians appointed at large whose terms of office be from one, two, three and four years respectively and the state chairman of the Cancer Committee. The latter to be appointed to this committee as long as he is chairman of the Cancer Committee. (I bring this up today for approval by the delegates and councilors of the State Medical Association.) The names of the other four physicians, who are to be appointed at large, will be proposed later to the councilors, who may be approved or rejected.

During the past year a physician has been appointed in every county in the state to represent the Medical Society, who can act as advisor to representatives of the Field Army. This physician is also to act in any educational campaign that may be put on in his community. In other words, this physician is to represent the physicians of this state.

From the funds obtained from the cancer campaign, there is to be about \$3,500 set aside for sponsoring a refresher course on cancer at the University of Minnesota in Minneapolis some time this fall. About fifty physicians who are interested will be selected to go. All expenses will be paid for about a three-day course.

We have recently sent out a questionnaire to all the physicians in this state to determine: (1) Their interest in a refresher course. (2) Whether they would like to have questionable cancer cases sent to them for examination. (3) Whether they would like to treat cancer cases. (4) Whether they would like to treat cancer cases, surgically, radiologically, or roentgenologically. (5) Whether they were interested in cancer or not.

The results of this survey are herein submitted.

O. S. RANDALL, M.D., Chairman

\* \* \*

As a member of the sub-committee on cancer I beg to state that the efforts of the State Board of Health in Cancer Control have been largely directed along educational lines. We have published in our monthly bulletin, *South Dakota Health Highlights*, a series of excellent articles by Dr. J. C. Ohlmacher and have made frequent references to the subject in various issues of the same publication, which has a mailing list of approximately 2,500. We have also shown educational films of Cancer Control to various lay groups and have furnished speakers on the subject whenever requested.

The provision made by the legislature at its last biennial session for inauguration of the four medical years courses in the State University may possibly lead to the creation of a center for the study and control of cancer on a basis much more extensive than has heretofore been possible. To attempt to form an independent center for this purpose in a small state like ours would be entirely too expensive and impracticable to warrant serious consideration.

GILBERT COTTAM, M.D., Superintendent,  
State Board of Health

*Sub-Committee on Syphilis Control Program*

During the past year the State Board of Health has continued its chemical control plan for control of venereal diseases. This provides for payments to physicians for reports of treatment given to patients with early or potentially communicable syphilis and to patients with gonorrhea when laboratory reports indicate that a cure has been effected.

A new program which was added during the past year provides for the hospitalization and rapid treatment with penicillin of early cases of syphilis. Under this plan the State Board of Health furnishes the necessary drugs for treatment and pays the hospital on a prearranged fee schedule. The physician's fee is paid by the patients.

During the coming year it is anticipated that changes will be made in the V.D. control plan to bring it up to date with modern treatment methods particularly as regards the use of penicillin in treatment.

GILBERT COTTAM, M.D., Chairman

**Committee on Necrology**

I have been unable to secure any additional information concerning the deaths of doctors in the state, excepting what was furnished me by letter April 4th, as follows:

|                                       |          |
|---------------------------------------|----------|
| H. H. Aldrich, DeSmet .....           | 6-16-45  |
| R. V. Overton, Winner .....           | 6-20-45  |
| Chas. J. Lavery, Aberdeen .....       | 7-6-45   |
| Guy Ramsey, Sioux Falls .....         | 8-19-45  |
| F. W. Minty, Rapid City .....         | 11-25-45 |
| G. H. Stridworthy, Viborg .....       | 1-29-46  |
| Walter L. Vercoe, Hot Springs .....   | 1-30-46  |
| Joseph H. Holleman, Springfield ..... | 2-19-46  |
| A. E. Bostrom, DeSmet .....           | 3-26-46  |

I wish some system could be established whereby reports of deaths with certain obituary data could be assembled during the year and not have the whole matter delayed until the approaching date of our state meeting. It seems to me the various district secretaries should take care of this matter from their districts.

J. A. HOHF, M.D., Chairman

**Committee on Medical Benevolence**

The committee on Medical Benevolence desires to submit the following report for 1945-46:

Assets, June 1, 1946:

|                                                             |                  |
|-------------------------------------------------------------|------------------|
| Cash on Hand (Savings, etc.) .....                          | \$ 246.87        |
| Series F Bonds (cost value) .....                           | 1,264.17         |
| From S. D. State Medical Assn. and<br>Auxiliary Units ..... | 157.50           |
| Interest on Savings .....                                   | 4.60             |
|                                                             | <hr/>            |
|                                                             | Total \$1,673.14 |

Suggestions: (1) That the State Medical Association continue to contribute 50c per member per year. (2) That the Auxiliary become more active in their participation.

W. H. SAXTON, M.D., Chairman  
C. E. SHERWOOD, M.D.  
GEO. STEVENS, M.D.

**Committee on Scientific Work**

Our Committee respectfully submits to the House of Delegates the scientific program of the 1946 annual session as evidence of its activity.

WILLIAM DUNCAN, M.D., Chairman  
F. S. HOWE, M.D.  
R. G. MAYER, M.D.

**SCIENTIFIC PROGRAM**

MONDAY, JUNE 3, 1946

9:00 A.M. Office Practice of Gynecology—Leonard A. Lang, M.D., Minneapolis, Minn. Clinical Assistant Professor of Obstetrics and Gynecology, University of Minnesota Medical School, and Chief of Service, Obstetrics and Gynecology, Minneapolis General Hospital.

9:45 Complications in Bilateral Congenital Polycystic Disease of the Kidney—T. P. Grauer, M.D., Chicago, Ill. Associate Professor of Urology, Northwestern University Medical School.

10:30 Intermission. Motion pictures. Medical and technical exhibits.

11:00 The Importance of Some Remedial Aspects of Heart Disease — N. C. Gilbert, M.D., Chicago, Ill. Professor of Medicine, Northwestern University Medical School.

12:00 Lunch.

1:30 P.M. The Pathology of the Retinopathy of Chronic Glomerulonephritis and Hypertension — Walter C. Camp, M.D., Minneapolis, Minn. Assistant Professor of Ophthalmology, University of Minnesota Medical School.

2:15 Acute Cholecystitis—Alton Ochsner, M.D., New Orleans, La. William Henderson Professor of Surgery and Director of Department of Surgery, Tulane University Medical School; Director of Division of General Surgery, Ochsner Clinic.

3:00 Intermission. Motion pictures. Medical and technical exhibits.

3:30 Bulbar Type Acute Poliomyelitis; Diagnosis and Treatment—J. Harry Murphy, M.D., F.A.A.P., Omaha, Neb. Associate Professor of Pediatrics, Creighton University Medical School.

4:15 Clinical Aspects of Chemotherapy—Wendell H. Hall, M.D., Minneapolis, Minn. Clinical Instructor in Medicine, University of Minnesota Medical School.

7:00 Annual Banquet. A Report on Activities of the Council on Medical Service and Public Relations and the Associated Medical Care Plans—A. W. Adson, M.D., Mayo Clinic, Rochester, Minn. Member of the Council on Medical Service and Public Relations, American Medical Association.

TUESDAY, JUNE 4, 1946

9:00 A.M.—Public Health and Organized Medicine—Arthur B. Price, M.D., Kansas City, Mo. Senior Surgeon, U.S.P.H.S., District Office.

9:30 Psychosomatic Medicine—Gordon R. Kamman, M.D., St. Paul, Minn. Assistant Clinical Professor of Nervous and Mental Diseases, University of Minnesota Medical School.

10:00 A Few Essentials in Prescribing Physical Medicine in General Practice—Earl C. Elkins, M.D., Rochester, Minn. Consultant in Section on Physical Medicine, Mayo Clinic.

10:30 Intermission. Motion pictures. Medical and technical exhibits.



11:00 Modern Concepts of Hypertension—Kenneth G. Kohlstaedt, M.D., Indianapolis, Ind. Director of Lilly Laboratory for Clinical Research, Indianapolis City Hospital.

11:30 Management of Breech Delivery—Leonard A. Lang, M.D., Minneapolis, Minn. Clinical Assistant Professor of Obstetrics and Gynecology, University of Minnesota Medical School, and Chief of Service, Obstetrics and Gynecology, Minneapolis General Hospital.

12:00 Lunch (Alonzo Ward Hotel). Round Table Discussion of X-Ray Films—N. J. Nessa, M.D., Sioux Falls, presiding; P. V. McCarthy, M.D., Aberdeen, leader.

1:30 P.M. The Diagnosis, Treatment and Prognosis of Cases of Carcinoma of the Gastrointestinal Tract. (1) Surgical Considerations—Alton Ochsner, M.D., New Orleans, La. William Henderson Professor of Surgery and Director of Department of Surgery, Tulane University Medical School; Directors of Division of General Surgery, Ochsner Clinic. (2) Gross and Microscopic Pathology—J. R. McDonald, M.D., Rochester, Minn. Head of Section of Surgical Pathology, Mayo Clinic; Associate Professor of Pathology, Mayo Foundation Graduate School, University of Minnesota. (3) Therapeutic Radiology—H. H. Bowling, M.D., Rochester, Minn. Section on Therapeutic Radiology, Mayo Clinic, and Professor of Radiology, Mayo Foundation Graduate School, University of Minnesota.

3:45 The Purpose and Methods of the American Cancer Society—A. W. Oughterson, M.D., New York, N. Y. Medical and Scientific Director, American Cancer Society.

\* \* \*

*South Dakota Academy of Ophthalmology and Otolaryngology*

President—J. A. Nelson, M.D., Sioux Falls

Vice President—P. G. Bunker, M.D., Aberdeen

Secretary-Treasurer—J. D. Alway, M.D., Aberdeen

SCIENTIFIC PROGRAM (Band Room, Civic Arena)  
MONDAY, JUNE 3, 1946

10:00 A.M. Clinical and Pathological Study of Uveitis—Walter E. Camp, M.D., Assistant Professor of Ophthalmology, University of Minnesota Medical School, Minneapolis, Minn.

11:00 Diverticula of the Pharynx (Report of 20 Cases)—Kenneth A. Phelps, M.D., Assistant Professor of Otolaryngology, Rhinology and Laryngology, University of Minnesota Medical School, Minneapolis, Minn.

### SPECIAL COMMITTEES

#### Radio Committee

There has been some progress. Rapid City and Sioux Falls have been having broadcasts of medical subjects. In Rapid City there has been difficulty in maintaining a continuous weekly program, due both to your chairman and lack of cooperation from the station. There will be an attempt made to correct this.

R. E. JERNSTROM, M.D., Chairman

#### Committee on Publications

The contract with the JOURNAL LANCET as official publication of the South Dakota State Medical Association still has two years to run. The suggestion is made that publication of a monthly or bi-monthly bulletin of the state medical association be considered.

R. G. MAYER, M.D., Chairman

#### Editorial Committee

It has not been possible for the members of this committee to meet in person. However, the work of this committee has been taken care of in the usual manner as evidenced by the JOURNAL LANCET, which is the official journal of the Association and which you all receive.

D. S. BAUGHMAN, M.D., Chairman

#### Committee on Education and Hospitals

The following work is now on the road to accomplishment:

1. Plans for the development of a four-year school in connection with the McKennan and Sioux Valley Hospitals at Sioux Falls are proceeding.

2. The acquisition of experienced, well-known clinical teachers to head major departments is being carried on as rapidly as possible. It now seems assured that we shall be able to procure full-time clinical teachers to head the three major departments.

3. At this time it appears unlikely that we shall be able to start junior-year instruction the coming fall.

4. We shall proceed, nevertheless, toward the organization of the clinical staff, the development of curriculum, and the establishment of an out-patient department.

5. We are proceeding towards the further development of our present basic science school. The acquisition of outstanding men to head departments made vacant by the resignation of interim appointees assumes some difficulties, largely because of the lack of housing facilities in Vermillion. Married men, especially men with families, though otherwise willing to become associated with us, hesitate to come unless they can be assured of proper accommodations.

6. During the last month several outstanding clinicians and one outstanding school administrator have visited our school and the hospitals in Yankton and Sioux Falls and have expressed themselves as confident that we can develop a good, small, creditable four-year school in South Dakota. They also sensed the need of such development.

E. M. STANSBURY, M.D., Chairman

#### Committee on Spafford Memorial Fund

I am reporting on the Dr. Frederick Angier Spafford Memorial Prize. This prize was established by the South Dakota State Medical Association and other friends of Dr. Spafford in recognition of his many years of service as a member of the State Board of Regents of Education and especially his interest in the study of the ancient classics. It consists of the interest on \$1,000 and will be awarded to that student who, in the opinion of the committee, has made most satisfactory progress in the study of Latin, preferably but not necessarily Virgil, during the current school year. This year the prize amounted to \$25.00 and was awarded to Miss Imogene Hooshagen of Sioux Falls, S. D.

J. C. OHLMACHER, M.D., Dean

#### Committee on Military Affairs

On behalf of the Military Affairs Committee I wish to submit the following report:

From the 1st district there were eight medical men in service, all of whom have returned to private practice.

From the 3rd district there was one member in the service and he has returned to private practice.

In the 4th district there were four in service; two are still in service, two discharged, one returned to his former location and one whose whereabouts are unknown.

Of the two from the 5th district one is still in service and the other is back in private practice.

From the 6th district there were six members in the Armed Forces, all of whom have returned to their former locations.

The 8th district had eight members in service, all of whom are now discharged. Four are back to their former locations and four are elsewhere.

From the 9th district there were sixteen men in the Armed Forces. Of these, twelve have returned to their former locations and the whereabouts of the other four are unknown.

There was one member who served from the 12th district and he is back to private practice.

Of the districts not reporting there are approximately twenty-three medical men who have served with the Armed Forces. One of these is still in service, and the location of others is unknown.

There was a total of 67 men in Service with three still active.

J. C. SMILEY, M.D., Chairman

#### Committee on Radiology

The Committee on Radiology begs to report that no essential change has developed in the practice of our specialty during the past year. The therapeutic value of irradiation is well recognized by our profession and lay people in general. Our tumor patients are being referred and treated with less delay and loss of time which means better prognosis and end results.

We again reiterate that Radiology does not favor application of the science by hospital and insurance plans without trained medical supervision whenever possible.

N. J. NESSA, M.D., Chairman

B. C. MURDY, M.D.

J. H. LLOYD, M.D.

**Committee on Medical Service and Public Relations**

The Committee on Medical Service and Public Relations reports as follows:

Much is being said in our press, radio and legislative halls these days on health insurance in the United States with which you are all familiar.

Advocates of *compulsory* health insurance argue on the basis of humanitarianism with medical service for everybody. The majority of the medical fraternity argue that they can do the same job *better* and *cheaper* by themselves than by a government bureaucracy.

We believe that compulsory health insurance will lead to lower medical standards and efficiency and thereby the public clientele will suffer in proportion.

We are fully in accord with pending proposals by organized medicine and hope for its final success over pending political legislation.

N. J. NESSA, M.D., Chairman  
T. F. RIGGS, M.D.  
G. W. MILLS, M.D.

**Committee on Prepayment and Insurance Plans**

During the past year your committee has followed closely the initiation and development of plans to prepay medical and hospital costs in various sectors of the country. Members of your committee have attended meetings at St. Paul, Minneapolis, St. Louis, and Chicago, all dealing with economic problems of medical practice.

This report will call your attention to certain significant facts and developments in this field during the past year. Details of necessity must be left out but if you have read the material which has come to your desks throughout the past year you are already familiar with much of it.

First, we must recognize that the public demands and will get prepayment of medical and hospital care by one means or another. If voluntary plans are not available or inadequate, this will be accomplished very soon by some form of political medicine.

In recognizing these facts the A.M.A. at its last meeting took an unprecedented step. It instructed its Committee on Medical Service and Public Relations to develop a National Prepayment Health program, to coordinate all existing plans and to stimulate the formation of new ones in areas where none exist at present.

We, in South Dakota, fall in the last category, namely, an area where no medical prepayment plan now exists. It will be recalled that we failed in our attempt to have an Enabling Act for this purpose passed by the last session of our State Legislature. Likewise, the State Hospital Association failed in its attempt to obtain a satisfactory Enabling Act permitting the development of the Blue Cross Hospital Plan in South Dakota. We are now one of the few states in the union where nothing tangible has been accomplished to enable the average individual to prepay medical, surgical and hospital costs.

The committee feels that one of two courses of action is open and should be followed as promptly as possible. First, we can again attempt to accomplish what we failed in at the last legislative session. Any such effort must be attended by more interest, cooperation and work on the part of the doctors of the State than was evidenced in 1945. The passage of such legislation would be aimed at the establishment of a non-profit corporation to supply medical and surgical care to the public. Of necessity the success of this plan would depend also on cooperation with and development of the Blue Cross Hospital Plan in this State. Thus, it would mean that the medical profession must actively support the State Hospital Association in their attempt to procure workable enabling legislation.

Our second approach to the problem lies in cooperation with the insurance underwriters of the state to develop something similar to what is known as "The Wisconsin Plan." In this plan those commercial companies writing insurance in the state of Wisconsin have agreed to write a standard policy approved by the Wisconsin Medical Association as to premium provision and benefits. The physician in Wisconsin may agree to cooperate with the plan by accepting the schedule of benefits as full payment in beneficiaries who have annual income of \$2080 without dependents or \$2600 with dependents. In cases where annual income is higher cash benefits will be paid and

the physician will be permitted to charge a higher rate than the policy fee schedule. This plan gives:

- (a) Full coverage benefits for care involved in the fields of surgery and obstetrics, whether given in or out of a hospital;
- (b) Full coverage benefits for anesthesia and radiology, when given outside of a hospital;
- (c) Broad benefits for hospitalization and therapeutic services performed in the hospital.

The obvious benefits of the Wisconsin Plan to the medical profession and the public are:

- 1. The doctors need not enter a new field, the field of insurance.
- 2. The doctors can cooperate wholeheartedly with the insurance men to bring increasingly adequate coverage to a large group of our population who need and desire reasonably priced and financially sound prepayment insurance.

If we, in South Dakota, could develop something similar to the Wisconsin Plan it would seem more suited to our situation than the initiation of an insurance organization and plan of our own.

Hearings on the Wagner-Murray-Dingell Bill are now going on in Washington. The matter of prepaying medical and hospital expense is being brought rapidly into the foreground of public thinking. The committee feels that the House of Delegates at its annual meeting should spend adequate time for thorough discussion of this problem. If time for conclusive discussion is not available and if action by the House of Delegates is necessary to commit this body to one plan or another, this committee recommends that a special meeting of the House of Delegates be called at an early date to consider this matter solely.

After serious consideration and study of this problem in other areas it is the recommendation of this committee that South Dakota's needs can be served best by a program similar to that in effect in Wisconsin. If a special meeting is called for this purpose, we suggest that representatives of interested insurance organizations be invited to meet with us for a careful discussion of the problem.

We, in South Dakota, have had good reason to proceed slowly and with caution. Our total population is small, our state is largely rural in character, and we have but a small percentage of our population engaged in industry. Your committee feels, however, that much ground work in other areas has been done proving that certain plans are feasible and successful. It is our opinion that definite steps are necessary promptly to give the South Dakota people what they want and need to protect them and ourselves from the fate of political medicine and to cooperate with the A.M.A. program and our colleagues in the other forty-seven states.

H. R. BROWN, M.D., Chairman

**Advisory to Departments of State Board of Health  
Committee on Orthopedics**

The following is a report of the work done by the Crippled Children's Department of the State Board of Health, which was supplied by Dr. Triolo, for the period of January 1, 1945, through December 31, 1945:

|                                                               |       |
|---------------------------------------------------------------|-------|
| Children on State Register January 1, 1945 .....              | 2,108 |
| New cases placed on Register during year .....                | 262   |
| Total on Register at end of year .....                        | 2,370 |
| Cases removed from Register during year .....                 | 146   |
| Crippling condition cured .....                               | 9     |
| Reached age of 21 .....                                       | 115   |
| Removed from State .....                                      | 15    |
| Death .....                                                   | 7     |
| Total on Register at end of year .....                        | 2,224 |
| Number of Clinics held .....                                  | 8     |
| Admission to clinics .....                                    | 388   |
| Visits direct to Orthopedists office in lieu of clinics ..... | 171   |
| Total clinic and office visits .....                          | 559   |

**HOSPITAL CARE**

|                                                        |     |
|--------------------------------------------------------|-----|
| Children under care in hospitals January 1, 1945 ..... | 27  |
| Children admitted to hospitals during year .....       | 166 |
| (130 new cases and 36 previously under care)           |     |
| Total .....                                            | 193 |



|                                                     |       |
|-----------------------------------------------------|-------|
| Discharges .....                                    | 182   |
| Children under care December 31, 1945 .....         | 11    |
| Total days hospital care provided during year ..... | 6,955 |
| GUY E. VAN DENMARK, M.D., Chairman                  |       |
| W. H. KARLINS, M.D.                                 |       |
| F. W. MINTY, M.D. (deceased)                        |       |

**Committee for Study of Reasons for Rejection of Selectees in South Dakota**

This is a preliminary report on the analysis of physical examinations of selective service registrants during wartime in South Dakota, April 1942 to March 1943.

| Percent of Registrants in Each Age Group Found to Have No Defects |      |
|-------------------------------------------------------------------|------|
| Age 18 to 44 .....                                                | 18.3 |
| 18 to 24 .....                                                    | 24.6 |
| 25 to 29 .....                                                    | 19.5 |
| 30 to 37 .....                                                    | 13.6 |
| 38 and over .....                                                 | 5.6  |

Rejection Rates per 1,000 Registrants. Ten Leading Causes

|                                  |      |
|----------------------------------|------|
| 1. Mental Disease .....          | 45.6 |
| 2. Musculo-Skeletal .....        | 44.8 |
| 3. Cardio-Vascular .....         | 43.4 |
| 4. Hernia .....                  | 43.4 |
| 5. Eye .....                     | 35.9 |
| 6. Neurological .....            | 26.2 |
| 7. Ear .....                     | 18.6 |
| 8. Tuberculosis .....            | 10.5 |
| 9. Syphilis .....                | 9.7  |
| 10. Educational deficiency ..... | 4.8  |

*Mental Disease:* Major disorders include psychoneurotic disorders, psychopathic personality and grave mental or personality disorders.

*Musculo-Skeletal Disorders:* For the most part these were disqualifying disabilities resulting from injuries such as limitation of motion of a joint and deformities resulting from fractures (hands, knees and elbows were most frequently affected). Amputations ranked second and spinal malformation (kyphosis, scoliosis, and lordosis) ranked third.

*Cardio-Vascular Disease:* Mostly hypertension and valvular heart disease.

*Hernia:* Inguinal type was most prominent.

*Eye:* Diseases of cornea and retina; cataracts.

*Neurological:* Epilepsy; post-traumatic syndromes; residual of poliomyelitis.

*Ear:* Otitis media; severely defective hearing.

A. TRIOLO, M.D., Chairman

**Committee on Medical School at the University of South Dakota**

This Committee has not functioned as an entity, merely as a part of the Council.

In the past year we have had two interviews in the Council with President Weeks of the University of South Dakota, and Dr. J. C. Ohlmacher, Dean of the Medical School of the University of South Dakota.

At present there is an established accredited Class A, two year medical school in operation, which has been the case for several years. The Legislature has appropriated \$70,000 for the purpose of expanding the school into a four year institution.

There has been considerable progress made along this line. A full time Professor of Surgery, Professor of Medicine, and Professor of Eye, Ear, Nose and Throat have been secured, all men eminent in the profession and well qualified for the position.

An arrangement has been tentatively made with the Sioux Falls hospitals to be used for teaching purposes. It will probably be necessary that a building be secured or erected in Sioux Falls for an Out-Patient department for teaching purposes. There is no doubt that the Veterans Bureau will establish a good sized hospital in Sioux Falls providing the medical school set up goes through, otherwise it is very doubtful if they will assign any of the new hospitals to that region, this being their present national policy.

It is going to be very difficult to have the school established

and operating in Sioux Falls this September, although this is the University's present plan.

The Council of the South Dakota State Medical Association has been very dubious of the possibility of establishing a first rate Class A medical school in South Dakota. The Council has gone on record as being opposed to the establishment of any school except one that can qualify as Class A.

It is understood that the University's advice on the establishment of the school comes from the Association of Medical Colleges, whose secretary has been up here and has made a tour of the state and spoken before a number of the district societies.

At the last meeting of the Council on April 14, 1946, at Huron, the Council voted that the President of the University invite Dr. Victor Johnson of Chicago, Secretary of the Committee on Hospitals and Medical Education of the American Medical Association, to visit the University and to sit in on the present plans for establishing a four year school. Since the approval of the American Medical Association is necessary to have a Class A school, it is felt that this will help to insure the establishment of such a school in South Dakota.

C. E. ROBBINS, M.D., Chairman

**Committee on National Legislation**

Without question the most important piece of national legislation, as far as the medical profession is concerned, ever introduced in Congress, is the present Wagner-Murray-Dingell bill.

Assuming that all members are familiar with it, nothing further will be said about its contents or purpose.

To our knowledge the House of Delegates has never officially gone on record as being opposed to this bill, consequently it is recommended that such action be taken during this session. This will enable the President to file a statement with the Senate Committee on Education and Labor opposing this bill with the support of the State Association. Doctor Howe, President-Elect, has already filed such a statement.

During the past year some of the members of this committee have attended several meetings which concerned compulsory health insurance either directly or otherwise. Further mention of these meetings is contained in the reports of the officers and other committees.

Through correspondence carried on by Doctor Pankow and the chairman of this committee word has been received from both of our Senators and both of our Congressmen to the effect that they are all definitely opposed to the Wagner-Murray-Dingell bill. Furthermore, considerable effort has been made to reach the public through the medium of speaking to lay groups and encouraging the distribution of literature which is supplied without charge by the National Physicians Committee.

As it is now apparent that the National Physicians Committee is by far the most effective of all the organizations attempting to mold public and legislative opinion in the field of medical care this committee recommends the following:

1. That the State Association pass a resolution endorsing the National Physicians Committee.
2. That every member be urged to give the National Physicians Committee financial support.
3. That the State Committee on National Legislation be authorized to co-operate with the National Physicians Committee and to become, in effect, a component state committee of the national organization.
4. That this committee carry on its activities, insofar as possible, according to the recommendations made by the National Physicians Committee in its informational bulletin No. 2, issued February 14, 1946.

Probably next in importance to compulsory health insurance legislation is the Hill-Burton hospital bill. This has passed the Senate and is now being considered by the House of Representatives. It is definitely a constructive piece of legislation and has the full endorsement and support of both the American Medical Association and National Physicians Committee, consequently, it is recommended that the State Association pass a resolution to the same effect. Furthermore, all members are urged to write to their Congressman requesting them to vote for this bill.

In addition to the above, there have been several other bills introduced in Congress which would in some way or another affect medical care and the practice of medicine.

The osteopaths and chiropractors apparently are quite active in Washington also, judging by their numerous attempts to attain by legislation, privileges to which they are not entitled by educational qualification.

On numerous occasions, and usually at the request of Doctor Joseph Lawrence, director of the American Medical Association's Washington office, your officers have sent letters and telegrams to our Senators and Representatives urging them to help defeat this type of legislation.

Through no fault of organized medicine, and largely because of expediency, osteopaths were included in the bill which establishes a new department of medicine and surgery in the Veterans Administration. In other words the Veterans Administration may hire them, but the language of the bill does not make this mandatory. What effect this will have on their new hospital set-up no one can tell at this early date, however it is certainly regrettable that this happened.

In conclusion our committee urges everyone to acquaint himself with the newly introduced Taft-Smith-Ball National Health bill. This may possibly be another very effective means to defeat compulsory health insurance.

The Committee:

WILLIAM DUNCAN, M.D., Chairman  
R. G. MAYER, M.D.  
F. S. HOWE, M.D.  
H. R. BROWN, M.D.  
C. E. ROBBINS, M.D.

Committee on Rural Medical Service

The health problem that South Dakota faces at the present time is that of having a population of one-half million, scattered over a very large area. Some of our largest counties have the smallest population and in many of these counties there are no doctors. In the state there are 342 licensed practicing doctors, 114 of whom are 65 years of age. Ninety per cent of the doctors are now concentrated in larger centers of population. In South Dakota that would be cities of 1,000 and up. In the centers of larger population, there is a doctor for every 800 people, while in the rural areas there is one doctor for every 2,600.

At the meeting of the A.M.A., Farm Bureau, Grange and Farmer's Union, and other farm organizations at Chicago, on March 29, 1946, these were some of the chief points brought out by some of the farm groups:

1. They wanted medical care brought closer to the farmer by practicing physicians.
2. Hospitals or diagnostic centers closer to the farmers.
3. Abolition of the \$1.00 a mile scale of charging fees.
4. F.S.A. was universally a flop.

Points brought out by the representatives of the Great Plains states, Texas, Oklahoma, Kansas, Nebraska, North Dakota and South Dakota:

1. Medical centers will grow in the natural trade centers, not county divisions. A great deal of stress has been made by statisticians that there are a certain number of counties in the United States without any physician whatsoever. However, if this was given close scrutiny, it would be found that there were very few, if any, people living in those counties which have no doctors. It naturally does not stand to reason that a doctor should be in a place where he can not be supported, any more than any other professions or trade would go to these sparsely populated areas to start up a business. It was unanimously felt that 30 or 40 miles of modern roads and transportation was not a hardship.
2. Modern trend of specialization and classification of physicians in the various boards has inherent trends to concentrate medical men in centers of large population. They felt that better medical service could be rendered to the public at large if this were true.
3. A doctor has a right to choose where he wishes to locate and raise his family and give them cultural advantages and they prefer settling in larger cities where these things are available.
4. If practicing is more attractive in rural areas as

to income and facilities for work and usefulness, it will naturally attract and support doctors.

A proposed program for action of state rural health committees was drawn up as follows:

What should the State Committee on Rural Medical Service undertake? Meet with interested farm groups such as the Farm Bureau, Grange, and Farmers Union, and agree on objectives for common effort. Three types of activity may be considered:

1. Hill-Burton bill. See that sound judgment is exercised in placing of facilities and other details applying to rural areas.

(a) Insistence on and devising methods for maintenance of high professional standards in all facilities constructed so that more service will not mean service of lower quality.

(b) Deciding what constitutes the unit to be served by various types of facilities, number of people, distance the sick can be transported, desirability of a public ambulance service. The present available professional personnel and possibility of attracting more.

(c) Deciding what is meant by diagnostic centers and health centers and their relation to the hospital as they should apply in each state.

(d) Close affiliation with agencies of state government created to administer the Hill-Burton bill or like legislation.

2. Extending to country people the benefits of prepayment plans for catastrophic illness and hospitalization, with special plans for marginal farmers who may be in part medically indigent, but should be encouraged to pull their pound.

3. Promotion of health education among farm people. Initiative here must reside in organized farm groups: Parent-Teachers, 4H Clubs, Home Economics, Boys Camps, Extension departments of State Agricultural Schools, accident prevention and first aid, sponsoring proper kind of publicity in farm press, and local papers and local radio.

4. Conference of rural and health leaders sponsored by State Colleges of Agriculture. Ohio University is a good example.

In areas of smaller population it is impossible to set up a medical unit of specialists and expect them to be supported. There was a time when a practicing physician, as a general practitioner, was able to practice a fairly adequate and appreciated type of service to the community which he served. I still feel that this can be done. But, with the present trend of education for our medical students and graduates, one is led to believe that medicine cannot be properly practiced unless it is done by specialists and that a general practitioner is a physician of less caliber, and consequently has had to go to the rural communities. I still feel that an alert general practitioner has a great place in South Dakota, and has at his command the right to practice medicine unrestricted, as a medical man would be in the larger centers. He, therefore, must equip himself, both mentally and with facilities to practice medicine, to carry out whatever is necessary to the problem which presents itself. It is a great challenge. He will want to do his best when he finds that he does not have someone else to make his decisions for him and to do his work for him. If we, as general practitioners, do not take this challenge, this state will naturally be a haven for osteopaths and chiropractors who are willing to go to the smaller centers, and do what they can to bring medical care to these people who have been forsaken by the medical profession.

May I add that building medical centers and hospitals throughout the state is not going to solve the problem. We, at the present time, are not able to staff what hospitals we have in the state, due to the shortage of nurses and strikes. We are not going to be able to build medical centers for diagnosis or other hospitals until the strikes are over and we get materials to build them with. In South Dakota we must get this bill through for a hospital licensure before we can expect to have any aid from the Hill-Burton act. Prepayment plans must be looked into. However, these would only do good in years of prosperity and even at that we have people who would rather pay their way, both in years of prosperity and years of depression, rather than subscribe to prepayment plans, which promise a great deal, but which often don't pay what the client expected.

ALONZO P. PEEKE, M.D., Chairman  
M. M. MORRISSEY, M.D.  
C. M. KERSHNER, M.D.



## ADDRESS OF THE PRESIDENT

WILLIAM DUNCAN, M.D.

Webster, South Dakota

Probably at no time in the sixty-five years since this Association was founded have there been so many important problems confronting it as there are today. Without much question the compulsory health insurance bill now before Congress is the most important of these. Although we must admit that the proponents of this legislation have a noble purpose and one which we share with them, namely, better medical care for all the people, the methods by which they hope to attain this goal should be for the most part objectionable to us. No attempt will be made to discuss this subject fully, for that has already been done and printed in our journals many times by men better qualified to do so, and it would be difficult to add anything new to what already has been said by them.

I would like, however, to point out a few of the most objectionable features of the Wagner-Murray-Dingell bill. First of all, it is compulsory; the people will be compelled to pay the tax and physicians will be compelled to take part in it, even though the bill as written does not say so. However, physicians will still be compelled to make a living and when 135,000,000 people are covered by this insurance it is obvious that we will have but one choice.

Furthermore, there is hardly a shred of evidence that enactment of this bill will produce better medical care for the people. Experience in foreign countries which have had socialized medicine for many years does not show this to be the case, and under our present system this nation is the healthiest of all the larger nations in the world.

The cost of this program would be tremendous. According to a recent study by E. W. Wilson published in Barron's *National Business and Financial Weekly*, the total annual cost of social insurance (of which compulsory health insurance would be a large part) would be somewhere between one-seventh and one-sixth of the annual payroll, or 10 to 12 billion dollars, using the average figures for the past ten years or so. Foreign experience definitely indicates that no sound economy can bear such a cost and still maintain the momentum of private incentive and enterprise.

In addition, the bill is un-American not only in principle, but perhaps in origin also. States' rights would be interfered with, the private practice of medicine as we know it today would be destroyed, physicians would lose their professional independence, and we would all be regimented under a veritable dictatorship headed by the Federal Social Security Administrator.

This may sound like an exaggeration but such is the considered opinion of high-standing medical men who have studied this bill thoroughly.

Now, assuming that we do not want socialized medicine, what can we do to prevent it? First of all, it would be well for us to recognize that there is a problem concerning adequate medical care. Then we should go ahead with constructive measures to solve it.

As far as South Dakota is concerned the overall shortage of physicians and hospital facilities is our greatest difficulty. The Hill-Burton bill, which has the endorsement and support of the American Medical Association, should go a long way toward taking care of the hospital situation. A solution for the lack of physicians will probably not be so simple. An *approved* four-year medical school in South Dakota would certainly be a big step in the right direction—even though that alone would be no guarantee that the graduates of such a school would locate in the smaller communities where the need is the greatest. Such a school is now in the process of development but is still far from being an actuality, and there are sound reasons for expressing doubt as to whether it will receive approval from the American Medical Association's Council on Medical Education and Hospitals, and without such approval we would be much worse off than having no school at all. In order to clarify this statement, I quote Doctor Victor Johnson, Secretary of the American Medical Association Council on Medical Education and Hospitals, in his last annual report on medical education.

"Unfortunately, some of the current proposals for establishing new medical schools are ill conceived and rest on a failure to understand certain well recognized principles which must guide the thinking about such projects. Some of these considerations, which would seem to be axiomatic, but too often disregarded, are as follows:

1. There is no justification for the establishment of a medical school to meet such an acute temporary emergency as the absence of physicians on military duty.

2. Any overall increased present or postwar need for additional physicians occasioned by the war can be provided by existing approved schools. There is no justification for establishing new medical schools for this purpose. Furthermore, the normal annual number of graduates from existing schools is adequate for the peacetime needs of the country, granted distribution is equitable.

3. The maldistribution of physicians as between the states or between urban centers and rural areas is a problem to be attacked primarily by other means than the production of more doctors in a given state; the rate of production and the distribution of doctors in this country are independent.

4. Medical education is by far the most expensive form of professional training, requiring an initial outlay and subsequent annual budgets in the early years totaling millions of dollars and not tens or hundreds of thousands. A school whose resources include annual budgets of less than \$350,000, independent of the cost of maintenance of the hospital and outpatient departments, is unlikely to conduct a satisfactory program.

5. The operation of an acceptable four year medical school is far more expensive than the conduct of a basic science medical program.

6. The trend toward more full time clinical instructors is so general that any school commencing with all or nearly all of its staff on a part time basis is already obsolete.

7. The possession of the M.D. degree and the successful practice of medicine do not, in themselves, indicate that a physician is qualified to teach medical students satisfactorily, even in clinical subjects. Volunteer and part time teachers require special training and experience.

8. A hospital well equipped to provide medical care to the people or even satisfactory for internship or residency training is not thereby necessarily satisfactory as a medical school hospital.

9. Medical schools must be so located that there is an ample supply of patients of all kinds, on the one hand, and competent instructors, including specialists, on the other hand.

10. No medical school is worthy of the name which does not carry out some significant research, even though the primary aim of the school is the training of general practitioners.

A failure to observe these generalizations might lead to costly ventures without prospects of accomplishing the ends sought, however desirable those ends may be."—(*J.A.M.A.*, Sept. 1, 1945, pp. 45 and 48.)

In view of such statements by the spokesman for this Council, I believe that this Association should do two things. First, it should take immediate steps to secure at least an opinion from him regarding the prospects of South Dakota's four-year school receiving the Council's approval. Second, it should carry out a thorough investigation to find out whether or not South Dakota students can still receive a medical education in established schools outside of the state.

We are all aware of the fact that the small-town, general practitioner is disappearing and we also know most of the reasons why. One of these is the great trend in medical education toward specialization which has developed during the past few years. Of the 21,000 physicians in the Armed Forces who replied to a recent American Medical Association questionnaire, more than 13,000 indicated that they wished to take enough post-graduate work to become certified as specialists. At present there are approximately 13,000 specialists registered, so that would double their numbers. One cannot help but wonder whether those in charge of medical education throughout the country have not largely forgotten that someone still must take care of the ordinary illnesses which people still have. At most medical schools very little is done to encourage graduates to enter general practice, and particularly so in small towns. In fact, at least some of the specialty boards definitely discourage students on that point and urge them to begin their training for specialization immediately after graduation. It is difficult for some of us to understand this, particularly when we realize that most of the original specialists and founders of the present system of specialty boards were general practitioners themselves to begin with. Furthermore, it is my firm belief that these men profited by general practice and that it definitely contributed toward making them the eminent specialists which they are.

It is now quite apparent that neither the opportunity to serve our fellow men, nor the excellent chances for reasonable financial success, will induce these younger men to locate in the smaller towns. Considering all this and in view of the widespread ambition to specialize, why could not these young men be given credit toward specialty rating for a certain period of time spent in general practice—say one year of credit for a minimum of three years as a general practitioner? At the present time most, if not all, of the boards do allow some credit for time served in the Armed Forces. Without in any way detracting from the value of such service, it is difficult to see why time spent in general practice would not be just as valuable.

I entertain no illusions that such a plan would solve

this problem, but I do believe that it would be a constructive measure in the right direction.

Before leaving the subject of physician shortage I would like to say a few words about Eye, Ear, Nose and Throat specialists. As with general practitioners, and perhaps next in importance, there is a great need for them in South Dakota. At present there are at least several places where such an individual is not only greatly needed, but where his financial success would be assured. However, as most of you know, Eye, Ear, Nose and Throat specialists are not even trained any more as such. They are either Otolaryngologists or Ophthalmologists and the smaller communities that could very adequately support one man with a reasonable amount of training in both fields could not offer enough for two specialists.

Under the present system there seems to be no solution for this difficulty. We can, however, rightfully ask this question. If those in authority over this field of training share with the rest of us a sincere desire to furnish good medical care to all the people, should they not take positive steps to correct this situation?

Returning to the subject of constructive measures for our Association, one of the utmost importance would be an effective, voluntary, prepaid medical and hospital insurance plan in South Dakota. This type of insurance is now available in almost every state except ours. As evidenced by its rapid growth, it is something the people want. Furthermore, the American Medical Association has finally not only fully endorsed it, but is now actively sponsoring a nation-wide plan of voluntary, prepaid medical care similar to the Blue Cross. It is well to bear in mind that such insurance is now considered, by those in a position to know, as one of our most effective weapons against socialized medicine or Federal compulsory health insurance.

During the last state legislative session, our Association made a sincere attempt to have necessary legislation passed which would enable it to introduce voluntary, prepaid medical care into South Dakota. However, such strong opposition was encountered both from within and without our professional ranks that the attempt was a complete failure.

It is hoped that within the next few months either some plan which does not require new legislation will be developed, or that those who were previously in opposition will be able to change their opinions, especially in view of new developments since the last session of the state legislature.

There are several other worthwhile measures which could be considered. Among them is rejuvenation of the Inter-Allied Council. This at one time had a very good start and if developed to its fullest could be a powerful force in the cause of professional freedom. Another, the development of a real public relations program, both within the medical profession itself and without, that is, directed at the public concerning the relations of medicine to the public. In such a program we should take a positive position rather than continually accepting the defensive attitude toward our critics, who have been both numerous and aggressive in recent years. We should, in particular, seize the opportunity to contact and co-



operate with other organized groups, professional or lay, who are either opposed to compulsory health insurance or have as yet made no decision on this vital subject.

Some constructive work could also be done toward improving our methods of lobbying at state legislative sessions. We are represented there by a very able attorney, but when he calls for help from the Association it usually comes in the form of "too little and too late." Mention should also be made about giving our full support to Federal legislation such as the newly introduced Taft bill, with which I am sure you are all familiar.

The last subject for your consideration is a proposal to strengthen our Association by establishing a state office and hiring a full-time executive secretary. In this swift-moving era of social and economic change it is impossible for your officers, all of whom are practicing physicians, to take adequate care of the business of this Association without some additional personnel. No one can argue that this business is not important enough to be looked after. About the only objection to such a move is that we will have to raise the dues and by so doing may lose some members. To this I have a ready answer.

The next two or three years may be the last chance we will ever have to help our Association reach its objective of better medical care for the people of South Dakota through the voluntary, evolutionary and orderly methods to which we and all the other citizens of this Democracy have been accustomed.

The desire to protect our professional independence should be almost as basic as the desire to protect our family, our home, or our individual liberty.

A stronger Association can certainly accomplish more toward this end than individual uncoordinated effort. Consequently, it is not unreasonable to expect of every practicing physician who does not want socialized medicine, a little more of his money, his time and his mental talent.

If or when we become harnessed by a Federal bureaucracy the problems now confronting us will of course all be solved, and it will be quite unnecessary to maintain a State Association except for purely scientific purposes. If dues are then required, no doubt the Federal Social Security Administrator will pay them for us.

#### ADDRESS OF THE PRESIDENT-ELECT

F. S. HOWE, M.D.

Deadwood, South Dakota

To the House of Delegates and Members of the South Dakota State Medical Association:

I wish to take this opportunity to thank the members of the association for the honor and privilege of serving you for the ensuing year.

The medical profession of South Dakota has made an outstanding record during World War II—a record in both military and civilian practice. We are very glad, indeed, to pay tribute to those members of the profession who served in the armed forces. At the same time, older members of the profession in this state carried on during the emergency without regard to their own health or convenience. They, too, deserve special citation.

At this time we physicians are facing grave problems. Upon their correct solution depends the entire future of our beloved and honored profession.

One of the first we must take into account is membership. According to the latest figures we have been able to obtain, there are 354 physicians in the state. Of this number, 250 are members of the State Association.

We must become thoroughly organized if we are going to make our influence felt. It is essential that each district society makes a drive for more members. Each local society must meet regularly, put on good scientific programs, personally invite non-members to attend and use every effort to make it worthwhile for them to join.

Nationally, the American Medical Association has 125,000 members out of a total of 175,000 physicians in the United States. Both the A.M.A. and the State associations should make every possible effort to secure additional members and perfect their organizations. A "united front" is an abused phrase just now, but a united front is what the medical profession needs in one of the most critical periods in its history.

A second problem we face is a serious shortage of physicians in this state, with the probability that we have a still more serious condition ahead of us. A number of counties are without a single M.D. We must recognize that the young physician just out of hospital or residency is not going to start practice without adequate hospital facilities.

Good highways and modern fast transportation have changed the medical picture. One solution which has been recommended repeatedly is the building of modern hospitals in isolated com-

munities, porbably by the federal government. This is a controversial matter, but it is my considered opinion that hospitals alone will not improve conditions. Where are the doctors coming from? Modern X-ray equipment, laboratories, facilities for taking electrocardiograms and basal metabolisms are of little or no value without trained men to interpret the findings. Modern operating rooms and sterilizing equipment are useless without a trained surgeon.

The most feasible solution would appear to be small emergency hospitals in isolated communities, with an M.D. or even a well trained graduate nurse in charge and good ambulance service available at all times to rush the patient to the nearest well equipped and well staffed hospital. As I said before, this is a controversial matter and some of you may not agree with me. If you do not, I hope to hear your opinions brought out in later discussions. In view of rapidly changing conditions, however, our position cannot remain static. We face facts, gentlemen. Some of them are not to our liking, but as has been said, a fact is a stubborn thing.

This is true of our most timely and pressing problem, often threatened, now at our very doorstep—socialized medicine. I believe we all agree that if and when the Murray-Wagner bill passes we shall have socialized medicine to all intents and purposes.

At the same time, as physicians we must recognize that there is a public demand for some pre-payment plan. It is this demand by the layman that has given the politicians the excuse they needed. If the medical profession does not institute such a plan the politicians will do it for us.

The A.M.A. plan already advanced gives us a basis for working out a pre-payment plan. Many of the states have already adopted variations of this plan and they appear to be working out fairly well.

South Dakota, composed largely of rural communities and small cities, not highly industrialized, makes for a difficult situation. It is obviously impossible to cover all minor illnesses, with our limited supply of physicians and no immediate prospect of many more. Both doctors and hospitals would be so over-burdened that a person really seriously ill could not get the attention he needed so badly. At the same time, the compulsory Murray-Wagner bill designed for big industrial cities would be particularly galling in its application here.

I believe that South Dakota, through its State Medical Association, must take necessary measures toward working out a practical voluntary pre-payment plan that would fit our needs in this state. I believe we must do this immediately.

Socialized medicine is not understood by the layman and in proportion to his lack of understanding the superficial aspects sound good to him. Sponsors of the Wagner-Murray bill harp on two strings. They say that most people are now securing poor medical care or none at all. They assume that under socialized medicine everybody would have excellent care. We know that neither of these propositions is true.

The layman does not realize that trained physicians, the very people who give him medical care under any system, are opposed to socialized medicine almost to a man. He does not know why they oppose it. Selfishness, the politician says. Here we have a job of education to perform.

Another of our problems centers around the various medical drives. The Infantile Paralysis drive, the Cancer drive, the Tuberculosis campaign, and research and clinics on heart disease should all be coordinated and combined in the interests

of efficiency. At the present time, because some drives have clever publicity and advertising they are over-financed while others of much greater importance such as cancer and heart disease, are not given the necessary financial support for progress. May I suggest that the program for coordination of these different drives could well be an important part of the work of the Ladies Auxiliary? I believe that they are in a position to do very efficient work along these lines.

You have heard the suggestion previously made that we hire a full-time executive secretary. I should like to endorse this program. The time has come when we need such a man. However, an intensive sales campaign must be carried on if we are to hold and enlarge our membership while we are increasing our dues to employ a good full-time man. Those of us actively in the work know its necessity but we must make our other members and prospective new members realize it.

In closing, I ask for the earnest, active support of all our members. It is only by the combined efforts of all of us that we can hope to accomplish the many tasks we must perform in the critical years ahead.

## SOUTH DAKOTA STATE MEDICAL ASSOCIATION ROSTER--1946

### MEMBERSHIP BY DISTRICTS

#### ABERDEEN DISTRICT NO. 1

**PRESIDENT**  
M. R. Gelber ..... Aberdeen

**SECRETARY**  
P. V. McCarthy ..... Aberdeen

Adams, John F. San Dimas, Calif.  
Alway, J. D. .... Aberdeen  
\* Bates, W. A. .... Aberdeen  
Bloemendall, G. J. .... Ipswich  
Brenckle, J. E. .... Mellette  
Brinkman, W. C. .... Veblen  
Bruner, J. E. .... Aberdeen  
Bunker, Paul G. .... Aberdeen  
Calene, John L. .... Aberdeen

Chichester, J. G. .... Redfield  
Cooley, Frank H. .... Aberdeen  
Damm, W. P. .... Redfield  
Drissen, E. M. .... Britton  
Eckrich, J. A. .... Aberdeen  
\* Elward, L. R. .... Doland  
Farrell, W. D. .... Aberdeen  
Gelber, M. R. .... Aberdeen  
Graff, Leo W. .... Britton  
Keegan, Agnes .... Aberdeen  
King, H. I. .... Aberdeen  
King, Owen .... Aberdeen  
\* Kruzich, S. J. .... Aberdeen  
Marvin, T. R. .... Faulkton  
Mayer, R. G. .... Aberdeen

McBroom, D. E. .... Redfield  
McCarthy, P. V. .... Aberdeen  
Murdy, Beecher C. .... Aberdeen  
Murdy, Robert ..... Aberdeen  
Pittenger, Earl A. .... Aberdeen  
Ranney, T. P. .... Aberdeen  
Rodine, John C. .... Aberdeen  
Rudolph, E. A. .... Aberdeen  
Scallin, Paul R. .... Redfield  
Schuchardt, I. L. .... Aberdeen  
Waldorf, C. E. .... Redfield  
\* Wayne, D. M. .... Redfield  
Weishaar, Chas. E. .... Aberdeen  
White, Walter E. .... Ipswich  
Whiteside, J. D. .... Aberdeen

#### WATERTOWN DISTRICT NO. 2

**PRESIDENT**  
A. Willen ..... Clark

**SECRETARY**  
G. R. Bartron ..... Watertown

Adams, M. E. .... Clark  
Bartron, G. R. .... Watertown  
Barron, H. J. .... Watertown

Bates, J. S. .... Lake Preston  
Brown, H. R. .... Watertown  
Christianson, A. H. .... Clark  
\* Crawford, J. H. Sr. .... Watertown  
\* Hammond, M. J. .... Watertown  
Hickman, N. L. .... Bryant  
Jorgenson, M. C. .... Watertown  
Kenny, H. T. .... Watertown  
Kilgard, R. M. .... Watertown  
Larsen, M. W. .... Watertown

Magee, W. G. .... Watertown  
Maxwell, R. T. .... Clear Lake  
McIntire, P. S. .... Bradley  
Randall, O. S. .... Watertown  
Richards, G. H. .... Sioux Falls  
Ross, Wm. .... Watertown  
Rousseau, M. C. .... Watertown  
Scheib, A. P. .... Watertown  
Walters, S. J. .... Watertown  
Willen, Abner ..... Clark

#### MADISON DISTRICT NO. 3

**PRESIDENT**  
G. H. Gulbrandsen ..... Brookings

**SECRETARY**  
C. M. Kershner ..... Brookings

Baughman, D. S. .... Madison  
Boyd, F. E. .... Flandreau  
\* Butler, C. A. .... Hot Springs

Davidson, Magni ..... Brookings  
Drobinsky, M. .... Estelline  
Grove, E. H. .... Arlington  
Gulbrandsen, G. H. .... Brookings  
Hofer, E. A. .... Howard  
Jordon, L. E. .... Chester  
Kershner, C. M. .... Brookings  
Miller, H. A. .... Brookings  
Muggly, J. A. .... Madison

Peeke, A. P. .... Volga  
Sherwood, C. E. .... Madison  
Tank, M. C. .... Brookings  
\* Torwick, E. E. .... Volga  
Watson, E. S. .... Brookings  
Westaby, J. R. .... Madison  
\* Westaby, R. S. .... Los Angeles  
Whitson, G. E. .... Madison  
Willoughby, F. C. .... Howard

#### PIERRE DISTRICT NO. 4

**PRESIDENT**  
O. A. Kimble ..... Murdo

**SECRETARY**  
M. M. Morrissey ..... Pierre

Carney, J. G. .... Los Angeles  
Collins, E. H. .... Gettysburg

Cottam, Gilbert ..... Pierre  
Cowen, J. T. .... Pierre  
Creamer, F. H. .... Dupree  
Embree, V. W. .... Onida  
\* Hart, B. M. .... Los Angeles  
Kimble, O. A. .... Murdo  
Martin, H. B. .... Harrold

Morrissey, M. M. .... Pierre  
Murphy, J. C. .... Murdo  
Northrup, F. A. .... Pierre  
Riggs, T. F. .... Pierre  
Robbins, C. E. .... Pierre  
\* Salladay, I. R. .... Pierre  
Triolo, A. .... Pierre



HURON DISTRICT NO. 5

**PRESIDENT**  
 H. L. Saylor ..... Huron

**SECRETARY**  
 H. P. Adams ..... Huron  
 Adams, H. P. .... Huron

\*Buchanan, R. A. .... Huron  
 Burman, G. E. .... Carthage  
 Hagin, J. C. .... Miller  
 Jacoby, Hans ..... Huron  
 Lenz, B. T. .... Huron  
 Pangburn, M. W. .... Miller

Saxton, W. H. .... Huron  
 Saylor, H. L. .... Huron  
 Shirley, J. C. .... Huron  
 Tschetter, J. S. .... Huron  
 Tschetter, Joseph ..... Huron  
 Tschetter, P. S. .... Huron

MITCHELL DISTRICT NO. 6

**PRESIDENT**  
 E. C. Bobb ..... Mitchell

**SECRETARY**  
 D. R. Mabee ..... Mitchell

Auld, C. V. .... Plankinton  
 Ball, W. R. .... Mitchell  
 Beukelman, W. H. .... Stickney  
 \*Bobb, B. A. .... Monrovia, Calif.

Bobb, C. S. .... Mitchell  
 Bobb, E. C. .... Mitchell  
 Bollinger, W. F. .... Parkston  
 Cochran, F. B. .... Plankinton  
 Delaney, Robert ..... Mitchell  
 Delaney, W. A. Jr. .... Mitchell  
 Delaney, W. A. Sr. .... Mitchell  
 DeVries, Albert ..... Platte  
 Dick, L. C. .... Spencer  
 \*Freyberg, F. W. .... Mitchell  
 Gillis, F. D. .... Mitchell  
 Jones, J. P. .... Mitchell

Jones, T. D. .... Chamberlain  
 \*Keene, F. F. .... Wessington Springs  
 Lloyd, J. H. .... Mitchell  
 Mabee, D. R. .... Mitchell  
 Mabee, O. J. .... Mitchell  
 Moran, C. S. .... Mitchell  
 McGreevy, F. V. .... Sioux Falls  
 Rieb, W. G. .... Parkston  
 Stegman, S. B. .... Salem  
 Tobin, F. J. .... Mitchell  
 Tobin, L. W. .... Mitchell  
 Weber, R. A. .... Mitchell

SIoux FALLS DISTRICT NO. 7

**PRESIDENT**  
 R. Reagan ..... Sioux Falls

**SECRETARY**  
 C. J. McDonald ..... Sioux Falls

Billingsly, P. R. .... Sioux Falls  
 Billion, T. J. Jr. .... Sioux Falls  
 \*Billion, T. J. Sr. .... Sioux Falls  
 Breit, Donald H. .... Sioux Falls  
 Clark, J. C. .... Sioux Falls  
 Cottam, G. I. W. .... Sioux Falls  
 \*Craig, Allen ..... Sioux Falls  
 \*Cunningham, R. .... Sioux Falls  
 Dehli, H. M. .... Colton  
 Devall, F. C. .... Garretson  
 Donahoe, S. A. .... Sioux Falls  
 Donahoe, W. E. .... Sioux Falls  
 Dumistra, F. .... Sioux Falls  
 Dulaney, C. H. .... Canton  
 Eggers, Maynard ..... Sioux Falls

Erickson, E. .... Sioux Falls  
 Erickson, O. C. .... Sioux Falls  
 Fiske, R. R. .... Flandreau  
 \*Fitzgibbons, G. .... Sioux Falls  
 \*Gage, E. E. .... Sioux Falls  
 Gregg, J. B. .... Sioux Falls  
 Groebner, O. A. .... Sioux Falls  
 Grove, A. F. .... Dell Rapids  
 Grove, M. S. .... Sioux Falls  
 Hanson, O. L. .... Valley Springs  
 Hofer, E. J. .... Freeman  
 \*Hummer, H. .... Sioux Falls  
 Hyden, Anton ..... Sioux Falls  
 Keller, S. A. .... Sioux Falls  
 Kemper, C. E. .... Viborg  
 Kittelson, J. A. .... Sioux Falls  
 Lamb, Hazel ..... Sioux Falls  
 Lanam, M. O. .... Sioux Falls  
 Leraan, L. G. .... Hartford  
 McDonald, C. J. .... Sioux Falls  
 \*Mullen, R. W. .... Sioux Falls

Nelson, J. A. .... Sioux Falls  
 Nessa, N. J. .... Sioux Falls  
 \*Nietfield, A. B. .... Sioux Falls  
 Nilsson, F. C. .... Sioux Falls  
 \*Olson, Orland ..... Sioux Falls  
 Opheim, O. V. .... Sioux Falls  
 Pankow, L. J. .... Sioux Falls  
 Parke, L. L. .... Sioux Falls  
 Reagan, R. .... Sioux Falls  
 Rich, E. L. .... Sioux Falls  
 \*Sackett, R. .... Parker  
 Sercl, W. F. .... Sioux Falls  
 Stenberg, E. S. .... Sioux Falls  
 Stevens, G. A. .... Sioux Falls  
 Stevens, R. G. .... Sioux Falls  
 Unruh, B. H. .... Sioux Falls  
 Van Demark, G. E. .... Sioux Falls  
 Volin, H. .... Lennox  
 Wallis, Marianne ..... Sioux Falls  
 \*Zellhoefer, H. .... Sioux Falls  
 Zimmerman, Goldie ..... Sioux Falls

YANKTON DISTRICT NO. 8

**PRESIDENT**  
 A. P. Reding ..... Marion

**SECRETARY**  
 J. A. Hohf ..... Yankton

Abts, E. J. .... Yankton  
 Abts, F. J. .... Yankton  
 Blezek, F. M. .... Tabor  
 Brookman, L. J. .... Vermillion  
 Bushnell, Wm. F. .... Elk Point  
 Conner, E. I. .... Alcester

Duggan, T. A. .... Wagner  
 Fairbanks, W. H. .... Vermillion  
 Greenfield, J. C. .... Avon  
 Haas, F. W. .... Yankton  
 Hills, W. C. .... Yankton  
 Hohf, J. A. .... Yankton  
 Hohf, S. M. .... Yankton  
 Hubner, R. F. .... Yankton  
 \*Kalayjian, D. S. .... Parker  
 \*Keeling, C. M. .... Springfield  
 Johnson, Geo. E. .... Yankton  
 Jordan, Geo. T. .... Vermillion

Joyce, E. .... Hurley  
 Lacey, V. I. .... Yankton  
 Lietzke, E. T. .... Beresford  
 McVay, C. B. .... Yankton  
 Ohlmacher, J. C. .... Vermillion  
 Reding, A. P. .... Marion  
 Schwartz, E. R. .... Wakonda  
 Smith, A. J. .... Yankton  
 Stansbury, E. M. .... Vermillion  
 Steiner, Peter K. .... Lemmon  
 Struble, A. J. .... Centerville  
 Tauber, K. S. .... Yankton

BLACK HILLS DISTRICT NO. 9

**PRESIDENT**  
 W. A. Dawley ..... Rapid City

**SECRETARY**  
 H. E. Davidson ..... Lead

Bailey, J. D. .... Rapid City  
 Borgmeyer, H. J. .... Rapid City  
 Brock, E. H. .... Rapid City  
 Butler, J. M. .... Hot Springs  
 \*Christian, P. C. .... Hot Springs  
 Clark, B. S. .... Spearfish  
 Clark, O. H. .... Newell  
 \*Cramer, L. L. .... Hot Springs  
 Crane, H. L. .... L'Oroya, Peru  
 Davidson, H. E. .... Lead  
 Davis, J. H. .... Belle Fourche

Dawley, W. A. .... Rapid City  
 Erickson, J. W. .... Rapid City  
 Ewald, P. P. .... Lead  
 Fleeger, R. B. .... Lead  
 \*Gilbert, Freeman J. .... Belle Fourche  
 Hare, Lyle ..... Spearfish  
 Hayes, Paul W. .... Hot Springs  
 Howe, F. S. .... Deadwood  
 \*Hummer, F. L. .... Lead  
 Jackson, A. S. .... Lead  
 Jackson, R. J. .... Rapid City  
 Jenstrom, R. E. .... Rapid City  
 Kegaries, D. L. .... Rapid City  
 \*Knoll, William ..... Hot Springs  
 \*Krasner, C. D. .... Hot Springs  
 Lampert, A. A. .... Rapid City  
 Lemley, R. E. .... Rapid City  
 Manning, F. E. .... Custer

Matlock, W. L. .... Deadwood  
 Mattox, N. E. .... Lead  
 \*Mauss, I. H. .... Rapid City  
 \*McGonigle, J. P. .... Rapid City  
 Merryman, M. P. .... Rapid City  
 Meyer, W. L. .... Sanator  
 \*Miller, G. H. .... Spearfish  
 Mills, G. W. .... Wall  
 Morse, W. E. .... Rapid City  
 Morsman, C. F. .... Hot Springs  
 Neves, Carl A. .... Hot Springs  
 Newby, H. D. .... Rapid City  
 \*Nyquist, R. H. .... Ft. Meade  
 O'Toole, T. F. .... Rapid City  
 Owen, G. S. .... Rapid City  
 Owen, N. T. .... Rapid City  
 Pemberton, M. O. .... Deadwood  
 Radusch, F. J. .... Rapid City

\* Railborn, R. L. Hot Springs  
 \* Roberts, F. J. Hot Springs  
 \* Rosenstock, Chas. Hot Springs  
 \* Sackett, R. F. Camp Rapid  
 Saddock, T. R. Wagner  
 Sherrill, S. F. Belle Fourche  
 Skogmo, B. R. Hot Springs

Smiley, J. C. Deadwood  
 \* Smith, F. C. Hot Springs  
 Soe, Carl A. Lead  
 Spain, M. L. Rapid City  
 \* Stewart, J. L. Spearfish  
 \* Stewart, M. J. Sturgis  
 Stewart, N. Wells Lead

Sundet, N. J. Kadoka  
 Swift, C. L. Martin  
 Threadgold, J. O. Belle Fourche  
 \* Townsend, L. J. Belle Fourche  
 Welty, D. M. Hot Springs  
 Williams, F. R. Rapid City  
 \* Zarbaugh, G. F. Deadwood

Lande, L. E. Winner

## ROSEBUD DISTRICT NO. 10

Malster, R. N. Carter  
 Quinn, R. J. Burke

Studenberg, J. E. Winner

## PRESIDENT

W. A. George Selby

## SECRETARY

L. D. Harris Mobridge

## NORTHWEST DISTRICT NO. 11

\* Caty, Robert Mobridge  
 Christie, Roy E. Eureka  
 \* Duncan, C. E. Pollock  
 George, W. A. Selby  
 \* Fleishman, Harold  
 Cheyenne Agency

Harris, L. D. Mobridge  
 Lowe, C. E. Mobridge  
 \* Sawyer, James G. Mobridge  
 Spiry, A. W. Mobridge  
 Totten, F. C. Lemmon

Faris F. Pfister Webster

## SECRETARY

W. H. Karlins Webster

Brauer, Harry H. Sisseton  
 Cliff, F. N. Milbank

## WHETSTONE VALLEY DISTRICT NO. 12

Duncan, William Webster  
 Flett, Chas. Milbank  
 Gregory, D. A. Milbank  
 Hawkins, A. P. Waubay  
 Hedemark, T. A.

Thief River Falls, Minn.

Jacotel, J. A. Milbank  
 Judge, W. T. Milbank

Karlins, W. H. Webster  
 Peabody, P. D. Jr. Webster  
 Pfister, Faris Webster  
 Younker, F. T. Sisseton

\* Honorary Member  
 \* Armed Service

## ROSTER

## South Dakota State Medical Association--1946

Abts, E. J. Yankton  
 Abts, F. J. Yankton  
 Adams, H. P. Huron  
 Adams, J. F. San Dimas, Calif.  
 Adams, M. E. Clark  
 Alway, J. D. Aberdeen  
 Auld, C. V. Plankinton  
 Bailey, J. D. Rapid City  
 Ball, W. R. Mitchell  
 Bartron, G. R. Watertown  
 Bartron, H. J. Watertown  
 Bates, J. S. Lake Preston  
 \* Bates, W. A. Aberdeen  
 Baughman, D. S. Madison  
 Beukelman, W. H. Stickney  
 Billingsly, P. R. Sioux Falls  
 Billion, T. J. Jr. Sioux Falls  
 \* Billion, T. J. Sr. Sioux Falls  
 Bloemendall, G. J. Ipswich  
 Blezek, F. M. Tabor  
 \* Bobb, B. A. Monrovia, Calif.  
 Bobb, C. S. Mitchell  
 Bobb, E. C. Mitchell  
 Bollinger, W. F. Parkton  
 Borgmeyer, H. J. Rapid City  
 Boyd, F. E. Flandreau  
 Brauer, Harry H. Sisseton  
 Breit, Donald H. Sioux Falls  
 Brenckle, J. E. Mellette  
 Brinkman, W. C. Veblen  
 Brock, E. H. Rapid City  
 Brookman, L. J. Vermillion  
 Brown, H. R. Watertown  
 Bruner, J. E. Aberdeen  
 \* Buchanan, R. E. Huron  
 Bunker, Paul G. Aberdeen  
 Burman, G. E. Carthage  
 Bushnell, Wm. F. Elk Point  
 \* Butler, C. A. Hot Springs  
 Butler, J. M. Hot Springs  
 Calene, John L. Aberdeen  
 Carney, J. G. Los Angeles, Calif.  
 \* Caty, Robert Mobridge

Chichester, J. G. Redfield  
 \* Christian, P. C. Hot Springs  
 Christianson, A. H. Clark  
 Christie, Roy E. Eureka  
 Clark, B. S. Spearfish  
 Clark, J. C. Sioux Falls  
 Clark, O. H. Newell  
 Cliff, F. N. Milbank  
 Cochran, F. B. Plankinton  
 Collins, E. H. Gettysburg  
 Conner, E. I. Alcester  
 Cooley, Frank H. Aberdeen  
 Cottam, Gilbert Pierre  
 Cottam, G. I. W. Sioux Falls  
 Cowan, J. T. Pierre  
 \* Craig, Allen Sioux Falls  
 \* Cramer, L. L. Hot Springs  
 Crane, H. L. L'Oroya, Peru  
 \* Crawford, J. H. Sr. Watertown  
 Creamer, F. H. Dupree  
 \* Cunningham, R. Sioux Falls  
 Damm, W. P. Redfield  
 Davidson, H. E. Lead  
 Davidson, Magni Brookings  
 Davis, J. H. Belle Fourche  
 Dawley, W. A. Rapid City  
 Dehli, H. M. Colton  
 Delaney, Robert Mitchell  
 Delaney, W. A. Jr. Mitchell  
 Delaney, W. A. Sr. Mitchell  
 Devall, F. C. Garretson  
 DeVries, Albert Platte  
 Dick, L. C. Spencer  
 Donahoe, S. A. Sioux Falls  
 Donahoe, W. E. Sioux Falls  
 Drissen, E. M. Britton  
 Drobinsky, M. Estelline  
 Duggan, T. A. Wagner  
 Dulaney, C. H. Canton  
 Dumistra, F. Sioux Falls  
 \* Duncan, C. E. Pollock  
 Duncan, William Webster  
 Eckrich, J. A. Aberdeen

Eggers, Maynard Sioux Falls  
 \* Elward, L. R. Doland  
 Embree, V. W. Onida  
 Erickson, E. Sioux Falls  
 Erickson, J. W. Rapid City  
 Erickson, O. C. Sioux Falls  
 Ewald, P. P. Lead  
 Fairbanks, W. H. Vermillion  
 Farrell, W. D. Aberdeen  
 Fiske, R. R. Flandreau  
 \* Fitzgibbon, G. Sioux Falls  
 \* Fleishman, Harold  
 Cheyenne Agency  
 Fleeger, R. B. Lead  
 Flett, Chas. Milbank  
 \* Freyberg, F. W. Mitchell  
 \* Gage, E. E. Sioux Falls  
 Gelber, M. R. Aberdeen  
 George, W. A. Selby  
 \* Gilbert, Freeman Belle Fourche  
 Gillis, F. D. Mitchell  
 Graff, Leo W. Britton  
 Greenfield, J. C. Avon  
 Gregg, J. B. Sioux Falls  
 Gregory, D. A. Milbank  
 Groebner, O. A. Sioux Falls  
 Grove, A. F. Dell Rapids  
 Grove, E. H. Arlington  
 Grove, M. S. Sioux Falls  
 Gulbrandsen, G. H. Brookings  
 Haas, F. W. Yankton  
 Hagin, J. C. Miller  
 \* Hammond, M. J. Watertown  
 Hanson, O. L. Valley Springs  
 Hare, Lyle Spearfish  
 Harris, L. D. Mobridge  
 \* Hart, B. M. Los Angeles, Calif.  
 Hayes, Paul W. Hot Springs  
 Hawkins, A. P. Waubay  
 Hedemark, T. A.  
 Thief River Falls, Minn.  
 Hickman, N. L. Bryant  
 Hills, W. C. Yankton



|                  |                    |                    |             |                    |                         |
|------------------|--------------------|--------------------|-------------|--------------------|-------------------------|
| Hofer, E. A.     | Howard             | McGreevy, F. V.    | Sioux Falls | Schuchardt, I. L.  | Aberdeen                |
| Hofer, E. J.     | Freeman            | ★McGonigle, J. P.  | Rapid City  | Schwartz, E. R.    | Wakonda                 |
| Hohf, J. A.      | Yankton            | McIntire, P. S.    | Bradley     | Sercl, W. F.       | Sioux Falls             |
| Hohf, S. M.      | Yankton            | McVay, C. B.       | Yankton     | Sherrill, S. F.    | Belle Fourche           |
| Howe, F. S.      | Deadwood           | Merryman, M. P.    | Rapid City  | Sherwood, C. E.    | Madison                 |
| Hubner, R. F.    | Yankton            | Meyer, W. L.       | Sanator     | Shirley, J. C.     | Huron                   |
| ★Hummer, F. L.   | Lead               | *Miller, G. H.     | Spearfish   | Skogmo, B. R.      | Hot Springs             |
| Hummer, H. R.    | Sioux Falls        | Miller, H. A.      | Brookings   | Smiley, J. C.      | Deadwood                |
| Hyden, Anton     | Sioux Falls        | Mills, G. W.       | Wall        | *Smith, A. J.      | Yankton                 |
| Jackson, A. S.   | Lead               | Moran, C. S.       | Mitchell    | Smith, F. C.       | Hot Springs             |
| Jackson, R. J.   | Rapid City         | Morse, W. E.       | Rapid City  | Soe, Carl A.       | Lead                    |
| Jacoby, Hans     | Huron              | Morseman, C. F.    | Hot Springs | Spain, M. L.       | Rapid City              |
| Jacotel, J. A.   | Milbank            | Morrissey, M. M.   | Pierre      | Spiry, A. W.       | Mobridge                |
| Jernstrom, R. E. | Rapid City         | Muggly, J. A.      | Madison     | Stansbury, E. M.   | Vermillion              |
| Johnson, Geo. E. | Yankton            | *Mullen, R. W.     | Sioux Falls | Stegman, S. B.     | Salem                   |
| Jones, J. P.     | Mitchell           | Murdy, Beecher C.  | Aberdeen    | Steiner, Peter K.  | Lemmon                  |
| Jones, T. D.     | Chamberlain        | Murdy, Robert      | Aberdeen    | Stenberg, E. S.    | Sioux Falls             |
| Jordan, Geo. T.  | Vermillion         | Murphy, J. C.      | Murdo       | Stevens, G. A.     | Sioux Falls             |
| Jordan, L. E.    | Chester            | Nelson, J. A.      | Sioux Falls | Stevens, R. G.     | Sioux Falls             |
| Jorgenson, M. C. | Watertown          | Nessa, N. J.       | Sioux Falls | *Stewart, J. L.    | Spearfish               |
| Joyce, E.        | Hurley             | Neves, Carl L.     | Hot Springs | ★Stewart, M. J.    | Sturgis                 |
| Judge, W. T.     | Milbank            | Newby, H. D.       | Rapid City  | Stewart, N. Wells  | Lead                    |
| Kalayjian, D. S. | Parker             | ★Nietfield, A. B.  | Sioux Falls | Studenberg, J. E.  | Winner                  |
| Karlins, W. H.   | Webster            | Nilsson, F. C.     | Sioux Falls | Sundet, N. J.      | Kadoka                  |
| Keegan, Agnes    | Aberdeen           | Northrup, F. A.    | Pierre      | Swift, C. L.       | Martin                  |
| Keeling, C. M.   | Springfield        | ★Nyquist, R. H.    | Ft. Meade   | Tank, M. C.        | Brookings               |
| Keene, F. F.     | Wessington Springs | Ohlmacher, J. C.   | Vermillion  | Tauber, K. S.      | Wagner                  |
| Kegaries, D. L.  | Rapid City         | ★Olson, Orland     | Sioux Falls | Threadgold, J. O.  | Belle Fourche           |
| Keller, S. A.    | Sioux Falls        | Opheim, O. V.      | Sioux Falls | Tobin, F. J.       | Mitchell                |
| Kemper, C. E.    | Viborg             | O'Toole, T. F.     | Rapid City  | Tobin, L. W.       | Mitchell                |
| Kenny, H. T.     | Watertown          | Owen, G. S.        | Rapid City  | *Torwick, E. E.    | Volga                   |
| Kershner, C. M.  | Brookings          | Owen, N. T.        | Rapid City  | Totten, F. C.      | Lemmon                  |
| Kilgaard, R. M.  | Watertown          | Pangburn, M. W.    | Miller      | *Townsend, L. J.   | Belle Fourche           |
| Kimble, O. A.    | Murdo              | Pankow, L. J.      | Sioux Falls | Triolo, A.         | Pierre                  |
| King, H. I.      | Aberdeen           | Parke, L. L.       | Sioux Falls | Tschetter, J. S.   | Huron                   |
| King, Owen       | Aberdeen           | Peabody, P. D. Jr. | Webster     | Tschetter, Jos.    | Huron                   |
| Kittelson, J. A. | Sioux Falls        | Peeke, A. P.       | Volga       | Tschetter, P. S.   | Huron                   |
| Knoll, Wm.       | Hot Springs        | Pemberton, M. O.   | Deadwood    | Unruh, B. H.       | Sioux Falls             |
| Krasner, C. D.   | Hot Springs        | Pfister, Faris     | Webster     | Van Demark, G. E.  | Sioux Falls             |
| ★Kruzich, S. J.  | Aberdeen           | Pittenger, E. A.   | Aberdeen    | Volin, H. P.       | Lennox                  |
| Lacey, V. I.     | Yankton            | Quinn, R. J.       | Burke       | Waldorf, C. E.     | Redfield                |
| Lamb, Hazel      | Sioux Falls        | Radusch, F. J.     | Rapid City  | Wallis, Marianne   | Sioux Falls             |
| Lampert, A. A.   | Rapid City         | *Railborn, R. L.   | Hot Springs | Walters, S. J.     | Watertown               |
| Lande, L. E.     | Winner             | Randall, O. S.     | Watertown   | ★Wayne, D. M.      | Redfield                |
| Lanam, M. O.     | Sioux Falls        | Ranney, T. P.      | Aberdeen    | Watson, E. S.      | Brookings               |
| Larsen, M. W.    | Watertown          | Reagan, R.         | Sioux Falls | Weber, R. A.       | Mitchell                |
| Lemley, R. E.    | Rapid City         | Reding, A. P.      | Marion      | Weishaar, Chas. E. | Aberdeen                |
| Lenz, B. T.      | Huron              | Richards, G. H.    | Sioux Falls | Welty, D. M.       | Hot Springs             |
| Leraan, L. G.    | Hartford           | Rich, E. L.        | Sioux Falls | Westaby, J. R.     | Madison                 |
| Lietzke, E. T.   | Beresford          | Rieb, W. G.        | Parkston    | *Westaby, R. S.    | Madison and Los Angeles |
| Lowe, C. E.      | Mobridge           | Riggs, T. F.       | Pierre      | White, W. E.       | Ipswich                 |
| Lloyd, J. H.     | Mitchell           | Robbins, C. E.     | Pierre      | Whiteside, J. D.   | Aberdeen                |
| Mabee, D. R.     | Mitchell           | *Roberts, F. J.    | Hot Springs | Whitson, G. E.     | Madison                 |
| Mabee, O. J.     | Mitchell           | Rodine, John       | Aberdeen    | Willen, Abner      | Clark                   |
| Magee, H. G.     | Watertown          | *Rosenstock, Chas. | Hot Springs | Williams, F. R.    | Rapid City              |
| Malster, R. N.   | Carter             | Ross, Wm.          | Watertown   | Willoughby, F. C.  | Howard                  |
| Manning, R. E.   | Custer             | Rousseau, M. C.    | Watertown   | Yunker, F. T.      | Sisseton                |
| Martin, H. B.    | Harrold            | Rudolph, E. A.     | Aberdeen    | ★Zarbaugh, G. F.   | Deadwood                |
| Marvin, T. R.    | Faulkton           | *Sackett, R. F.    | Camp Rapid  | ★Zellhoefer, H.    | Sioux Falls             |
| Matlock, W. L.   | Deadwood           | ★Sackett, R.       | Parker      | Zimmerman, Goldie  | Sioux Falls             |
| Mattox, N. E.    | Lead               | Sadock, T. R.      | Wagner      |                    |                         |
| *Mauss, I. H.    | Rapid City         | ★Salladay, I. R.   | Pierre      |                    |                         |
| Mayer, R. G.     | Aberdeen           | Saxton, W. H.      | Huron       |                    |                         |
| Maxwell, R. T.   | Clear Lake         | Saylor, H. L.      | Huron       |                    |                         |
| McBroom, D. E.   | Redfield           | ★Sawyer, Jas. G.   | Mobridge    |                    |                         |
| McCarthy, P. V.  | Aberdeen           | Scallin, Paul R.   | Redfield    |                    |                         |
| McDonald, C. J.  | Sioux Falls        | Scheib, A. P.      | Watertown   |                    |                         |

\* Honorary Member

★ Armed Service

WOMEN'S AUXILIARY TO THE SOUTH DAKOTA STATE MEDICAL ASSOCIATION

Officers

|                       |                                  |
|-----------------------|----------------------------------|
| President             | Mrs. William Duncan, Webster     |
| President-elect       | Mrs. H. Russell Brown, Watertown |
| First Vice President  | Mrs. Myron W. Larsen, Watertown  |
| Second Vice President | Mrs. J. H. Lloyd, Mitchell       |
| Recording Secretary   | Mrs. Kurt S. Tauber, Milbank     |
| Cor. Sec. and Treas.  | Mrs. Paul G. Bunker, Aberdeen    |
| Past President        | Mrs. G. S. Adams, Yankton        |

Chairmen of Standing Committees

|                                |                                 |
|--------------------------------|---------------------------------|
| <i>Hygeia</i>                  | (not appointed)                 |
| Bulletin                       | Mrs. A. J. Struble, Centerville |
| Legislative                    | Mrs. C. E. Robbins, Pierre      |
| Organization                   | Mrs. Myron W. Larsen, Watertown |
| Program                        | Mrs. M. R. Gelber, Aberdeen     |
| Public Relations and Publicity | Mrs. F. W. Minty, Rapid City    |
| Historian                      | Mrs. G. S. Adams, Yankton       |

South Dakota State Medical Benevolent Committee

|                     |                               |
|---------------------|-------------------------------|
| Chairman            | Mrs. J. C. Hagin, Miller      |
| Secretary-Treasurer | C. E. Sherwood, M.D., Madison |

Advisory Council

|                                |         |
|--------------------------------|---------|
| C. E. Sherwood, M.D., Chairman | Madison |
| W. H. Saxton, M.D.             | Huron   |
| C. E. Robbins, M.D.            | Pierre  |

President's Report 1945-1946

Mrs. William Duncan, of Webster, was elected president of the Women's Auxiliary to the South Dakota State Medical Association at its 36th annual meeting in Aberdeen, June 1-4, 1946. Other officers are: Mrs. H. Russell Brown, Watertown, president-elect; Mrs. Myron W. Larsen, Watertown, first vice president; Mrs. J. H. Lloyd, Mitchell, second vice president; Mrs. Kurt S. Tauber, Milbank, recording secretary, and Mrs. Paul G. Bunker, Aberdeen, corresponding secretary and treasurer.

Mrs. G. S. Adams, retiring president, gave a resume of her annual reports sent to Miss Margaret N. Wolfe, our Executive Secretary, Chicago, and to our National Historian, Mrs. David B. Ludwig of Pittsburgh, also the war report for 1944-1946 which was sent to our national War Service Chairman, Mrs. Rollo K. Packard of Chicago. The war report indicated that all Doctor's wives had continued their activities in hospital work, Red Cross sewing and knitting, surgical dressings, hospital guild work, canteen, nurses aide classes, ration boards, cancer control drive, Gray Ladies, bond sale drives, World Relief clothing drive, Girl Scouts, etc. One auxiliary member served on the State Recruitment Committee of the U. S. Cadet Nurse Corps and promoted the U. S. Cadet Corps at Sacred Heart Hospital in Yankton.

At the close of another year we are happy to report that the South Dakota Auxiliary has made progress in all phases of its work and has increased its membership from 132 to 150 members, which was our goal. Our slogan was "Every Doctor's Wife a Member." The highlight of the convention was the report that Whetstone Valley District No. 12 had been organized with nine members. We now have eleven organized and one unorganized district. The smallest unit has four members, which is 100 per cent. The largest unit has twenty-six members. Our first president, Mrs. R. D. Jennings of Hot Springs, South Dakota, is still very active, although nearly 90 years of age. She spent the winter in Tulsa, Oklahoma, where she attended a meeting of the Oklahoma Auxiliary on May 7, 1946.

This year our *Hygeia* chairman obtained 62 subscriptions for *Hygeia*, the largest number ever sold, and entered the National contest, winning the Honorable Mention award.

Our Auxiliary programs this past year have been educational, social and legislative. Some of the subjects were: Promotion of Public Health, Promotion of *Hygeia* and *Child Care*, Promotion of the *Bulletin*, Juvenile Delinquency, Promotion of Authentic Nutrition Programs, Doctor's Day Observance, Promotion of Cancer Control, Promotion of Benevolent Fund and Auxiliary Cooperation to help plan a lasting World Peace and Rehabilitation.

This past year we have had the privilege of hearing over WNAX Radio every Tuesday evening, "The Doctors Talk it Over." The subjects proved most instructive and interesting. The radio has just added a new series, "Venereal Diseases," which should contain valuable information.

At the close of our annual Medical Auxiliary meeting we had the pleasure of hearing Dr. Gilbert Cottam, superintendent of the State Board of Health, address us on the Wagner-Murray-Dingell bill. Dr. Cottam had just returned from Washington and his talk was very educational and entertaining.

Our Post War annual meeting in Aberdeen was an outstanding success. The Hostess Auxiliary was wonderfully solicitous of us in every respect, their entertainment was delightful and we are all most grateful to them for a successful and enjoyable convention. The meeting adjourned with Mrs. William Duncan, our new president, in the chair.

Benevolent Fund Report

The Benevolent Fund, established in 1939 by the Woman's Medical Auxiliary for indigent physicians and their families, is now about twenty-five hundred dollars. At the annual meeting it was voted that the bonds remaining in the Auxiliary treasury be added to the Benevolent Fund and that the Benevolent Fund Committee also consider using the funds on hand as a Student Loan Fund for senior students. We also voted a donation to our State Society for Crippled Children.

MRS. G. S. ADAMS

ROSTER, 1946 — MEMBERSHIP BY DISTRICTS

ABERDEEN DISTRICT NO. 1

|                                 |          |
|---------------------------------|----------|
| President—Mrs. I. L. Schuchardt | Aberdeen |
| Secretary—Mrs. Paul G. Bunker   | Aberdeen |
| Bruner, Mrs. J. E.              | Aberdeen |
| Bunker, Mrs. P. G.              | Aberdeen |
| Calene, Mrs. J. L.              | Aberdeen |
| Cooley, Mrs. F. H.              | Aberdeen |
| Gelber, Mrs. M. R.              | Aberdeen |
| Mayer, Mrs. R. G.               | Aberdeen |
| Murdy, Mrs. B. C.               | Aberdeen |
| Murdy, Mrs. Carson              | Aberdeen |
| Murdy, Mrs. Robert              | Aberdeen |
| Pittenger, Mrs. E. A.           | Aberdeen |
| Ranney, Mrs. T. P.              | Aberdeen |
| Rudolph, Mrs. E. A.             | Aberdeen |
| Schuchardt, Mrs. I. L.          | Aberdeen |

WATERTOWN DISTRICT NO. 2

|                                |           |
|--------------------------------|-----------|
| President—Mrs. M. C. Jorgenson | Watertown |
| Secretary—Mrs. O. S. Randall   | Watertown |
| Brown, Mrs. H. R.              | Watertown |
| Hammond, Mrs. M. J.            | Watertown |
| Jorgenson, Mrs. M. C.          | Watertown |
| Kilgard, Mrs. R. M.            | Watertown |

|                          |            |
|--------------------------|------------|
| Larsen, Mrs. M. W.       | Watertown  |
| Magee, Mrs. W. G.        | Watertown  |
| Randall, Mrs. O. S.      | Watertown  |
| Scheib, Mrs. A. P.       | Watertown  |
| Vaughn, Mrs. James B.    | Castlewood |
| Walters, Mrs. Stanley J. | Watertown  |
| Richards, Mrs. G. H.     | Watertown  |
| Rousseau, Mrs. M. C.     | Watertown  |

MADISON DISTRICT NO. 3

|                               |           |
|-------------------------------|-----------|
| President—Mrs. C. E. Sherwood | Madison   |
| Secretary—Mrs. J. R. Westaby  | Madison   |
| Baughman, Mrs. D. S.          | Madison   |
| Davidson, Mrs. M.             | Brookings |
| Grove, Mrs. E. H.             | Arlington |
| Gulbrandsen, Mrs. G. H.       | Brookings |
| Hofer, Mrs. E. A.             | Howard    |
| Miller, Mrs. H. A.            | Brookings |
| Peeke, Mrs. A. P.             | Volga     |
| Sherwood, Mrs. C. E.          | Madison   |
| Tank, Mrs. M. C.              | Brookings |
| Watson, Mrs. E. S.            | Brookings |
| Westaby, Mrs. J. R.           | Madison   |
| Whitson, Mrs. G. E.           | Madison   |



PIERRE DISTRICT NO. 4

|                                     |         |
|-------------------------------------|---------|
| President—Mrs. T. F. Riggs .....    | Pierre  |
| Secretary—Mrs. I. R. Salladay ..... | Pierre  |
| Martin, Mrs. H. B. ....             | Harrold |
| Morrissey, Mrs. M. M. ....          | Pierre  |
| Northrup, Mrs. F. A. ....           | Pierre  |
| Riggs, Mrs. T. F. ....              | Pierre  |
| Robbins, Mrs. C. E. ....            | Pierre  |
| Salladay, Mrs. I. R. ....           | Pierre  |
| Triolo, Mrs. A. ....                | Pierre  |

HURON DISTRICT NO. 5

|                                        |        |
|----------------------------------------|--------|
| President—Mrs. R. A. Buchanan .....    | Huron  |
| Secretary—Mrs. John S. Tschetter ..... | Huron  |
| Adams, Mrs. H. P. ....                 | Huron  |
| Buchanan, Mrs. R. A. ....              | Huron  |
| Hagin, Mrs. J. C. ....                 | Miller |
| Jacoby, Mrs. Hans .....                | Huron  |
| Lenz, Mrs. B. T. ....                  | Huron  |
| Saylor, Mrs. Howard .....              | Huron  |
| Saxton, Mrs. W. H. ....                | Huron  |
| Shirley, Mrs. J. C. ....               | Huron  |
| Tschetter, Mrs. John S. ....           | Huron  |
| Tschetter, Mrs. Joseph S. ....         | Huron  |
| Tschetter, Mrs. Paul S. ....           | Huron  |

MITCHELL DISTRICT NO. 6

|                                   |             |
|-----------------------------------|-------------|
| President—Mrs. F. D. Gillis ..... | Mitchell    |
| Secretary—Mrs. D. R. Mabee .....  | Mitchell    |
| Ball, Mrs. W. R. ....             | Mitchell    |
| Beukelman, Mrs. W. H. ....        | Stickney    |
| Bobb, Mrs. C. S. ....             | Mitchell    |
| Bobb, Mrs. E. C. ....             | Mitchell    |
| Delaney, Mrs. W. A. Jr. ....      | Mitchell    |
| Delaney, Mrs. W. A. Sr. ....      | Mitchell    |
| Freyberg, Mrs. F. W. ....         | Mitchell    |
| Gillis, Mrs. F. D. ....           | Mitchell    |
| Lloyd, Mrs. J. H. ....            | Mitchell    |
| Mabee, Mrs. D. R. ....            | Mitchell    |
| Mabee, Mrs. O. J. ....            | Mitchell    |
| McGreevey, Mrs. J. V. ....        | Sioux Falls |
| Moran, Mrs. C. S. ....            | Mitchell    |
| Rieb, Mrs. W. G. ....             | Parkston    |
| Tobin, Mrs. F. J. ....            | Mitchell    |
| Tobin, Mrs. L. W. ....            | Mitchell    |
| Weber, Mrs. R. A. ....            | Mitchell    |

SIoux FALLS DISTRICT NO. 7

|                                   |                |
|-----------------------------------|----------------|
| President—Mrs. R. Reagan .....    | Sioux Falls    |
| Secretary—Mrs. H. M. Delhi .....  | Colton         |
| Treasurer—Mrs. L. J. Pankow ..... | Sioux Falls    |
| Billion, Mrs. T. J. ....          | Sioux Falls    |
| Brandon, Mrs. P. E. ....          | Sioux Falls    |
| Delhi, Mrs. H. M. ....            | Colton         |
| Donahoe, Mrs. S. A. ....          | Sioux Falls    |
| Erickson, Mrs. E. G. ....         | Sioux Falls    |
| Erickson, Mrs. O. C. ....         | Sioux Falls    |
| Gage, Mrs. E. E. ....             | Sioux Falls    |
| Grove, Mrs. M. S. ....            | Sioux Falls    |
| Hanson, Mrs. O. A. ....           | Valley Springs |
| Hyden, Mrs. Anton .....           | Sioux Falls    |
| Kittleson, Mrs. J. A. ....        | Sioux Falls    |
| Lanam, Mrs. M. O. ....            | Sioux Falls    |
| Leraan, Mrs. L. G. ....           | Sioux Falls    |
| McDonald, Mrs. C. J. ....         | Sioux Falls    |
| Nelson, Mrs. J. A. ....           | Sioux Falls    |
| Nessa, Mrs. N. J. ....            | Sioux Falls    |
| Nilsson, Mrs. F. C. ....          | Sioux Falls    |
| Pankow, Mrs. L. J. ....           | Sioux Falls    |
| Reagan, Mrs. R. ....              | Sioux Falls    |
| Sercl, Mrs. Wm. F. ....           | Sioux Falls    |
| Stenberg, Mrs. E. S. ....         | Sioux Falls    |
| Stevens, Mrs. G. A. ....          | Sioux Falls    |

|                              |             |
|------------------------------|-------------|
| Stevens, Mrs. R. G. ....     | Sioux Falls |
| Stone, Mrs. J. G. ....       | Sioux Falls |
| Ver Maelen, Mrs. Peter ..... | Sioux Falls |
| Volin, Mrs. H. P. ....       | Lennox      |

YANKTON DISTRICT NO. 8

|                                     |             |
|-------------------------------------|-------------|
| President—Mrs. E. R. Schwartz ..... | Wakonda     |
| Secretary—Mrs. R. F. Hubner .....   | Yankton     |
| Abts, Mrs. E. J. ....               | Yankton     |
| Abts, Mrs. F. J. ....               | Yankton     |
| Adams, Mrs. G. S. ....              | Yankton     |
| Blezek, Mrs. F. M. ....             | Tabor       |
| Brookman, Mrs. L. J. ....           | Vermillion  |
| Duggan, Mrs. T. A. ....             | Wagner      |
| Greenfield, Mrs. J. C. ....         | Avon        |
| Haas, Mrs. F. W. ....               | Yankton     |
| Hohf, Mrs. J. A. ....               | Yankton     |
| Hubner, Mrs. R. F. ....             | Yankton     |
| Johnson, Mrs. G. E. ....            | Yankton     |
| Joyce, Mrs. E. ....                 | Hurley      |
| Kirby, Mrs. W. M. ....              | Springfield |
| Lacey, Mrs. V. I. ....              | Yankton     |
| McVay, Mrs. C. B. ....              | Yankton     |
| Morehouse, Mrs. E. M. ....          | Yankton     |
| Ohlmacher, Mrs. J. C. ....          | Vermillion  |
| Reding, Mrs. A. P. ....             | Marion      |
| Schwartz, Mrs. E. R. ....           | Wakonda     |
| Smith, Mrs. A. J. ....              | Yankton     |
| Stansbury, Mrs. E. M. ....          | Vermillion  |
| Struble, Mrs. A. J. ....            | Centerville |
| Tauber, Mrs. K. S. ....             | Milbank     |
| Trieweiler, Mrs. J. E. ....         | Yankton     |

BLACK HILLS DISTRICT NO. 9

|                                  |               |
|----------------------------------|---------------|
| (No acting president)            |               |
| Secretary—Mrs. F. W. Minty ..... | Rapid City    |
| Bailey, Mrs. J. D. ....          | Rapid City    |
| Brock, Mrs. E. H. ....           | Rapid City    |
| Davis, Mrs. J. H. ....           | Belle Fourche |
| Hare, Mrs. Lyle .....            | Spearfish     |
| Howe, Mrs. F. S. ....            | Deadwood      |
| Jackson, Mrs. A. S. ....         | Lead          |
| Jernstrom, Mrs. R. E. ....       | Rapid City    |
| Kegaries, Mrs. D. L. ....        | Rapid City    |
| Meyer, Mrs. W. L. ....           | Sanator       |
| Minty, Mrs. F. W. ....           | Rapid City    |
| Morse, Mrs. W. E. ....           | Rapid City    |
| Newby, Mrs. H. D. ....           | Rapid City    |
| O'Toole, Mrs. T. F. ....         | Rapid City    |
| Spain, Mrs. M. L. ....           | Rapid City    |
| Wills, Mrs. G. W. ....           | Wall          |

ROSEBUD DISTRICT NO. 10

|                                    |        |
|------------------------------------|--------|
| (No acting president)              |        |
| Secretary—Mrs. R. V. Overton ..... | Winner |
| Lande, Mrs. L. E. ....             | Winner |
| Overton, Mrs. R. V. ....           | Winner |
| Quinn, Mrs. R. J. ....             | Burke  |
| Studenberg, Mrs. J. E. ....        | Winner |

NORTHWEST DISTRICT NO. 11

(currently non-active)

WHETSTONE VALLEY DISTRICT NO. 12

|                                    |          |
|------------------------------------|----------|
| President—Mrs. Wm. Duncan .....    | Webster  |
| Secretary—Mrs. F. T. Younker ..... | Sisseton |
| Brauer, Mrs. H. H. ....            | Sisseton |
| Cliff, Mrs. F. N. ....             | Milbank  |
| Duncan, Mrs. Wm. ....              | Webster  |
| Gregory, Mrs. D. A. ....           | Milbank  |
| Hawkins, Mrs. A. P. ....           | Waubay   |
| Peabody, Mrs. P. D. Jr. ....       | Webster  |
| Pfister, Mrs. Faris .....          | Webster  |
| Younker, Mrs. F. T. ....           | Sisseton |
| Wold, Mrs. H. R. ....              | Sisseton |

# The JOURNAL LANCET

Serves the *Medical Profession of*  
MINNESOTA, NORTH DAKOTA, SOUTH DAKOTA AND MONTANA

Official Journal of the American Student Health Assn., Great Northern Railway Surgeons' Assn., Minneapolis Academy of Medicine, Montana State Medical Assn., North Dakota Society of Obstetrics and Gynecology, North Dakota State Medical Assn., Northwestern Pediatric Society, Sioux Valley Medical Assn., South Dakota Public Health Assn., South Dakota State Medical Assn.

## ADVISORY COUNCIL

### North Dakota State Medical Assn.

Dr. A. E. Spear, *Pres.*  
Dr. Philip G. Arzt, *Pres.-Elect*  
Dr. L. W. Larson, *Secy.*  
Dr. W. W. Wood, *Treas.*

### North Dakota Society of Obstetrics and Gynecology

Dr. E. H. Boerth, *Pres.*  
Dr. Paul Freise, *Vice Pres.*  
Dr. G. Wilson Hunter, *Secy.-Treas.*

### Minneapolis Academy of Medicine

Dr. Karl W. Anderson, *President*  
Dr. Russell W. Morse, *Vice Pres.*  
Dr. J. C. Miller, *Secretary*  
Dr. Ragnvald S. Ylvisaker, *Treasurer*  
Dr. Henry E. Hoffert, *Recorder*

### South Dakota State Medical Assn.

Dr. F. S. Howe, *Pres.*  
Dr. H. R. Brown, *Pres.-Elect*  
Dr. J. L. Calene, *Vice-Pres.*  
Dr. Roland G. Mayer, *Secy.-Treas.*

### South Dakota Public Health Assn.

Dr. J. M. Butler, *Pres.*  
Dr. C. E. Sherwood, *Vice Pres.*  
Dr. Gilbert Cottam, *Secy.-Treas.*

### Sioux Valley Medical Assn.

Dr. D. S. Baughman, *Pres.*  
Dr. Will Donahoe, *Vice Pres.*  
Dr. R. H. McBride, *Secy.*  
Dr. Frank Winkler, *Treas.*

### Montana State Medical Assn.

Dr. S. A. Cooney, *Pres.*  
Dr. M. A. Shillington, *Pres.-Elect*  
Dr. R. F. Peterson, *Secy.-Treas.*

### Northwestern Pediatric Society

Dr. G. B. Logan, *Pres.*  
Dr. Geo. Kimmel, *Vice Pres.*  
Dr. Northrop Beach, *Secy.-Treas.*

### Great Northern Railway Surgeons' Assn.

Dr. W. W. Taylor, *Pres.*  
Dr. R. C. Webb, *Secy.-Treas.*

### American Student Health Assn.

Dr. Ralph I. Canuteson, *Pres.*  
Dr. Glenadine Snow, *Vice Pres.*  
Dr. G. T. Blydenburgh, *Secy.-Treas.*

## BOARD OF EDITORS

DR. J. A. MYERS, *Chairman*

Dr. J. O. Arnson  
Dr. A. B. Baker  
Dr. D. S. Baughman  
Dr. Ruth E. Boynton  
Dr. Gilbert Cottam  
Dr. H. S. Diehl  
Dr. L. G. Dunlap  
Dr. Ralph V. Ellis  
Dr. W. A. Fansler

Dr. A. R. Foss  
Dr. James M. Hayes  
Dr. A. E. Hedback  
Dr. E. D. Hitchcock  
Dr. R. E. Jernstrom  
Dr. A. Karsted  
Dr. L. W. Larson  
Dr. W. H. Long  
Dr. O. J. Mabe

Dr. J. C. McKinley  
Dr. Irvine McQuarrie  
Dr. Henry E. Michelson  
Dr. C. H. Nelson  
Dr. N. J. Nessa  
Dr. Martin Nordland  
Dr. J. C. Ohlmacher  
Dr. K. A. Phelps  
Dr. C. E. Sherwood

Dr. M. A. Shillington  
Dr. J. C. Shirley  
Dr. E. Lee Shrader  
Dr. E. J. Simons  
Dr. J. H. Simons  
Dr. S. A. Slater  
Dr. W. P. Smith  
Dr. S. E. Sweitzer

Dr. W. H. Thompson  
Dr. E. L. Tuohy  
Dr. M. B. Visscher  
Dr. O. H. Wangenstein  
Dr. S. Marx White  
Dr. H. M. N. Wynne  
Dr. Thomas Ziskin,  
*Secretary*

LANCET PUBLISHING CO., *Publishers*, 84 South Tenth Street, Minneapolis 2, Minnesota

MINNEAPOLIS, MINN., AUGUST, 1946

## WASH LESS AFTER SUN-BATHS

Among research workers in the field of biochemistry it has become recognized as a well established fact that all manifestations of life, whether normal or morbid, are accompanied by chemical changes. Until recently, such an assertion might have been looked upon as too bold, especially in application to mental disease, but even in these cases there is now increasing proof of changes as exemplified by findings in the composition of the blood and spinal fluid.

The most important contribution of modern biochemistry from a practical standpoint has been made in the fields of vitamin, hormone and antibiotic research. The importance of the vitamin problem is due to the fact that esthetic refinement in the culinary art has resulted in a notable loss of man's instinct to choose the right food, while we find that the animal's instinct remains almost infallible in this respect. If rats are fed on food deficient in vitamin B they eat their own excrement or that of other rats which contains this vitamin. If cut off

from even this source of vitamin, they devour each other and choose the organs that abound in vitamin B, as the liver. Man, on the other hand, has been obliged to replace his instinct by science, which has, to be sure, solved many vitamin problems during the past four decades but left others to satisfy the ambition of the zealous investigators of our and later times.

The chemical reactions which give rise to active vitamin D through radiation is an interesting story. The sebaceous glands of the skin produce a secretion containing vitamin D, which is activated by sun radiation on the surface of the body. This vitamin can be absorbed through the skin, and therefore a person should not wash himself too thoroughly after a sun-bath. In animals the activating takes place on the hairy tegument. When the cat licks its fur, or when apes are apparently hunting for fleas, they are actually satisfying their hunger for vitamin D, which cannot be reabsorbed through the thick fur.

A. E. H.



## AS THE LIFE SPAN LENGTHENS

Today we boast of a significant accomplishment of the medical profession and its allies in the recent lengthened span of human life. Longevity in the United States is now surpassed by only a few small populations in other parts of the world. In this country the life expectancy at birth was forty years in 1850. It increased to forty-seven years during the last half of the nineteenth century. In 1940 it was sixty-three years.

In 1900 there were 7,083,033 (9.32 per cent of the total population) persons in the United States of fifty-five years or older, but in 1940 there were 19,591,519 (14.88 per cent of the entire population) persons in this age period.

The increase in the length of life has been due in large part to the control of contagious diseases which formerly were so destructive among young children. Obviously, many deaths in infancy markedly reduce the average length of life although many persons attain senility. For example, with twenty-six years as the average duration of life in India, a considerable number of persons live to be old. However, the infant and early childhood mortality is so high as to reduce the average to this low level.

Diseases which once were rampant among children in the United States are now responsible for relatively few deaths. For example, in Minneapolis (population 492,370) in 1945 there were only 410 deaths among children from birth through four years of age, and 371 of them occurred during the first year of life (175 of which were premature births or birth injuries). Contagious diseases, formerly so destructive, accounted for relatively few of these deaths in 1945, as follows: Epidemic meningitis 4; whooping cough 1; influenza 8; poliomyelitis 2; pneumonia 51; diarrhea 24. One is impressed by the fact that not one child died from diphtheria or tuberculosis.

For the years 1942 to 1945 in Minneapolis the average annual number of births was 12,172. Thus, it is obvious that the vast majority of children are passing safely through the first four years of life which was previously so hazardous. However, in the country as a whole, further curbing of controllable diseases among children is capable of resulting in greater increase in the span of human life.

The diseases and conditions which cause death after the age of forty have not responded so well to the efforts of the medical profession. In fact, among the persons who have attained this age the expectancy of life is only one or two years more than it was among persons of this age fifty years ago. Therefore, achievement in controlling these conditions might result in a further marked increase in longevity.

With so many persons now living into the seventh, eighth and ninth decades of life no new condition has been created, but some situations pertaining to elderly people have greatly increased in magnitude. A good example is health problems. Undoubtedly there are far more older persons suffering from such conditions as malignancy, heart afflictions, emphysema and tuberculosis than ever before because there have never formerly been

so many persons in this age period. Indeed, there are now so many elderly persons in this country that one occasionally hears it intimated that a considerable number of physicians may enter the field of geriatrics as a specialty. It is a question as to whether this situation will come to pass. In any event, there is now a large demand on the physicians' time to care for persons in the later decades of life. The cordial reception accorded *Geriatrics*, the new official journal of the American Geriatrics Society, is an indication that physicians everywhere are seeking information in order to supply this demand.

J. A. M.

## STREPTOMYCIN IN TREATMENT OF TULAREMIA

Considerable variance of opinion has existed until recently as to the most effective therapy for tularemia.

Jackson<sup>1</sup> reports 61 consecutive cases of tularemia treated successfully with bismuth sodium tartrate administered intravenously. The solution used is 2 per cent bismuth sodium tartrate containing 29.6 mg. of bismuth per cubic centimeter, buffered with sucrose to isotonicity.

Bell and Kahn<sup>2</sup> reported their results in experimental tularemia in guinea pigs treated with eleven different remedies, some containing bismuth. The following were found to be of no value in this experimental treatment of tularemia: sulfanilamide, sulfadiazine, sulfamerazine, acriflavine, metaphen, iodine and bismuth (iodobismutol with saligenin), arsenic and bismuth (solution of bismuth subgallate and sodium para-aminophenyl arsonate), trivalent arsenic alone (maphersen), antimony (stibophen), penicillin, and hyperimmune equine antitularemic serum.

Foshay and Pasternack<sup>3</sup> report good results in seven cases of tularemia treated with streptomycin. All responded promptly to treatment. One case in which treatment was started on the eighth day of the disease was discharged as cured on the seventeenth day, nine days after treatment was begun. The authors state that response was uniform in character, degree, continuity, and time of appearance. Foshay and Pasternack used doses that would probably now be considered suboptimal. The total dosage used for each of their seven cases varied from 640,000 units to a maximum of 1,760,000 units.

The *Bulletin of the U. S. Army Medical Department* for May, 1946, in a general review of streptomycin, says this concerning its effects on tularemia, "Present experience suggests that streptomycin is the most effective therapeutic agent available for this condition."

These latter experiences justify the conclusion that, at present, streptomycin is the most effective therapeutic agent available for the treatment of tularemia.

T. D.

### REFERENCES

1. Jackson, W. W.: Treatment of Tularemia with Intravenous Bismuth Sodium Tartrate. *Amer. Jour. Med. Sciences*, 209: 513, (April) 1945.
2. Bell, J. F., and Kahn, O. B.: Efficacy of Some Drugs and Biologic Preparations as Therapeutic Agents for Tularemia. *Arch. Internal Med.*, 75: 155, (March) 1945.
3. Foshay, L., and Pasternack, A. B.: Streptomycin for Tularemia. *J.A.M.A.*, Feb. 16, 1946.

## News Items

### NEWS FROM NORTH DAKOTA

Dr. George F. Campana, North Dakota state health officer since 1944, resigned June 27. Dr. Leonard Larson, Bismarck, chairman of the state public health advisory council said a successor to Dr. Campana has not yet been named. Dr. Campana expects to enter private practice with his brother in Brooklyn, New York.

Officers of the medical staff of St. Luke's hospital, Fargo, North Dakota, elected June 18, are Dr. Charles Heilman, president; Dr. C. B. Darner, vice president; Dr. H. W. Hawn, secretary; Drs. W. C. Nichols, W. E. G. Lancaster and V. G. Borland, executive committee members; Drs. G. Wilson Hunter and W. A. Stafne, committee on records, and Drs. A. C. Fortney, Borland and Hawn, program committee.

.....

Approximately eighty donators to the Tri-State Hospital fund met at Bowman, North Dakota, June 11, for the purpose of electing a board of trustees. Named for one year terms as board of trustee members were L. P. Dove and M. S. Byrne; two year members are Mrs. Ray Storer, and J. J. Sedevie; Mrs. Harold Brooks was elected as trustee for a term of three years.

### NEWS FROM SOUTH DAKOTA

Dr. Millard C. Hanson, one of the two Boston doctors who have discovered a new medical agent more powerful in early tests than penicillin, is formerly of Howard, South Dakota. He was born there in 1898 and left in 1922 to attend the University of Chicago medical school.

Two Rapid City clinics, the Midwest and the Lemley-Merryman, merged on July 1. The offices are established in the former Lemley Clinic building with complete laboratory and X-ray facilities provided. In the new medical service are Dr. J. D. Bailey, pediatrics, Dr. M. P. Merryman, internal medicine, Dr. R. E. Lemley, genito-urinary, rectal, and skin diseases, Dr. F. R. Williams, general surgery, orthopedics, and gynecology, and Dr. A. G. Olson, dentistry.

Dr. Joseph Lovering, formerly an assistant surgeon at the Mayo clinic, became associated July 1 with the Peabody clinic, Webster, South Dakota, as a surgeon.

.....

Appointment of Dr. Arnold Slaughter, Dallas, Texas, as dean of the newly expanded four-year medical school at the University of South Dakota was announced June 14 by President I. D. Weeks.

At the same time President Weeks announced the organization of a department of surgery in the medical school and the appointment of Dr. William R. Cubbins, Chicago, as head of the department.

Dr. Slaughter, a former Iowan, is at present dean of students and chairman of the department of physiology and pharmacology at Southwestern Medical college at Dallas.

Dr. J. H. Crawford, Jr., and Dr. Mary A. Schmidt opened offices in the Way-Penney Building, Watertown, South Dakota, on August 1. Dr. Crawford, a diplomate of the American Board of Ophthalmology, specializes in ophthalmology. Dr. Schmidt is a fellow of the University of Minnesota and is a specialist in pediatrics.

### NEWS FROM MONTANA

The Montana State Medical association held their annual meeting July 18-20 in Great Falls, Montana. News of the meeting will be published in a later issue of JOURNAL LANCET.

.....

Dr. Frank L. McPhail of Great Falls was elected president of the Montana Public Health association at its two-day session in Helena the early part of June. Dr. McPhail, who serves as chairman of the maternal child health committee of the Montana State Medical association, succeeded C. G. Manning, Lewistown school superintendent.

Dr. William R. Schaffarzick has opened offices in the Bayles-Nash Clinic, Three Forks, Montana, as a resident physician and surgeon. He was graduated from the medical school of Vanderbilt University, Nashville, Tennessee, in 1943, and during the past three years was in the Armed Forces.

Dr. F. W. Paul and Dr. V. D. Ferree are opening a clinic in Kalispell, Montana, on August 1. Dr. Paul served three years in the AAF.

Dr. Frank B. Wisner, who served in the navy, is opening an office in Libby, Montana. He practiced at Ludlow before the war.

Dr. John C. Wolgamot, Great Falls, Montana, a specialist in orthopedic surgery, has joined the Great Falls Clinic. Dr. Wolgamot is a graduate of the University of Michigan school of medicine and later taught medicine there. He acted as a consultant for the Michigan state tuberculosis sanitarium.

Dr. H. C. Watts, manager of the Veterans Administration hospital at Fort Harrison, Montana, since 1927, has been transferred to the VA branch office at San Francisco.

## Deaths

Dr. Thomas F. Quinby, 91, of Minneapolis, died June 30 after a prolonged illness. Dr. Quinby was the oldest member of the Hennepin County Medical society, and senior physician in the county. He was born in Biddeford, Maine, in 1855.

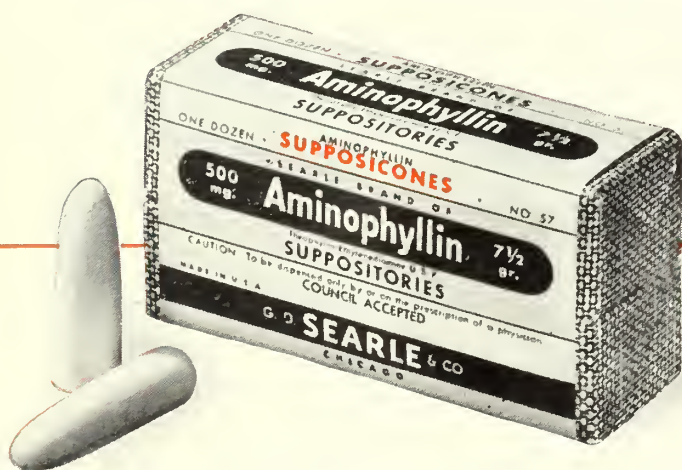
For two years following his graduation from the college of physicians and surgeons of Columbia university in 1878 where he received his M.D. degree, Dr. Quinby attended the University of Heidelberg, Germany.

Returning to this country in 1880, he settled in Minneapolis and for many years played a leading part in civic enterprises. He served for three years as a city health inspector, and was elected to the board of education, a post which he held for twelve years, four of them as president. He also served for ten years as local surgeon for the "Soo" line.



# SEARLE RESEARCH

has produced an improved AMINOPHYLLIN SUPPOSITORY



AMINOPHYLLIN  
SUPPOSITICONES

Searle brand of  
AMINOPHYLLIN  
SUPPOSITORIES

This new suppository—known as the Searle Aminophyllin Supposicone—has these advantages:

1. It remains stable outside the body at temperatures up to 130° F.
2. It liquefies rapidly inside the rectum at normal body temperature.
3. It is nonirritating to the rectal mucosa; no anesthetic is required.
4. It provides an excellent vehicle for prolonged medication.
5. It contains 500 mg. (7½ gr.) of Searle Aminophyllin, having at least 80% of anhydrous theophyllin.



Supposicone is the registered trademark of G. D. Searle & Co., Chicago 80, Illinois

**SEARLE**

RESEARCH IN THE SERVICE OF MEDICINE

Dr. Quinby received a citation from President Wilson for his services during the influenza epidemic of 1918-19 at the government hospital, Chester, Pennsylvania.

He is survived by his wife and a niece.

Dr. H. L. Koehler, 58, Missoula, Montana, died on June 8. He was a physician on the staff of the Northern Pacific hospital in Missoula since January 1944. He was born in Wisconsin in 1888.

Dr. Koehler's medical education was obtained at Loyola university, Chicago. Following his graduation about 1912, he interned in the same city.

In 1937 Dr. Koehler began practice in Polson, Montana, where he was associated with Dr. John Dimon for a number of years. He also practiced in Circle and Glendive and at Three Forks he and Dr. Dimon operated a hospital for the Milwaukee railroad. He was a veteran of World War I, serving in the medical corps. He belonged to the American Medical association and the Western Montana Medical society.

He is survived by his wife, two sons, two daughters, and a step-son.

.....

Dr. G. W. Glaspel, 81, Grafton, North Dakota, died June 27. He had practiced there since 1888, and was the oldest practicing physician in Walsh county. He was born in Oshawa, Ontario, in 1865.

Dr. Glaspel received his degree from the medical school of the University of Iowa in 1888. After practicing for a short time in Hillsboro, North Dakota, he moved to Grafton to take over the practice of his brother who had died.

He is survived by a son and a daughter.

## Classified Advertisements

### LOCATION FOR PHYSICIAN

Armour, good county seat town in prosperous community in southeastern South Dakota. No physician in entire county. Good office quarters, which have previously been occupied by a physician, are available for immediate occupancy. Address reply to J. A. Liddiard, Sec. Armour Commercial Club, Armour, South Dakota.

### PRACTICE FOR SALE

Active general practice in town of 550 north central Minnesota, with house-office combination completely modern, grossing \$15,000.00 yearly. Excellent hospital facilities nearby. Prefer sale house-office cash or terms. Purchase of drugs and equipment optional. Address Box 833, care of this office.

### FOR SALE

Retiring from practice. Location and up-to-date office equipment in business section of International Falls, Minnesota. No accounts to purchase. By appointment only. Write Dr. J. H. Drake, Shapira Building, International Falls.

### FOR SALE

Cambridge-Hindle electrocardiograph, portable model, in first-class condition. Address Box 844, care of this office.

### NURSE WANTED

Wanted, a nurse with one or two dependents. Small hospital offers salary, plus bonus, plus living quarters and meals for nurse and her dependents. Write Box 845, care of this office.

### TECHNICIAN WANTED

Female technician who can do laboratory and x-ray work, in medical firm situated in lake region of Minnesota. Good salary from the start. Address Box 846, care of this office.

### FOR SALE

X-ray—Shockproof 15 M.A. radiographic and fluoroscopic unit on mobile floor stand with timer and 12x16 type B screen like new. Will sacrifice. Address Box 847, care of this office.

### FOR SALE

Short wave therapy apparatus, Rose CW2 No. 1640 with electros. Practically new. Phone Bridgeport 8345 in Minneapolis or write Box 848, care of this office.

### ASSISTANCE AVAILABLE

Aznoe's, established in 1896, has available a number of well trained physicians (diplomates of the specialty boards, industrial physicians and surgeons, general practitioners, psychiatrists, tuberculosis specialists and residents). For histories, write Ann Woodward, Aznoe's-Woodward Medical Personnel Bureau, 30 North Michigan Ave., Chicago 2, Ill.

### IMMEDIATE OCCUPANCY

for beginning or established physician to share suite of offices with another physician or dentist. Individual treatment room or laboratory in new office building located in very best residential retail section of North Minneapolis. Address Box 761A, care of this office.

## Advertisers' Announcements

### Paba for Tick Fever

Rocky Mountain Spotted Fever or Tick Fever has until recently defied man's efforts. Now Paba (para-aminobenzoic acid), a member of the vitamin B-complex group, can be an effective agent in the treatment of tick and other related fevers originating with rickettsial organisms.

The International Vitamin Corporation, New York, has made available for therapeutic use Paba, the only effective agent so far known in the treatment of tick and typhus fevers. Members of the American Typhus Commission in Cairo, Egypt, made clinical studies of Paba, as did another group in Ledo, Assam, India. These workers concluded that Paba is decidedly an effective drug in the treatment of rickettsial diseases.

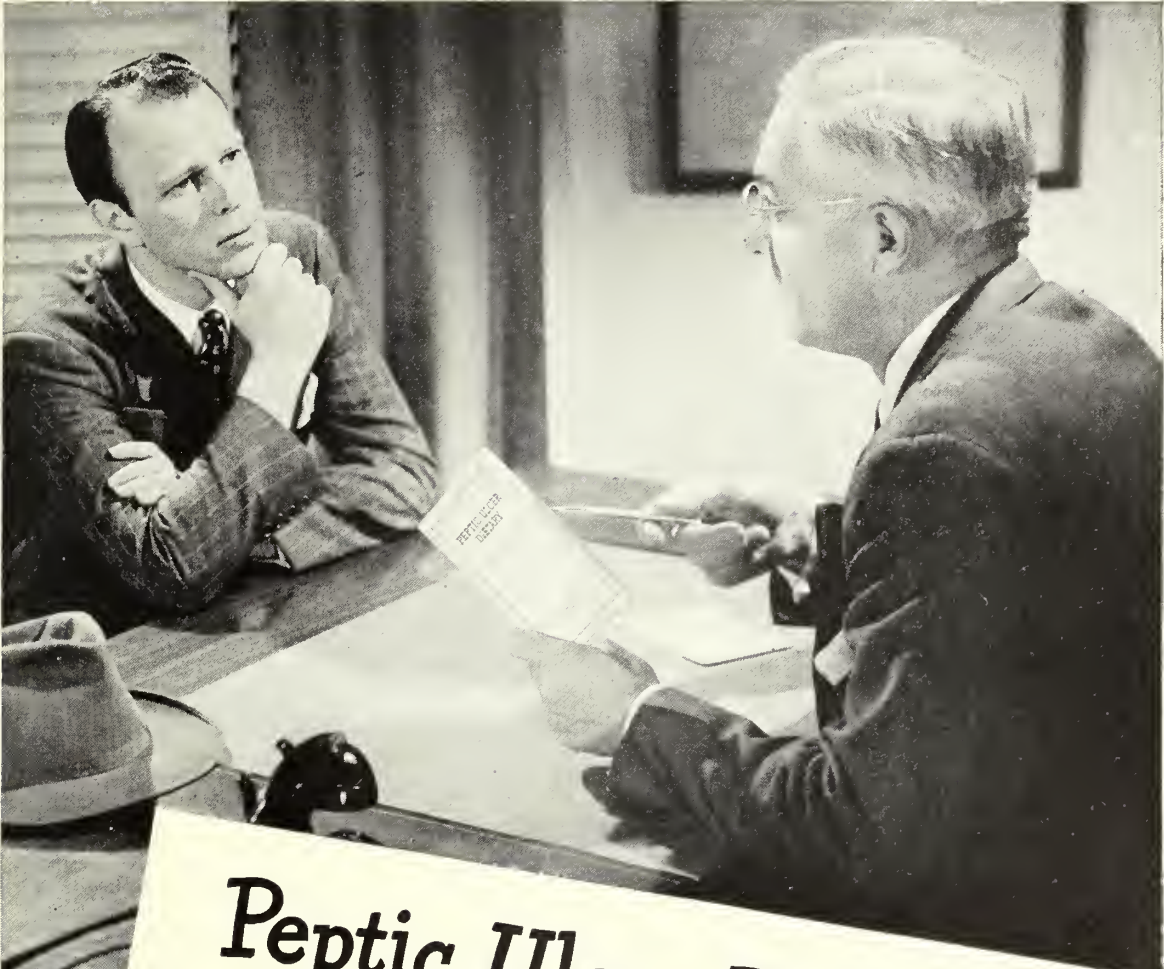
### Wyeth Makes Methionine Available for Clinical Study

Wyeth Incorporated has been the first pharmaceutical firm in the country to make synthetic dl-methionine available to the medical profession in sufficient quantity for experimental clinical purposes. Production has still not reached the point where larger than investigational quantities can be offered through regular drug channels, but this point is not far off.

The pharmacological evidence which first established the specific value of methionine in liver damage (fatty infiltration, cirrhosis and necrosis) due to dietary, toxic and injury factors, was the work of many scientists, both in America and in England. Prominent among these has been the research staff of the Wyeth Institute of Applied Biochemistry, in Philadelphia.

That liver cirrhosis is not a direct consequence of alcohol poisoning but may result from malnutrition incident to alcohol addiction is one of the points brought out by a summary of the methionine situation just released by Wyeth. While not necessarily of benefit in liver affections of infectious origin (such





# Peptic Ulcer Dietary

*Gelatine studies have shown the way in peptic ulcer management*

The use of a bland protein for its acid neutralizing properties and supplemental food value is gaining enthusiastic medical support.

*Peptic Ulcer Dietary*, details a proved method for the use of Knox Gelatine in the management of various types of peptic ulcer.

Written in simple language, clearly understandable, we believe your patients will find it a practical guide once you have prescribed.

*Peptic Ulcer Dietary* contains:

1. A short introduction on the principles of peptic ulcer feeding.

2. *Special Ulcer Diet*. Bland, and liberal in calories and protein, many doctors regularly prescribe this diet just as it's given in the Knox Booklet.

3. *Diet for and management of bleeding peptic ulcer*.

4. *Several pages of suitable recipes* that can be made easily and quickly in the home.

We'll be glad to send you, without any obligation whatever, as many copies of *Peptic Ulcer Dietary* as you wish. Address your request to Knox Gelatine, Dept. 403 Johnstown, N. Y.

## KNOX GELATINE (U.S.P.)

PLAIN, UNFLAVORED GELATINE...ALL PROTEIN, NO SUGAR



as catarrhal jaundice and Weil's disease), methionine appears to be specifically beneficial in remedying liver injury due to burns, poisoning by carbon tetrachloride, chloroform, TNT, and other industrial and anesthetic chemicals, and in general all types of liver damage due to faulty nutrition. The latter is said to include eclampsia.

#### Ayerst Introduces Fluoride Tablets for Dental Use

Ayerst, McKenna & Harrison Limited, Division of American Home Products, Inc., New York, has introduced "Enziflur" Tablets containing calcium fluoride with vitamins C and D.

Various investigators in recent years have reported that fluorine in the drinking water of certain midwestern communities appeared to inhibit the development of dental caries among children of such areas. In clinical studies, Ayerst found that tablets of calcium fluoride would produce the same result, and that the addition of vitamins C and D would materially enhance the action of the fluoride.

"Enziflur" Tablets are available in bottles of 30 and 100 tablets. Each tablet provides Calcium Fluoride, 2.0 mg.; Vitamin C (ascorbic acid), 30.0 mg., and Vitamin D (irradiated ergosterol), 400 I.U. (U.S.P. XII). One tablet daily supplies the optimal amount of calcium fluoride for the prevention of dental caries.

#### Radio Series Dedicated to Medical Profession

Development of wider public understanding and appreciation of the contribution made by the medical profession and by medical research to the world's health and welfare is the objective of a new series of radio programs on the Columbia Broadcasting System heard every Tuesday at 7:30 P.M., Central Standard Time.

The half-hour program, known as "Encore Theater," presents radio dramatizations of famous films, novels, and biographies, dealing with medicine's immortals, as well as with the work, achievements and struggles of thousands of members of the medical profession who, although by-passed by fame, daily are making substantial contributions to the prevention and cure of disease, often at great personal sacrifice. Sponsor of the program is Schenley Laboratories, Inc., which for the past two years has sponsored a somewhat similar program dedicated to the medical profession, "The Doctor Fights."

The programs are designed to underline the scientific achievements of the medical profession, while stressing the human warmth and sympathy which often prompts members of the profession to sacrifice health and even personal life in order to serve others.

#### Repair Service for Hospitals and Doctors

Experience and concentration along a specialized line lead to dependable service and it would be difficult to find any business in which this is more certain to be true than in repairing, re-plating, and renewing instruments and equipment employed by physicians. For thirteen years Louis Seekon played an important part in the repair and replacement division of a company supplying cardiographs, sterilizers, calorimeters and operating equipment. Possessed of the background and facilities to engage in such work on "his own" he has opened a modern shop at

322 S. 6th St., Minneapolis, called the Twin City Hospital and Physicians Repair Service, and handles jobs of all sorts in this field, emphasizing a willingness to quote the price of repairs and to give an estimate of the time required. Round-the-clock service is another feature.

#### Promise Large-Scale Streptomycin Output

Significant progress toward large-scale output of streptomycin is reported by Merck & Co., Inc., at Rahway, New Jersey, in its annual report.

Investigations conducted by the firm show that the drug is effective in tularemia or rabbit fever, certain infections of the kidney and bladder, and certain wound infections unaffected by other treatments. It also has proved of value in treating tuberculosis and undulant fever. Last year the firm began construction of a group of buildings for large-scale production of the mold chemical at its Elkton, Virginia, plant.

#### Medical Literature for the Veteran Physician

A special compilation of informative literature on recent developments in endocrinology is being presented to each physician returning from service in the armed forces during the war. Publisher of this literature is the Schering Corporation, of Bloomfield and Union, New Jersey, manufacturers of endocrine, diagnostic and other pharmaceutical preparations.

The "Welcome Home" collection supplies information designed to help the military doctor bring himself up-to-date in civilian practice. It contains a copy of "Sex Endocrinology," the illustrated 96-page volume covering the physiology, chemistry and rationale of hormones in modern therapeutics. A "handy index" provides in brief outline form for the physician readily accessible and concise summaries on treatment and dosage of endocrine products. The accompanying copy of the Schering "Handbook" supplies to the physician technical information and product data on Schering pharmaceuticals.

#### Free Case History Forms Offered by Ar-Ex Cosmetics

The importance of comprehensive history taking in diagnosis has been stressed by every clinician and diagnostician. Too often symptoms of obscure etiology remain undiagnosed for years because the case history failed to bring the significant cause to light. In its contacts with physicians, the Professional Service Department of Ar-Ex Cosmetics, Inc., has frequently heard the desire for more adequate case history forms. As a result, expert clinicians were consulted in the development of a case history form that would serve the purpose of both the specialist and the general practitioner. In preparing the form, two thoughts were kept in mind: (1) to make it as comprehensive as possible to reveal both obscure and obvious causative factors; (2) to make it concise enough to be of value to the busy physician. Though time and usage will undoubtedly improve the present form, many physicians have pronounced the new Ar-Ex Cosmetics case history form as the most comprehensive and revealing form of which they know.

Supplies of the forms are now being distributed to interested physicians without cost or obligation on request to the professional service department of Ar-Ex Cosmetics, Inc., 1036 W. Van Buren Street, Chicago 7, Illinois.



FOR THE  
DOCTOR

- ★ Trousers
- ★ Coats
- ★ Jackets

## Ina-May Uniform Shoppe

WE HAVE A COMPLETE LINE OF

PROFESSIONAL  
GARMENTS

in pre-shrunk material  
for immediate delivery

Mail orders promptly filled.  
Write for catalog and prices.



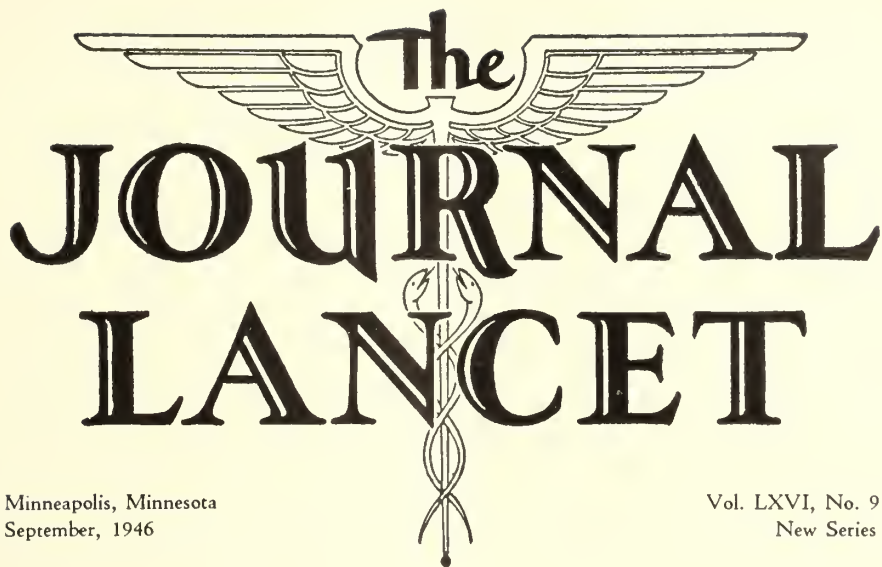
FOR THE  
NURSE

- ★ Uniforms
- ★ Lab Coats
- ★ "Shorty Coats"

100 First Avenue Bldg.

Rochester, Minnesota





# The JOURNAL LANCET

Minneapolis, Minnesota  
September, 1946

Vol. LXVI, No. 9  
New Series

## Sulfonamides and Antibiotics in the Prevention and Treatment of Infectious Diseases

Wesley W. Spink, M.D.†  
Minneapolis, Minnesota

**A**DVANCES in the prevention and treatment of infectious diseases have been remarkably rapid in recent years and for this reason it becomes important to review occasionally the status of various specific agents used in the management of infections. This applies especially to the sulfonamides and to the antibiotics. This subject is of importance to physicians charged with the responsibility of the health of university and college students. The following remarks, then, would apply particularly to clinical conditions and problems of infectious diseases as they confront the physician in the student health services. At the University of Minnesota Hospitals my associates and I have been particularly fortunate in carrying out clinical observations on the Student Health Service under the direction of Dr. Ruth Boynton.

### Present Status of the Sulfonamides in the Treatment of Infection

While penicillin has supplanted the use of the sulfonamides in the treatment of a large number of infections, and rightfully so, there still remain some clinical conditions where sulfonamide therapy is indicated. At this point I should like to discuss the systemic and local use of the sulfonamides.

#### SYSTEMIC USE OF THE SULFONAMIDES

By systemic use is meant the administration of the sulfonamides by either parenteral or oral routes.

Presented at the annual meeting of the American Student Health Association, May 7-9, 1946, Minneapolis, Minnesota.

†Professor of Medicine, University of Minnesota Medical School and Hospitals, Minneapolis.

*Urinary tract infections.* Urinary tract infections are frequently caused by gram-negative bacilli which are highly resistant to the action of penicillin. This includes the following species: *Escherichia coli*, *Proteus vulgaris*, *Pseudomonas pyocyaneus*, and *Aerobacter aerogenes*. On the other hand, some strains in the foregoing species may be highly resistant to the bacteriostatic action of the sulfonamides. Other causative micro-organisms of infections of the urinary tract include *Streptococcus viridans* and *Streptococcus faecalis* and, occasionally, nonhemolytic or gamma streptococci. Again, there are some strains within these species that are not only resistant to penicillin but resistant to sulfonamides as well. One of the outstanding features related to the treatment of urinary tract infections with the sulfonamides is that relatively small doses of the drugs are necessary. At the present time at the University of Minnesota Hospitals, sulfadiazine is the drug of choice. Thus sulfadiazine, in common with others, is concentrated and excreted through the kidneys, resulting in high levels of the drug in the urinary tract. Many cases may be satisfactorily treated by giving 0.5 gram three or four times a day. In some instances it has been desirable to use 1 gram three to four times a day. Rarely is it necessary to use the material parenterally. When the smaller doses of sulfadiazine are employed it is not necessary in the great majority of cases to give an alkali in order to maintain an alkaline reaction in the urine. However, an adequate intake of fluid is always recommended.

*Meningitis.* Highly satisfactory clinical results have been obtained in the treatment of *meningococcic meningitis* with the sulfonamides. While penicillin is also effective, in most cases we prefer to use sulfadiazine because the drug can be administered either orally or parenterally with adequate concentrations appearing in the cerebrospinal fluid. If the patient can take sulfadiazine by mouth, an initial dose of 4 gm. is given and then 1 gm. every four hours. The object is to maintain a blood concentration of at least 5 mgm. per 100 cc. If the condition of the patient does not permit the administration of the drug orally, a solution of sodium sulfadiazine is injected intravenously as an initial dose of 3 to 4 gm. of sodium sulfadiazine contained in 500 cc. of physiological saline solution, and then 1 gm. of sodium sulfadiazine in 100 cc. of saline solution is administered every six to eight hours. As soon as possible thereafter, the patient is encouraged to take sulfadiazine by mouth.

Within twenty-four hours after the initiation of chemotherapy the cerebrospinal fluid will be sterile. Treatment with sulfadiazine is usually carried out for at least seven to eight days and then discontinued if the cerebrospinal fluid findings are normal. In desperate cases of meningococcic meningitis some authorities also recommend the use of antimeningococcic serum in addition to sulfadiazine. We have utilized the serum only on extremely rare occasions. Penicillin has also been administered in combination with sulfadiazine in the treatment of meningococcic meningitis, particularly in seriously ill patients. There is certainly no contraindication for combining therapy but it has been extremely difficult to evaluate clinical results under these circumstances. Because penicillin penetrates the blood-brain barrier radically when injected intramuscularly or intravenously resulting in little or no material to be found in the cerebrospinal fluid, it is desirable to give a solution of penicillin intrathecally as will be described shortly.<sup>1</sup> Either the sodium or calcium salt of penicillin may be injected intramuscularly in doses of 20,000 to 30,000 units every two to three hours.

While meningitis due to *Haemophilus influenzae*, type B, is rarely the cause of meningitis in the age group found on a college or university student health service, it is a frequent cause of meningitis in infants and young children. Sulfadiazine and specific antiserum are indicated in the treatment of this type of meningitis. While some strains of *Haemophilus influenzae* are sensitive to penicillin, many strains are highly resistant. For this reason, penicillin is not recommended as a routine in the treatment of this type of meningitis.

Both sulfadiazine and penicillin are indicated in the treatment of *pneumococcic meningitis*. It is to be recalled that pneumococcic meningitis is an extremely serious disease. The mortality rate of untreated cases is around 100 per cent. At the University of Minnesota Hospitals, the mortality rate following the introduction of treatment with the sulfonamides has been slightly more than 60 per cent. It has been stated that the mortality rate of pneumococcic meningitis in all age groups is around 50 per cent following the use of penicillin.<sup>2</sup> At the University of Minnesota Hospitals experience

with a combination of sulfadiazine and penicillin has resulted in the mortality rates of less than 25 per cent.<sup>3</sup> Obviously, there are many factors affecting mortality rates besides specific therapy. These include the nutritional status of the patient; the age of the patient; the duration of the disease; the type of pneumococcus responsible for the disease; and the successful surgical eradication of foci of infection. Sulfadiazine should be given in doses which will maintain a blood concentration of at least 10 mgm. per 100 cc. Sulfadiazine may be given orally or, if necessary, the sodium salt may be administered parenterally. Neither sulfadiazine nor sodium sulfadiazine should be injected into the subarachnoid space.

The sodium or calcium salt of penicillin is given parenterally in doses of 30,000 to 40,000 units every two hours during the initial phases of the illness. During the same phase, a lumbar puncture is performed every twelve hours and at least 10 cc. of cerebrospinal fluid is removed and replaced with 10 cc. of physiological saline solution containing 10,000 units of the sodium salt of penicillin. As the patient improves, the penicillin may be introduced every twenty-four hours and, concurrently, the doses being given intramuscularly may be reduced. Treatment should be continued as outlined until the cerebrospinal fluid remains sterile and the concentration of the sugar approaches normal. Treatment with penicillin by both intrathecal and intramuscular routes in most instances may be discontinued at the end of two weeks, but sulfadiazine should be given orally in doses of 1 gm. every four to six hours for at least two more weeks. During convalescence the patient should be observed closely for any signs of a relapse. It has not been necessary to use type specific antipneumococcic serum in conjunction with penicillin or sulfadiazine. The treatment of *staphylococcic meningitis* is essentially the same as that outlined for pneumococcic meningitis and, in our experience, satisfactory results have been obtained.

*Pneumonia.* While sulfadiazine has proved to be effective in the treatment of pneumonia due to the various types of pneumococci, penicillin is the drug of choice. This also applies to pneumonia due to *hemolytic streptococci*.

*Bacillary Dysentery.* Sulfadiazine is recommended for the treatment of dysentery due to the *Shigella* group of organisms. Therapy with sulfadiazine is usually combined with one of the sulfonamides that is poorly absorbed from the intestinal tract such as sulfasuxidine.

*Nasal pharyngitis and tonsillitis due to Group A hemolytic streptococci.* Physicians responsible for the health of university and college students are frequently concerned with the problem of upper respiratory infections due to group A hemolytic streptococci. This also includes complications of streptococcic respiratory disease such as acute sinusitis and otitis media. It is now generally agreed that the sulfonamides do not appreciably alter the clinical course of patients having nasal pharyngitis and tonsillitis. Clinical observations on the student health service by Dr. Ruth Boynton and her associates at the University of Minnesota have revealed that the duration of the illness in the treated group was the same



as that of the untreated group of control patients. There was no difference in the incidence of complications between the two groups. This has been the experience of others when dealing with a group of healthy young adults in a good state of nutrition who became acutely ill with a streptococcal upper respiratory infection.<sup>4</sup> However, in children, it would appear that treatment with sulfadiazine has reduced the incidence of complications from these streptococcal respiratory infections. It is also generally agreed that the clinical course of scarlet fever is not appreciably altered by sulfonamide therapy, although, again, suppurative complications may be reduced. The administration of a sulfonamide to individuals with streptococcal sore throats will not reduce the incidence of acute rheumatic fever.<sup>4</sup>

#### LOCAL USE OF THE SULFONAMIDES

The sulfonamides, particularly sulfanilamide and sulfathiazole, have been extensively used as topical agents in the treatment of infection. With but rare exceptions, most authorities are not in favor of using the sulfonamides as topical agents. This has been largely due to the fact that an appreciable number of patients have been sensitized to the drug in this manner, and also because the clinical results have not been too encouraging. The spread of an infection from a local area may be prevented by utilizing the sulfonamides systemically. Furthermore, most serious suppurative lesions are due to the gram-positive group of organisms. Under these conditions, the local application of penicillin may be more advantageously utilized since the action of penicillin is not inhibited by the presence of necrotic tissue and exudate.

#### PRESENT STATUS OF THE SULFONAMIDES IN THE PREVENTION OF INFECTIOUS DISEASES

*Systemic.* Sulfonamides, especially sulfadiazine, have been widely used in the prevention of acute respiratory infection. It has been estimated that group A hemolytic streptococci are responsible for approximately 20 per cent of all upper respiratory tract infections. In time of war, the incidence among fresh recruits is frequently much higher, and experience in World War II emphasized the high attack rate in recently inducted military personnel. Although upper respiratory infections due to hemolytic streptococci are for the most part relatively benign infections, the late nonsuppurative complications resulting from these diseases may be disastrous.

The most important nonsuppurative complication is acute rheumatic fever. During the last war, the attack rate of acute rheumatic fever reached serious proportions among military personnel in all branches of the services. It was soon appreciated that the sulfonamides did not prevent the incidence of rheumatic fever after the tissues had been invaded by group A hemolytic streptococci. In an effort to prevent the invasion of the pharynx by streptococci, several programs of sulfonamide prophylaxis were carried out among healthy groups.<sup>5,6,7,8</sup> The procedure was to give  $\frac{1}{2}$  gm. to 1 gm. of sulfadiazine twice daily. It would appear that such a procedure was associated with a drop in the attack rate of streptococcal respiratory infections and a reduction in the incidence of acute rheumatic fever. Captain T. J. Carter,<sup>9</sup> Chief of

the Division of Preventive Medicine, Bureau of Medicine and Surgery, United States Navy, has stated that in 1943 mass chemoprophylaxis involving a million men was undertaken in selected stations on a controlled basis, the result of which was very successful. "At one station the rate of admission for scarlet fever varied from 63.5 per thousand to 171.6 per thousand during the observation period before the use of sulfadiazine. Following the institution of the prophylaxis, the rate fell to zero within two weeks. Tonsillitis at this same station fell from 426 per thousand to 46 per thousand. Rheumatic fever, the most serious of the infections associated with the streptococcus organism because of the heart involvements, was reduced from 87 per thousand to zero within four weeks." Captain Carter estimated that this program saved over a million man-days for medical personnel, and between 50 and 100 million dollars.

However, it soon became apparent that this type of chemoprophylaxis induced the appearance of invasive strains of group A hemolytic streptococci which were highly resistant to the bacteriostatic action of sulfadiazine. These sulfonamide-resistant strains became widely disseminated and caused disease in epidemic form.<sup>10,11</sup> Fortunately, these strains were still susceptible to therapeutic concentrations of penicillin. If penicillin had not become available, there is every reason to believe that serious and disastrous consequences would have followed this mass chemoprophylaxis program due to the dissemination of sulfonamide-resistant streptococci. The significance of this statement is illustrated by the report of Allman.<sup>12</sup> An epidemic of scarlet fever due to a strain of group A type 17, hemolytic streptococci included 5,640 cases. This particular strain was highly resistant to sulfadiazine. In fact, experiments *in vitro* revealed that the strain grew in the presence of 125 mgm. per 100 cc. of sulfadiazine. Obviously, any complications arising in this group of cases of scarlet fever would not be benefited by sulfonamide therapy. However, there were 511 cases of otitis media, 60 cases of acute mastoiditis, and two of meningitis. The individuals having these complications were treated with penicillin and in some cases a combination of surgery and penicillin was employed. No deaths occurred.

In view of the experience of chemoprophylaxis in military personnel, the use of small doses of sulfonamides in a large segment of a civilian population should not be encouraged. The procedure may not only be associated with the development of sulfonamide-resistant strains of bacteria, but, also, an appreciable number of individuals may become sensitized to the drugs or develop serious toxic reactions. One group of individuals who may be benefited by such a chemoprophylactic program includes children who have had one or more attacks of acute rheumatic fever. It is now well established that recurrent attacks of acute rheumatic fever in children may be precipitated by upper respiratory infections due to hemolytic streptococci. Several qualified groups of investigators have shown that these recurrent attacks may be prevented in children if they are given small daily doses of a sulfonamide which will prevent the onset of upper respiratory infection.<sup>13,14,15,16,17</sup> It is

becoming more apparent that this prophylactic program should be carried out not only during those months when respiratory infections are most prevalent but all during the year. The procedure is to give  $\frac{1}{2}$  gm. to 1 gm. of sulfadiazine daily. Fortunately, the toxic reactions following such a procedure have been relatively small. In general, children tolerate the sulfonamides much better than adults. There are no indications that the use of these small amounts of sulfadiazine are detrimental to a growing child. If a child has had one or more attacks of rheumatic fever, it is desirable that he should receive sulfonamides during those years when rheumatic fever is most likely to occur, namely, between the ages of five and fourteen years.

*Meningococcic meningitis.* The meningococcus is highly susceptible to the antibacterial action of the sulfonamides, and in contrast to the gonococcus, very few strains of meningococci occurring in epidemics have been shown to be resistant to the drug. There is no doubt that when meningitis breaks out in a closely knit group, a program of sulfonamide prophylaxis should be invoked immediately among the healthy contacts.<sup>18,19</sup> Under these circumstances, an epidemic may be promptly controlled.

#### SULFONAMIDE PROPHYLAXIS POSTOPERATIVELY

At the University of Minnesota Hospitals the sulfonamides have been used postoperatively by Dr. O. H. Wangenstein and his staff in selected patients. In many instances, it has been necessary to place an indwelling catheter into the urinary bladder and, in order to prevent the development of cystitis as a result of this procedure, small daily doses of sulfadiazine have been given parenterally. In the majority of instances, when an indwelling catheter is used in the urinary bladder, prophylactic treatment with a sulfonamide is indicated.

#### PROPHYLACTIC USE OF SULFONAMIDES BY LOCAL APPLICATION

There has been a tendency in several quarters to use the sulfonamides locally in traumatic and surgical wounds for the prevention of infection. In fact, this was the recommended procedure for a time in the Armed Forces of the United States. In general, this procedure has been abandoned. Preparations of the sulfonamides in sprays, gums and gargles have also been used for prophylactic purposes but this indiscriminate use of the drugs should be discouraged. Such a procedure has very questionable value, and is one way of developing sulfonamide-resistant organisms and inducing sensitivity in individuals to the drugs.

#### Antibiotics

Waksman<sup>20</sup> has defined an antibiotic as a chemical substance of microbial origin which inhibits the growth or the metabolic activities of bacteria and other microorganisms. While this antagonistic relationship has interested bacteriologists for many years, the application of this knowledge for clinical purposes is only a recent development. Considerable impetus was given to this field of endeavor by the fundamental observations of Dubos.<sup>21,22</sup> Tyrothricin, produced by *Bacillus brevis*, was studied by Dubos and found to be a complex substance containing tyrocidine and gramicidin. From a clin-

ical point of view, the crude preparation, tyrothricin, has been used for topical application in the treatment of local infection. The material cannot be used orally or parenterally because of its toxic properties. Tyrothricin is not inhibited by necrotic material and exudate, and it is most effective against gram-positive organisms. Therefore, this material has only limited clinical application. It also has been used extensively in veterinary medicine. The dental profession has used it for topical application in the mouth for prophylactic and therapeutic purposes.

#### PENICILLIN

Time does not permit a comprehensive discussion relative to the clinical use of penicillin. It is desirable, however, to review briefly some of the recent developments pertaining to the production of penicillin; methods of administering penicillin; and the use of penicillin in the treatment of clinical conditions that are more likely to be encountered on a student's health service.

While, as far as is known, penicillin has not been synthesized chemically, considerable information is now available concerning the chemistry of penicillin. This has some bearing on the clinical use of penicillin. In the commercial preparation of penicillin, it has now become apparent that there are now several antibiotics of the penicillin class, notably penicillin F, G, X and K. These penicillins differ chemically and biologically. Penicillins now available for clinical use very likely contain a mixture of these different fractions.\*

#### METHODS OF ADMINISTERING PENICILLIN

There are several methods whereby penicillin may be introduced into the body. For the more severe infections, it is desirable to introduce either the calcium or sodium salt of penicillin parenterally. Most severe infections can be satisfactorily treated by the intermittent intramuscular route. Since penicillin is excreted relatively rapidly from the body, frequent injections should be given. During the initial stages of the more severe infections, it is desirable to give an injection every two hours. Solutions of penicillin may also be given by a continuous intramuscular method. According to Hirsh and Dowling,<sup>23</sup> 200,000 units of penicillin may be given in twenty-four hours (8,333 units per hour) by the continuous intramuscular method which will maintain a therapeutically effective blood level 96 per cent of the time. If 25,000

\*Since this paper was presented, an important communication has appeared in the *Journal of the American Medical Association*, Volume 131, page 271, May 25, 1946, on "The Changing Character of Commercial Penicillin," which is a joint statement by the Committee on Medical Research, the United States Health Service and the Food and Drug Administration. It is pointed out that commercial penicillin is not a single substance. Those substances that have been identified are penicillins G, X, F, and K. The relative amounts of these several penicillins may very well vary from time to time and in recent months it would appear that some commercial penicillins contain a significant proportion of penicillin K. Penicillin K is relatively ineffective against several infections and its inefficiency when used in the treatment of infections is probably related to the fact that, unlike G, X and F, it is rapidly destroyed in the body. These authorities point out further that in the purification of commercial penicillin it is possible that there has been a decrease in "impurities" which may possibly effect the therapeutic activity. It is now recognized that penicillin K is relatively ineffective against syphilis which is reflected in the relapse rate of patients treated with the more purified commercial penicillins.



units of penicillin are injected intramuscularly every three hours similar concentrations occur only 80 per cent of the time. While moderate pain may be associated in some patients with this type of injection, this can be avoided by changing the site of the injection every twenty-four to ninety-six hours and the use of procaine may also alleviate the pain. It is unnecessary to use the intermittent intravenous method in the treatment of infections. The continuous intravenous drip method may perhaps be profitably utilized in the treatment of patients with subacute bacterial endocarditis. According to Loewe and his associates,<sup>24</sup> more superior serum levels are maintained by the continuous intravenous method than by the continuous intramuscular method. At the University of Minnesota Hospitals the vast majority of patients are treated by the intermittent intramuscular method.

In order to delay absorption of penicillin from the muscles after injection, various methods have been proposed to delay absorption from these sites. An effective method is that devised by Romansky and Rittman,<sup>25,26</sup> in which calcium penicillin suspended in beeswax and peanut oil is injected intramuscularly. In this manner, there is a slow release of penicillin from the tissue which is prolonged over a period of several hours. At the present time, the material available for clinical use consists of 300,000 units of calcium penicillin 4.8 per cent beeswax (by weight) and peanut oil contained in 1 cc. According to Romansky and Rittman<sup>27</sup> a single intramuscular injection of this material will maintain effective blood levels for twenty-four hours and penicillin will be detected in the urine for three days thereafter. Kirby and his group,<sup>28</sup> however, found that there are wide individual variations in absorption and excretion when penicillin in beeswax and peanut oil was injected intramuscularly. In 69 per cent of the patients, levels were present for no longer than twelve hours. Leifer, Mark and Kirby<sup>29</sup> point out that larger amounts of penicillin must be given in beeswax and oil preparations than when multiple injections of penicillin in saline solution are used. There appeared to be no doubt that the single injection of penicillin in beeswax and oil was effective in the vast majority of cases of acute gonococcal urethritis. For the present, at the University of Minnesota Hospitals, the more severe infections are not being treated with this preparation but by the multiple intramuscular injections of penicillin in saline solution.

Solutions of penicillin may also be given orally. The careful observations of McDermott and his associates<sup>30</sup> would indicate that penicillin given orally is therapeutically effective, provided five times the amount is given orally as would be injected parenterally. Contrary to many statements, the acidity of the gastric contents does not appear to influence materially the absorption of penicillin. Therefore, it is not necessary to give antacids with penicillin. The important feature is to administer the material on a fasting stomach, that is, before meals. For the present, it is probably not desirable to treat severe infections by the oral route. There are now preparations of commercial penicillin on the market for oral use such as troches and buffered tablets. These are not

indicated for use in the initial stages, at least, of severe infections.

Solutions of penicillin may also be injected into the serous cavities and, as has already been pointed out, in the treatment of suppurative meningitis, it is necessary to inject penicillin into the subarachnoid space. Penicillin in any form should not be instilled within the rectum for clinical purposes. The amount of material absorbed is totally ineffective.

Penicillin has also been utilized by aerosolization<sup>31,32</sup> for the treatment of upper respiratory tract infections such as bronchial asthma, chronic bronchitis, bronchiectasis, and lung abscess. Aerosols have been defined by Segal and Ryder<sup>32</sup> as "suspensions of liquids or solids in air or oxygen." This method has been used at the University of Minnesota Hospitals by my associate, Dr. Wendell H. Hall, utilizing the BLB oxygen mask and bubbling oxygen through an aqueous solution of penicillin. While the number of cases treated has been small, the results have not been too encouraging. There is no doubt that the procedure, though it has its limitations, has some indications in patients with the foregoing conditions. Segal and Ryder<sup>32</sup> feel that the method is an ideal therapeutic approach for the preoperative and postoperative treatment of patients with bronchiectasis and a prolonged course of treatment may be effective in some cases of lung abscess.

#### CLINICAL INDICATIONS FOR PENICILLIN

It is timely to discuss briefly the use of penicillin in such *streptococcal diseases* as nasopharyngitis, tonsillitis, sinusitis, otitis media and scarlet fever. As pointed out previously, the average patient with tonsillitis or nasopharyngitis on a student health service recovers with but rare suppurative complications. Penicillin should only be utilized for the more acutely and severely ill individuals. Under these conditions, the systemic use of penicillin is followed by objective improvement within a relatively few hours. It is important that treatment be continued for at least five to seven days since, if treatment is discontinued within forty-eight to seventy-two hours, there may be clinical relapses with complications. During the acute stages of the illness, penicillin may be given parenterally in doses of 20,000 units every two or three hours and then as the patient recovers, penicillin may be administered orally in doses of 40,000 units four times a day. In acutely ill patients with scarlet fever, penicillin is probably effective against the suppurative stage of the disease but does not appear to influence the toxemia. Therefore, it is necessary in some instances to use antitoxin, as contained in convalescent human serum, in combination with penicillin. Penicillin has been found to be effective in the treatment of otitis media, and also in early cases of acute mastoiditis. In the treatment of meningitis due to group A hemolytic streptococci, it is desirable to use the material parenterally as well as intrathecally.

Penicillin is the most effective agent used for *fusospirochetal disease* or *Vincent's infection*. The material may be given parenterally or orally and usually it is only necessary to treat the patient for forty-eight to seventy-two hours.

Penicillin should be used in the treatment of *pneumococcic* and *streptococcic pneumonia*. Doses of 20,000 units given intramuscularly every three hours are effective and treatment should be continued for three to five days. Penicillin may be used parenterally for the first forty-eight hours, and then as the patient improves and the temperature becomes normal, 40,000 units of penicillin may be given orally four times a day for three more days.

The foregoing constitutes some of the more frequent infections seen on a student health service and, as pointed out before, it is not necessary at this time to review the clinical indications for penicillin.

#### PROPHYLACTIC USE OF PENICILLIN

Penicillin has not been evaluated for prophylactic purposes as extensively as the sulfonamides. One of the problems in infectious diseases relating to upper respiratory tract infections is the human carrier of group A hemolytic streptococci. Hamburger and his associates<sup>33</sup> have pointed out that the dangerous carrier is the individual having hemolytic streptococci in nasal cultures. He has recommended the eradication of streptococci from the nasopharynx of these carriers by the daily use of a single intramuscular injection of penicillin in beeswax and peanut oil.<sup>34</sup> Penicillin is also indicated prophylactically in individuals with acquired or congenital cardiac lesions who are to have tooth extractions or tonsillectomies. In this manner, the onset of subacute bacterial endocarditis may be prevented by giving an injection immediately before the surgical procedure and then multiple doses by mouth for a day or two after operation.

#### STREPTOMYCIN

In 1944, Waksman and his associates<sup>35</sup> found that streptomycin produced by the actinomycetes *S. griseus* was antagonistic for gram-positive and gram-negative bacteria. Streptomycin is now being evaluated clinically and the clinical indications for streptomycin must await the results of these studies. Like penicillin, streptomycin is highly soluble in aqueous solutions. While the material may be ingested orally, relatively little of the material is absorbed and, therefore, for systemic infections, the material should be injected parenterally. Streptomycin is largely excreted through the kidneys and the rate of excretion is similar to that of penicillin. Therefore, the material is injected parenterally every three to four hours. Following parenteral injections, small amounts of streptomycin do appear in the spinal fluid. But in the treatment of meningitis it becomes necessary to inject the material intrathecally. Streptomycin is more toxic than penicillin, but less so than the sulfonamides, and the toxicity, in part at least, may be related to impurities in the material.

Streptomycin has been found to be quite effective in the treatment of *tularemia*. The drug has also been found to be effective following parenteral injection in the treatment of certain *gram-negative bacillary urinary tract infections*, particularly in instances where the organisms have been found to be highly resistant to both the sulfonamides and to penicillin. Highly encouraging results have also been obtained in the treatment of *meningitis due to Haemophilus influenzae, type B*. Thus far,

the clinical results in *brucellosis* have not been too encouraging, but further studies are necessary before final conclusions can be drawn. Experimentally, streptomycin has been found to be effective against tuberculosis.<sup>36</sup> In human patients, it would appear that treatment with large amounts of streptomycin over a relatively long period of time have been effective in some types of extrapulmonary tuberculous lesions. The precise role of streptomycin in the therapy of tuberculosis must await further development. In experimental animals, streptomycin has been found to be protective against *infections with Haemophilus pertussis*.<sup>37</sup>

From the foregoing it would appear that another antibacterial agent has been made available, especially for gram-negative bacterial infections. While streptomycin is not yet available for general use, there are indications that in the near future the material will be commercially available.

#### BIBLIOGRAPHY

1. Kinsman, J. M., and D'Alonzo, C. A.: The Penetration of Penicillin Through Normal and Inflamed Meninges. *New Eng. J. Med.*, 234: 459, 1946.
2. Keefer, C. S.: Penicillin—Its Present Status in Infections. *Am. J. M. Sc.*, 210: 147, 1945.
3. Hall, W. H., Alden, J., Burt, G. M., and Spink, W. W.: The Treatment of Pneumococcal and Staphylococcal Meningitis with Penicillin and Sulfonamides: Report of 20 Cases. *Minnesota Medicine*, 29: 553, 1946.
4. Spink, W. W., Rantz, L. A., Boisvert, P., and Coggeshall, H.: Sulfadiazine and Penicillin for Hemolytic Streptococcus Infections of the Upper Respiratory Tract. *Arch. Int. Med.*, 77: 260, 1946.
5. The Prevention of Respiratory Tract Bacterial Infections by Sulfadiazine Prophylaxis in the United States Navy. Epidemiology Unit No. 22: NAVMED 284, Bureau of Medicine and Surgery, Navy Department, Washington, D. C.
6. Watson, R. F., Schwenker, F. F., Fetherston, J. E., and Rothbord, S.: Sulfadiazine Prophylaxis in an Epidemic of Scarlet Fever. *J.A.M.A.*, 122: 730, 1943.
7. Holbrook, W. P.: The Army Air Forces Rheumatic Fever Control Program. *J.A.M.A.*, 126: 84, 1944.
8. A. F. Coburn: The Prevention of Respiratory Tract Bacterial Infections by Sulfadiazine Prophylaxis in the United States Navy. *J.A.M.A.*, 126: 88, 1944.
9. Mass Chemoprophylaxis at all Naval Training Stations. *J.A.M.A.*, 127: 96, 1945.
10. Sulfadiazine Resistant Strains of Beta Hemolytic Streptococci: Appearance During the Course of Sulfadiazine Prophylaxis at a Large Naval Training Center. Epidemiology Unit No. 22. *J.A.M.A.*, 129: 921, 1945.
11. Damrosch, D. S.: Chemoprophylaxis and Sulfonamide Resistant Streptococci. *J.A.M.A.*, 130: 124, 1946.
12. Allman, C. H.: Penicillin in Otolaryngology: Its Use in 511 Cases of Otitis Media and 74 Cases of Mastoiditis. *J.A.M.A.*, 129: 109, 1945.
13. Coburn, A. F., and Moore, L. V.: Follow-Up Report on Rheumatic Subjects Treated with Sulfanilamide. *J.A.M.A.*, 117: 176, 1941.
14. Kuttner, A. G.: Prevention of Rheumatic Recurrences: Discussion of Various Measures Now Being Used. *N. Y. State J. of Med.*, 43: 1941, 1943.
15. Thomas, C. B.: Prevention of Recurrences in Rheumatic Subjects. *J.A.M.A.*, 126: 490, 1944.
16. Dodge, K. G., Baldwin, J. S., and Weber, M. W.: The Prophylactic Use of Sulfanilamide in Children with Inactive Rheumatic Fever. *J. Ped.*, 24: 483, 1944.
17. Wolf, R. E., Rauh, L. W., and Lyon, R. A.: Prevention of Rheumatic Recurrences in Children by Use of Sulfathiazole and Sulfadiazine. *J. Pediatrics*, 27: 516, 1945.
18. Pilot, I.: Sensitiveness of Meningococci to the Sulfonamides. *J.A.M.A.*, 127: 310, 1945.
19. Garvin, E. R.: Sulfadiazine as Prophylactic Agent Against Meningitis. *U. S. Nav. Med. Bull.*, 44: 700, 1945.



20. Waksman, S. A.: Microbial Antagonisms and Antibiotic Substances. New York: The Commonwealth Fund, 1945, p. 271.
21. Dubos, R. J.: Bactericidal Effect of an Extract of a Soil Bacillus on Gram Positive Cocci. *Proc. Soc. Exper. Biol. and Med.*, 40: 311, 1939; *J. Exper. Med.*, 70: 1, 11, 1939.
22. Dubos, R. J., and Cattanev, C.: Studies on a Bactericidal Agent Extracted from a Soil Bacillus; Preparation and Activity of a Protein-Free Fraction. *J. Exper. Med.*, 70: 249, 1939.
23. Hirsh, H. L., and Dowling, H. F.: Observations on Continuous Intramuscular Method of Administering Penicillin. *A. J. M. Sciences*, 210: 435, 1945.
24. Loewe, L., Rosenblatt, P., Russell, M., and Altire-Weber, E.: Superiority of Continuous Intravenous Drip for Maintenance of Effectual Serum Levels of Penicillin: Comparative Studies, with Particular Reference to Fractional and Continuous Intramuscular Administration. *J. Lab. and Clin. Med.*, 30: 730, 1945.
25. Romansky, M. J., and Rittman, G. E.: A Method of Prolonging the Action of Penicillin. *Science*, 100:196, 1944.
26. Romansky, M. J., and Rittman, G. E.: Penicillin: Prolonged Action in Beeswax-Peanut Oil Mixture. *Bull. U. S. Army Med. Dept.*, No. 81, 43, 1944.
27. Romansky, M. J., and Rittman, G. E.: Penicillin Blood Levels for Twenty-Four Hours Following a Single Intramuscular Injection of Calcium Penicillin in Beeswax and Peanut Oil. *New Eng. J. Med.*, 233: 577, 1945.
28. Kirby, W. M. M., Leifer, W., Martin, S. P., Rammelkamp, C. H., and Kinsman, J. M.: Intramuscular and Subcutaneous Administration of Penicillin Beeswax-Peanut Oil. *J.A.M.A.*, 129: 940, 1945.
29. Leifer, W., Martin, S. P., and Kirby, W. M. M.: The Treatment of Gonococcal Urethritis with Single Injections of Penicillin-Beeswax-Peanut Oil Mixture. *New Eng. J. Med.*, 233: 583, 1945.
30. McDermott, W., Bunn, P. A., Benoit, M., DuBois, R., and Reynolds, M. E.: The Absorption, Excretion, and Destruction of Orally Administered Penicillin. *J. Clin. Invest.*, 25: 190, 1946.
31. Barach, A. L., Silberstein, F. H., Oppenheimer, E. T., Hunter, T., and Soroka, M.: Inhalation of Penicillin Aerosol in Patients with Bronchial Asthma, Chronic Bronchitis, Bronchiectasis and Lung Abscess: Preliminary Report. *Ann. Int. Med.*, 22: 485, 1945.
32. Segal, M. S., and Ryder, C. M.: Penicillin Aerosolization in the Treatment of Serious Respiratory Infections: A Preliminary Report. *New Eng. J. Med.*, 233: 747, 1945.
33. Hamburger, M., Jr., Green, M. J., and Hamburger, V. G.: Problems of "Dangerous Carrier" of Hemolytic Streptococci: II. Spread of Infection by Individuals with Strongly Positive Nose Cultures Who Expelled Large Numbers of Hemolytic Streptococci. *J. Infect. Dis.*, 77: 96, 1945.
34. Hamburger, M., Jr., and Lemon, M. M.: The Problem of the Dangerous Carrier of Hemolytic Streptococci. III. The Chemotherapeutic Control of Nasal Carriers. *J.A.M.A.*, 130: 836, 1946.
35. Schatz, A., Bugie, E., and Waksman, S. A.: Streptomycin, a Substance Exhibiting Antibiotic Activity Against Gram-Positive and Gram-Negative Bacteria. *Proc. Soc. Exper. Biol. and Med.*, 55: 66, 1944.
36. Feldman, W. H., Hinshaw, H. C., and Mann, F. C.: Streptomycin in Experimental Tuberculosis. *Am. Rev. Tuberculosis*, 52: 269, 1945.
37. Hegarty, C. P., Thiele, E., and Verwey, W. F.: The In Vitro and In Vivo Activity of Streptomycin Against Hemophilus Pertussis. *J. of Bact.*, 50: 651, 1945.

### RED CROSS NURSES RECRUITED AS POLIO THREAT GREW

In late July close to three hundred nurses from all sections of the country were recruited by the American Red Cross within a few days for poliomyelitis service in a dozen states.

Additional nurses are being recruited by Red Cross chapters and paid by the National Foundation for Infantile Paralysis, as new and continued outbreaks of the disease occur. Nursing leaders of all Red Cross chapters have been alerted to draw from their disaster nurse reserves, when requested, for assignment to affected states. States requiring additional nursing help include Minnesota, South Dakota, Kansas, Oklahoma, Illinois, Texas, Missouri, Louisiana, Mississippi, Alabama, and Florida. Polio cases in 1946 have been listed by the U. S. Public Health Service in every state except two, Nevada and Rhode Island.

As an aid to nurses, the first institute sponsored jointly by American Red Cross chapters and the National Foundation for Infantile Paralysis as demonstration and instruction in poliomyelitis nursing techniques, recently was completed in Nashville, Tennessee. Approximately two hundred fifty nurses attended. Plans are under way for similar institutes to be held in other localities.

Courses for Red Cross nurse's aides, in care of convalescent polio patients, instituted several years ago, are continuing currently in all sections where the disease has reached epidemic proportions.

Under broadened policy for nurse recruitment in epidemics, the Red Cross is prepared to call nurses for emergency service in communicable disease outbreaks even though epidemic proportions have not been reached. This is part of the Red Cross general recruitment program for nurses in all disasters. Through efforts of local nursing leaders in Red Cross chapters, the list of disaster reserve nurses constantly is being strengthened to meet year 'round emergencies. —American Red Cross News Release, Aug. 4, 1946.

# The Graduate Student and Research\*

Owen H. Wangenstein, M.D.†

Minneapolis, Minnesota

THIS occasion, upon which we meet to honor the men and women who have manifested an interest in scholarship and scientific research, and whose labors have attracted the notice of their teachers and fellow workers in science, is an important annual university calendar event, for you men and women represent the promise of the future. Advances in knowledge are dependent upon the anxiety of persons like you to contribute to the patrimony of knowledge.

The primary motive that impels undergraduates to become graduate students in most instances, undoubtedly, is a desire or thirst for more learning and instruction in a field that appeals to the student. In brief, the student desires to become a specialist of sorts. In this quest the earnest student soon learns how true was the characterization of science by Oliver Wendell Holmes, the medical poet, when he said: "Science is the topography of ignorance." The zealous graduate student recognizes early his obligation to contribute to the reservoir of knowledge from which he has been ladling out to himself generous portions of information.

Students who fail to get beyond the spoon-feeding phase remain in the nursery stage of development and never attain mature growth. The student with a good appetite for knowledge soon learns that the occasional feeding by his teacher does not appease his hunger. He learns how to feed himself. Moreover, the earnest student's conflict with unsettled problems drives him on, and soon he is consumed with a desire to try to add a few tidbits to the stores upon which he has been drawing so generously in his formative years. In the beginning, he probably sallies forth in the spirit of adventure like a boy starting out on a bright spring morning for an outing in the country. It is only a diversionary amusement for a day, and then back to the old routine. But the attractions of research frequently prove far more fascinating than the student had dreamed; he will stay another day to enjoy the promising prospects of the outing. Days and weeks go by and when the student returns from his adventure, his outlook on life has changed. What he undertook as momentary recreation has now become an absorbing interest of his life.

If any of you recognize within yourselves some of these symptoms, you have caught the contagion of a highly infectious disease. It is an ailment, however, that most of its victims enjoy, even though they may not talk much about it, as many are prone to do of their physical ailments. This new-found pleasure gives to life a zest and flavor that only those who have tasted it can appre-

ciate. For them, research must be a constituent of the daily diet, without which life seems dull and drab.

## WHAT IS RESEARCH?

Research probably connotes various things to people in different walks of life. In the main, however, it can truthfully be said, the American public does not need to be convinced of the importance of research. On every hand, we see what patient fact-finding has done to improve our everyday existence. The pauper of today enjoys luxuries denied kings of less than half a century ago, largely because of contributions of science to the conveniences of life, which most of us are quick to regard as the necessities of life.

A pragmatist, somewhat skeptical of the value of research, may tell you that it consists in proving the obvious in a most thorough manner by laborious means. Another may tell you, as the name implies, it means looking again very carefully. The husband complains that he cannot locate his dressing gown. The wife, schooled in the importance of method, goes to the closet and without apparent effort finds readily what had thrown husband into confusion. Research is that simple, they will tell you. All you need is method and time to do it. Others may tell you that a researcher is a person who does not know what he is looking for but is not happy till he finds it.

I have the impression that there may be some truth in all these suggestions. The most fundamental requisite of a research project is an *idea*. A disciplined imagination is at the bottom of every great discovery. The person professing to want to do some research must be looking for something. He may not know exactly what he is looking for, but he is conversant enough with the situation under scrutiny to recognize that the problem is unsolved and demands an answer. A person with an idea, possessing also a capacity for critical analysis, affords real promise of a hopeful prospect in the solution of a problem. If, in addition, he is master of a method or technique by which the problem can be approached, the situation is even more promising. Not uncommonly, however, these two abilities are not associated. That is, persons with ideas lack intimate knowledge of methods, tools, or techniques by which to undertake the solution of a problem. And frequently, too, persons who have an intimate acquaintance or mastery of techniques are devoid of ideas. Obviously, therefore, for the successful prosecution of research, a combination of talents frequently is necessary, in which a fusion of effort with others gives an accelerated momentum to the project. No one was ever great by imitation.

The touchstone of the scientific method is the universal validity of its results. It establishes a finality of proof and agreement which puts aside all speculative rationalization. Such is the superiority of the experimental method over logic. John Hunter, who introduced the scien-

\*The President's address presented before the 50th annual initiation of the Minnesota Chapter of Sigma Xi, June 8, 1945. Reprinted from *Bulletin of the Minnesota Medical Foundation*, vol. 5, pages 91-99, June, 1945.

†Chief of the Department of Surgery, University of Minnesota.



tific method of collecting and classifying facts in surgery, said to his pupil Edward Jenner of smallpox vaccination fame: "Don't think; try the experiment!"

#### CO-OPERATIVE RESEARCH

The war has indicated in a convincing manner what can be done through the agency of co-operative research. A certain thing needs to be done. But how to do it? The best minds and the best available talent having an interest and acquaintance with the problem under scrutiny are brought together. Ideas and methods are pooled; barriers are broken down; the impetus of many hands, facilities and liberal support under wise guidance with frequent discussions lend assurance that real progress will be made. Employing this principle of operation, this country mobilized effectively for war on a gigantic nationwide scale that permeated into every activity of life with almost incredible results. There probably comes a time in many important researches progressing at a snail-like pace, when this principle of co-operative effort will advance considerably the ultimate solution of the problem.

This circumstance suggests that in many problems there are facets known only to certain persons; and that, if an over-all picture could be put together by a fusion of knowledge of the subject, or of knowledge of methods by which an answer to the problem can be arrived at, the final solution of the problem may be quickened by years or decades. Undoubtedly, there are such isolated facts buried in the scientific catacombs of our libraries, which facts if known to the person who should be in possession of that knowledge, would save endless labor and supply the information necessary for the solution of the problem. Scientific workers would do well to implement means to guard against failure in their researches from this lack of perspective. At the same time, it must be confessed, there are pressing problems not amenable to solution by such synthesis—problems which must await the penetrating clairvoyance of methods yet not available or the discerning dreams of a Joseph or a Daniel to resolve the mystery which blocks their solution. Study, discussions, and integration of related talents and knowledge help to expedite such synthesis of information, but when essential facts are missing, the research can inch forward only as that knowledge becomes available.

#### THE GREAT IMPORTANCE OF A NEW FACT

A new fact can change the whole complexion of a problem. How very true and how plodding a process the discovery of a single new fact can be! How many papers and books would never be published if the hurdle of containing a single new fact had to be met! This effort, like a lot of others, would wither under such a critical examination and never see the light of day. Little wonder that a new fact is a priceless possession and that we immortalize the names of men who have added a single important fact to knowledge. The pedantry of authority must give way before the testimony of a new fact. Does it not strike you as odd that our textbooks of today, though perhaps more numerous, in the main, are not much larger in a given well-established field than they were at the beginning of the century? The deletion of barnacles, the correction of mistruths and repeated errors, copied

out of other textbooks in the compilation, and the very paucity of established new facts limit the size of our textbooks of instruction.

#### SYNTHESIS OF KNOWN FACTS

It is very reassuring, however, that progress can be made by the synthesis of well-known facts and through minor improvements here and there, without the painful and slow process of the birth of a new idea. Let me illustrate from my own field of surgery: Twenty to thirty years ago, operations upon the thorax involving excision of the thoracic esophagus for cancer, as well as operations upon the lung for excision of one or more of its lobes for bronchiectasis, were being undertaken by surgeons interesting themselves in thoracic surgery. The results were disastrous, and I know of at least one well-known thoracic surgeon who gave up intrathoracic surgery because of the risks involved. In the intervening years, a wholly new situation has come about in this difficult field of surgery, without the discovery of a single major new fact. The methods employed are really the same as those used by the pioneers in this field, with this difference: time has pointed out the essentials in carrying such procedures forward to a satisfactory conclusion. To be sure, there have occurred improvements in anesthesia, in operative technique and in the preparation of the patient for, as well as after, operation. Yet, all of the essential items involved in the successful performance of these procedures were known when the pioneers in the field were making the initial skirmishes with the problem. In other words, experience has been a big factor in reducing the mortality in pulmonary lobectomy from 50 to 1 or 2 per cent. And experience is only to be acquired by a thorough study of the recorded experience of others aided by a critical analysis of the problem gained through a personal acquaintance with it. I repeat, it is very reassuring to know that important progress can be made on a problem, by synthesis of well-known facts and experience, even in the absence of new facts.

#### BASIC AND APPLIED RESEARCH

These considerations suggest the propriety of saying something concerning the relationship of applied to basic research. Let me illustrate from a major development that has occurred in the medical field. In 1929, Fleming, a bacteriologist at St. Mary's Hospital in London, while working with colonies of staphylococci, noted that contamination of his colonies with a mould, later identified by him as penicillium, exhibited a definite inhibiting effect upon the growth of bacteria. Nothing more was done with the matter until much later. When Florey (1941), a pathologist at Oxford, and his associates, in surveying substances exhibiting antibacterial action, found that penicillium was one of the most powerful antibacterial substances extant against certain Gram-positive organisms, they began the co-ordinated program of production to which many British and American laboratories have devoted their entire facilities. Fleming, the discoverer of penicillin, little recognized the importance of his discovery. It remained for Florey and his associates to point out the real significance of that discovery. Drs. Howard W. Florey and Alexander Fleming were both

knighted by the King for their important contribution to the control of bacterial infection.\* How many more years would Fleming's observation have gone unheralded had not Florey been casting about to test the potency of known antibacterial agents? Had Fleming been a chemist, it is to have been expected that a definite lag of years should intervene between discovery and appreciation of its importance. In this instance, however, both men were physicians, one a bacteriologist, the other a pathologist. Great credit is owing the person who first appreciates and points out in a forceful manner the application to which a discovery can be put. What I am trying to point out is that really two persons participated in the discovery. And so it is with many discoveries. It was Whipple and his associates (1918) who demonstrated the hematopoietic efficacy of a liver diet in dogs in the management of anemia. It remained for Minot and Murphy (1926) to establish that such treatment was equally effective in the management of pernicious anemia in man. The Nobel Prize Committee rightfully divided the honors of this great discovery among the three. Had it been possible to bring about the clinical syndrome of pernicious anemia in the dog, Whipple and his associates undoubtedly would have completed the entire experiment themselves and hastened the practical application of a life-saving remedy.

Medicine is commonly regarded as a field of applied science. Yet basic discoveries can and are being made by workers engaged primarily in applied research. The distinction between basic and applied research is occasionally more arbitrary than real. An integrated co-operative effort on a broad base should of necessity include investigators from pure science as well as applied fields.

#### THE SUPPORT OF RESEARCH

Industry recognizes the value of research, and most forward-looking industries support research liberally. Such a policy brings a rich reward directly back into the treasuries of industry. Foundations, research institutes, and universities also are vitally interested in research. In the instance of this latter group of institutions, however, there is little or no opportunity for research to be self-supporting. They derive their support largely from philanthropic persons interested in promoting the public good. State universities in latter years are finding legislatures in a more receptive mood when appropriations are asked for research. Daniel Webster, while seeking a federal appropriation for his native New Hampshire, was asked what the state produced. "Men," said Webster, "and God has graven their image in the granite of her hills." With the growth of graduate schools, primarily responsible for the sponsorship of research in universities, it might be well to suggest the following addition to such a query when asked of universities: Out of the labors of our scientific workers engaged in research, a liberal, yes, a munificent, return is made to society on the money made available for purposes of research.

There is obviously a limit to which state universities can support research without compromising the larger

responsibility of the university of providing opportunities for education on a broad base to its maturing men and women. In Minnesota, which stands eighteenth in population and twenty-third in wealth among our states, we have a total student enrollment which ranks third among American universities, exceeded only by Columbia and California. The graduate school, though a more recent development at Minnesota, has exhibited real growth and represents an achievement of which we may well be proud. The formal development of a graduate school came as a result of the vision of George Vincent, our third University of Minnesota president. Under Presidents Burton, Coffman, Ford and Coffey, the graduate school has grown. To Dr. Ford in particular, however, large credit is owing for the great care with which he nurtured and watched over its expansion during his twenty-five years of stewardship as Dean of the Graduate School.

A year ago President Coffey appointed an all-university Advisory Committee composed of seventeen members of the graduate faculty to study the matter of the organization of research in the University. That committee, under the aegis of Dr. William S. Miller, its chairman, and Dr. Lee I. Smith, the secretary, held a number of meetings during the past year and devoted considerable thought and study to the problems hedging about the organization of research. As a member of that committee, I wish to say that the deliberations of the group were characterized by a serious and high-minded interest in the future of research at this institution. Over a period of many years, there has grown up here at Minnesota an atmosphere and a spirit of friendly co-operative helpfulness conducive to research. These vitalizing influences, so essential for the stimulus and the growth of research, permeate the entire institution. You can feel it on every hand, in the attitude of the administration as well as in one's contacts with members of the graduate faculty.

There are epochs in the development of every institution. The keen interest of the people of Minnesota in education is apparent. Our university has attained its present stature of growth on a broad base, largely because the people of Minnesota have wanted superior educational advantages for their children, and have been sympathetic with and ardent in their support of the dreams and ambitions which our university leaders, presidents and successive Boards of Regents alike, have cherished for our university.

The time has come, however, when even greater importance must be attached to the growth and expansion of the graduate school. If Minnesota is to continue in the vanguard of progress amongst educational institutions of this country, an effort must be made to give increased impetus to the functions of the graduate school. Its activities have been carried on largely as a by-product of university departmental teaching divisions.

#### INTEGRATION OF TEACHING AND RESEARCH

In a sense, it is mandatory that students have some contact in the classrooms with the most productive scholars of the university. At the same time, that contact, if not too heavy a teaching obligation, is equally

\*The Nobel prize in medicine for 1945 was awarded to Fleming and Florey and the latter's associate, Dr. E. Chain.



important for members of the graduate faculty interested in research. Our own late Dean Lyon, who was keen for integration of teaching and research, said of his own famed teacher in physiology, Jacques Loeb: "To my mind, science lost rather than gained when Loeb left the university for the research institute." Many in the medical field, I know, garner ideas for their research out of the problems of their daily activity. To isolate them from that source is to make them sterile; to load these same men down with busy teaching schedules and too much responsibility for the care of patients, is to deprive them of the time or the energy to do research. Dean Lyon, I believe, was right in his insistence that a proper admixture of teaching and research was healthful and helpful to both.

Of some of us who lead dual lives in desiring to be both teacher and investigator, our very good friends may say—and mark you, criticism is the life of research, without which the scientific approach to problems cannot survive—that one of these objectives is ambition enough for any man, and singleness of purpose is necessary for the success of any important enterprise. Benjamin Rush, well-known physician of the American Revolution, said of himself: "Medicine is my wife and science my mistress." To this self-avowal of dual interests, Oliver Wendell Holmes is said to have remarked: "I do not think that the breach of the seventh commandment can be shown to have been of advantage to the legitimate owner of his affections." However much this invective may strike home in the experience of any one of us, I am inclined to believe that most of you will agree with me when I say that research gives enlightenment and meaning to our teaching, and teaching the controversial problems of our special fields of activity affords problems and ideas for our research. A career combining teaching and investigation offers reciprocal advantages to both.

#### THE GRADUATE SCHOOL AND ITS BUDGET

In our university, the graduate school itself has a very small budget, the faculty of the graduate school deriving their emolument from the undergraduate departmental teaching divisions of the university. As the teaching programs of these divisions expand, it is axiomatic that less time is available for research. In the preamble of the document prepared by the president's Advisory Committee on proposed plans of organization for research, Dr. Lee Smith and his associates said:

"In any scholarly activity, the prime factor is the scholar—the thinker who possesses vision, patience, industry, and mastery of his field of learning. However, the best of scholars is in a futile position when he is deprived of time, for research is not only a time-consuming activity in itself, but it must be preceded and accompanied by thinking. This thinking can seldom be done upon a scheduled basis; it requires unhurried time, for it is not the sort of thing that can be made to flow mechanically like the numbers from a calculating machine. Consideration of economy alone indicates that the able research man should be spared from dissipating his time from day to day upon many matters which can as well be entrusted to others. . . . It has been said, quite aptly, that a university, to gain and maintain a high intellectual position, must strive to retain the able original scholars which it already has, and must be alert always to attract to its faculty a stream of new scholars of established attainments or of recognized promise. It is admitted, moreover, that the prime requisite for the functioning of any institution as a source of scholarly production is the presence

in it of a faculty of distinguished talent. These facts being taken for granted, it follows that research and graduate education as university activities are no less important than undergraduate teaching, and that research and graduate education should be represented in the administrative scheme of the university by as high a position as is any other of the university activities."

#### RECRUITMENT OF SCIENTIFIC WORKERS INTO RESEARCH

On this occasion, we meet to acknowledge your interest in research and to bestow upon you the badge of membership in the scientific fraternity of Sigma Xi for your accomplishment. Many of you, I know, have earned graduate degrees as well. However much you prize that recognition for sentimental or more apparent reasons, let me remind you that it is your participation in a contribution to knowledge and demonstrated interest in research that brings us together tonight, and not the winning of a graduate degree. In honoring you, we are reminding ourselves that the research workers and teachers of tomorrow must be sought in and recruited from groups such as this. A desire to learn is equally as important as ability in the learning process. Similarly in research, enthusiasm for the work must go hand in hand with native talent.

A university would do well to see to it that its faculty use all legitimate means to persuade those of you who have manifested real ability to do research to remain in the game. We can point out to you the large rewards, of which perhaps the greatest is the personal satisfaction in the knowledge of a task well done. "Contented industry," the late Dr. William J. Mayo said frequently, "is the mainspring of human happiness." And if that labor has to do with advancement of knowledge and the betterment of man and his environment, what employment could give greater happiness?

We must be realistic, however, and offer you an opportunity with promise and a financial reward adequate for your needs. It is this latter matter that is often the stumbling block. In an integrated teaching and research program with all positions on the budget filled, the acquisition of a new faculty member is not a simple matter, as those of us who have had experience with budgets well know. Yet, here is an item of the greatest importance for the university. If this university is to maintain the eminent position it has acquired amongst educational institutions, the cultivation of a faculty devoted to the advancement of learning must take on accelerated momentum. The University of Minnesota is now in its ninety-fourth year of existence, but it is really only within the thirty-year period of time, marking the beginning and rise of the graduate school, that the University of Minnesota has come to the fore as an important educational center. The growth of the institution on a broad base is largely over. Renewed emphasis must now be lent to maintaining and extending its influence in the advancement and enlargement of knowledge—otherwise decadence is in store for us. The rise and fall of faculties and empires is a matter of common knowledge. The leadership that has made the University of Minnesota great, it must continue to have. As we contemplate the future of our university, it is apparent that

a more liberal support of productive scholarly activity and research is essential for the continued growth and improvement of those qualities that have brought distinction to our university.

#### MONIES AVAILABLE FOR RESEARCH

A study of the sources of the money which have been available to the university sheds interesting light on the problem of the support of research. A study of the summary of gifts to the university from 1851 to 1942, from other than legislative sources, compiled by the Comptroller's Office, indicates that during these ninety-one years a total of \$14,828,091.75 was received. Approximately 10 per cent of this amount came from alumni of the university. During the six-year interval (three biennial periods) from 1941 to 1947, the legislature appropriated a total of \$31,052,543. In other words, over a period of six years, the legislature put at our disposal somewhat more than twice the amount of money made available to the university from all other sources over a ninety-one-year period. Of the monies appropriated by the legislature, slightly more than 4 per cent was set aside for specific research purposes. This latter figure, in a sense, is fictional, however, for all of us on the graduate faculty derive our salaries from our respective departmental teaching budgets.

During the school year 1942-1943, the university received gifts in the amount of \$301,013.16. Of this amount, \$235,383.16 came from a number of miscellaneous sources; the remaining \$65,630 was constituted by federal grants administered through the Office of Scientific Research and Development. In addition, during the school year 1942-1943, \$18,977.68 accrued for purposes of research as income from endowments. During the same period, \$103,562.37 accrued as income from endowments for research for expenditures by the Mayo Foundation at Rochester.

This superficial and somewhat cursory survey of the sources of university support suggests definitely the need of making a studied effort to enlarge considerably our sources of revenue from gifts. President Coffey said recently on the occasion of the testimonial dinner in his honor: "The University of Minnesota needs more influential friends." The booklet entitled "An Interpretation of an Economic Analysis of the State of Minnesota" (1945) representing a summary of the studies of the Minnesota Resources Commission, though giving emphasis to the importance of research in the solution of the problem of the declining per capita wealth in Minnesota, affords little hope that we may expect even larger legislative appropriations for educational purposes.

The plan of organization of research proposed and endorsed by the majority of the members of President Coffey's Advisory Committee, envisages the prospect of having one of the senior administrative officers of the graduate school devote time and thought to the problem of securing a more liberal support of research through gifts. The future of research at the University of Minnesota is directly dependent upon our ability to enlarge

considerably the support of research from private sources. If the federal government undertakes to support research in other fields as liberally as it has in agriculture, a partial solution of our problem is in sight. Until that comes about, however, President Coffey's suggestion of enlisting the sympathetic interest of our own influential citizens in the cause of research appears to be the only solution.

#### THE RELATIONSHIP OF RESEARCH TO THE SOCIAL ORDER

Training in research leads to an appreciation of the value of evidence. The scientific method eliminates the element of personal bias in controversial matters, and asks only: What is the evidence? Science and research have opened up for us a vast new world. They have not alone revolutionized our conception of the universe, but they have altered our entire mode of existence. Our capacity to enjoy and appreciate the contributions of research to life is limited largely by our ability to get on with one another. When a cow is well fed, she lies down content, and chews her cud. But the undisciplined passions of man are in conflict with his ability to secure for himself peace of mind, which is the ultimate happiness. What creatures other than man destroy their own kind in a wanton manner? What progress have we made in the observance of the moral law since the Sermon on the Mount? Why, when books continuously are being written and expounded on morality does their teaching appear to exercise so little influence upon the behavior and conduct of man for the better? When will facts, an appreciation of the value of evidence, and elimination of the element of personal bias permit the scientific method to operate effectively in our relations with our fellow man? Perhaps Shakespeare supplied the answer when he had Portia in the Merchant of Venice, say:

"If to do were as easy as to know what were good to do, chapels had been churches, and poor men's cottages princes' palaces. It is a good divine that follows his own instructions. I can easier teach twenty what were good to be done than be one of the twenty to follow mine own teaching."

#### CONCLUSION

The work of man in this world is the establishment of order which is also heaven's first law. It is to be hoped that man may learn the value of the scientific method in helping him get on with his fellow man, just as he accepts gladly the gifts of scientific research to the enrichment of his daily life. Research brings light where there was darkness, and much as the world needs light it stands even in greater need of an enlightened understanding. Few of us who profess to follow teaching and research will be bringers of the light, but we can all be ardent seekers after it, and strive mightily for an enlightened understanding. The graduate student who centers his career about research, and who is driven by an anxiety to contribute to the welfare of his fellow man, will find in the accomplishment satisfaction and personal happiness. I hope that none of you will abandon this prospect which research holds out to all who follow her with diligence and devotion.



# Anopheline Mosquitoes in Montana

Donald J. Pletsch, Ph.D.\*

Bozeman, Montana

THE recent return to Montana of thousands of ex-service personnel, some of whom still carry malaria parasites, gives new importance to the problem of Montana's anopheline mosquitoes. Twenty-six male students at Montana State University, Missoula, apparently harbored malaria parasites in June, 1946 (according to Dr. C. R. Svore, Director, University Health Service). At the same time twenty-two ex-servicemen at Montana State College, Bozeman, had blood smears positive for malaria.

swamps, pools, and slow-moving streams. Captured adult anophelines were all identified as belonging to species already known from the state, *Anopheles punctipennis* and *A. maculipennis*. In the larval and pupal stages these two species cannot be readily distinguished from one another, but attempts were made to rear the immature forms to the adult stage. Results of the survey are summarized in Table 1, below.

Several interesting conclusions may be drawn from the survey results. First, anophelines were more generally

TABLE 1  
Anopheline Mosquitoes Found in Western Montana: April 19 - May 31, 1946

| COUNTY                    | LARVAL HABITATS |                 | ADULT HABITATS  |                 | ADULTS COLLECTED              |                               |
|---------------------------|-----------------|-----------------|-----------------|-----------------|-------------------------------|-------------------------------|
|                           | Number Examined | Number Positive | Number Examined | Number Positive | <i>Anopheles punctipennis</i> | <i>Anopheles maculipennis</i> |
| Deer Lodge                | 0               | —               | 1               | 0               | 0                             | 0                             |
| Flathead                  | 5               | 2               | 4               | 3               | 0                             | 7                             |
| Gallatin                  | 1               | 1               | 0               | —               | —                             | —                             |
| Granite                   | 1               | 0               | 2               | 1               | 0                             | 3                             |
| Jefferson                 | 0               | —               | 1               | 0               | 0                             | 0                             |
| Lake                      | 3               | 1               | 4               | 2               | 2                             | 7                             |
| Lincoln                   | 6               | 1               | 5               | 0               | 0                             | 0                             |
| Mineral                   | 5               | 0               | 7               | 2               | 1                             | 11                            |
| Missoula                  | 7               | 1               | 3               | 0               | 0                             | 0                             |
| Powell                    | 2               | 0               | 2               | 1               | 0                             | 3                             |
| Ravalli                   | 8               | 1               | 11              | 2               | 0                             | 2                             |
| Sanders                   | 9               | 4               | 15              | 1               | 1                             | 60                            |
| Total                     | 47              | 11              | 55              | 12              | 4                             | 93                            |
| Per cent positive samples | 23.6%           |                 | 21.8%           |                 |                               |                               |

The presence of anopheline mosquitoes in Montana has been recognized for many years. Mail (1934) listed two species, *Anopheles punctipennis* and *A. maculipennis*, both potential transmitters of malaria parasites. He considered *Anopheles punctipennis* unimportant because of its rarity, as there was only a single record from Montana, at Lolo in the Bitterroot Valley. Regarding *Anopheles maculipennis*, known from six records, he stated, "Although this mosquito is the most important malaria carrier in California, it is of no importance as such in Montana. It is not sufficiently numerous to constitute a pest."

A survey was conducted for anopheline mosquitoes in 12 western Montana counties from May 20 to 31, 1946. Earlier random collections had been made on April 19 and 29 in Mineral County. Adult anophelines were sought in barns, cowsheds, outbuildings, under cabins, in boxes and barrels, culverts, under bridges, and in similar locations offering protection from wind and direct sunlight. Dips for larvae were made in roadside "borrow-

present in the area than previously supposed, and in some instances were breeding in close proximity to towns or cities. Second, the considerable numbers of larvae found in some breeding places indicated favorable conditions for development. This impression was confirmed by finding adult anophelines in some instances (61 adults under one bridge near Hot Springs, Sanders county). Third, the finding of male mosquitoes in numbers as early as May 28 was evidence of a 1946 generation by that date, as only the female *Anopheles* overwinter in this latitude.

In addition to the twelve counties included in the 1946 survey, records of *Anopheles* are on hand for Lewis and Clark, Valley, Phillips, and Blaine counties. It is likely that intensive collecting would reveal small numbers of anophelines in any part of the state.

The probability of indigenous malaria in Montana remains very remote, but the possibility of such an occurrence cannot be discounted while potential transmitters and persons harboring parasites are both present. Medical practitioners in Montana should be aware of the possibilities of malaria with its variety of symptoms.

\*Associate Entomologist, Montana Agricultural Experiment Station, Bozeman.

# Transactions of the North Dakota State Medical Association House of Delegates

59th Annual Session

Bismarck, North Dakota, May 26, 1946

## OFFICERS, 1945-1946

President ..... JAMES F. HANNA, Fargo  
 President-Elect ..... A. E. SPEAR, Dickinson  
 First Vice-President ..... PHILIP G. ARZT, Jamestown  
 Second Vice-President ..... W. A. LIEBELER, Grand Forks  
 Speaker of the House ..... JOHN H. MOORE, Grand Forks  
 Secretary ..... L. W. LARSON, Bismarck  
 Treasurer ..... W. W. WOOD, Jamestown  
 Delegate to A.M.A.—1946 ..... A. P. NACHTWEY, Dickinson  
 Alternate Delegate to A.M.A.—1946 ..... W. A. WRIGHT, Williston

## COUNCILLORS

### Terms Expiring 1946

Second District ..... J. C. FAWCETT, Devils Lake  
 Seventh District ..... JOSEPH SORKNESS, Jamestown  
 Eighth District ..... F. W. FERGUSSON, Kulm  
 Tenth District ..... W. H. GILSDORF, Valley City

### Terms Expiring 1947

First District ..... PAUL BURTON, Fargo  
 Third District ..... C. J. GLASPEL, Grafton, Secretary  
 Sixth District ..... N. O. RAMSTAD, Bismarck, President

### Terms Expiring 1948

Fourth District ..... A. D. McCANNELL, Minot  
 Fifth District ..... C. J. MEREDITH, Valley City  
 Ninth District ..... A. E. WESTERVELT, Bowdon

## HOUSE OF DELEGATES

### CASS COUNTY

V. G. BORLAND ..... Fargo  
 O. A. SEDLAK ..... Fargo  
 A. L. KLEIN, Alternate ..... Fargo  
 S. C. BACHELLER, Alternate ..... Enderlin  
 B. A. MAZUR, Alternate ..... Fargo

### DEVILS LAKE

G. W. TOOMEY ..... Devils Lake  
 W. R. FOX, Alternate ..... Rugby

### GRAND FORKS

P. H. WOUTAT ..... Grand Forks  
 G. L. COUNTRYMAN ..... Grafton  
 L. H. LANDRY, Alternate ..... Walhalla

### KOTANA

W. A. WRIGHT ..... Williston  
 I. S. AbPLANALP, Alternate ..... Williston

### NORTHWEST DISTRICT

A. R. SORENSON ..... Minot  
 D. J. HALLIDAY ..... Kenmare  
 M. T. LAMPERT, Alternate ..... Minot

### RICHLAND

A. H. REISWIG ..... Wahpeton  
 C. V. BATEMAN, Alternate ..... Wahpeton

### SHEYENNE VALLEY

PAUL T. COOK ..... Valley City  
 A. C. MacDONALD, Alternate ..... Valley City

### SIXTH DISTRICT

C. C. SMITH ..... Mandan  
 R. H. WALDSCHMIDT ..... Bismarck  
 M. S. JACOBSON, Alternate ..... Elgin

### SOUTHERN

F. E. WOLFE ..... Oakes  
 VICTOR FERGUSSON, Alternate ..... Edgeley

### SOUTHWESTERN DISTRICT

A. P. NACHTWEY ..... Dickinson  
 R. W. RODGERS, Alternate ..... Dickinson

### STUTSMAN COUNTY

W. W. WOOD ..... Jamestown  
 P. G. ARZT, Alternate ..... Jamestown

### TRI-COUNTY

M. J. MOORE ..... New Rockford  
 F. W. FORD, Alternate ..... New Rockford

### TRAILL-STEELE

O. A. KNUTSON ..... Buxton  
 R. C. LITTLE, Alternate ..... Mayville

## STANDING COMMITTEES

### COMMITTEE ON MEDICAL EDUCATION

H. E. FRENCH, Chairman ..... Grand Forks  
 J. H. FJELDE ..... Fargo  
 C. R. TOMPKINS ..... Grafton  
 R. E. LEIGH ..... Grand Forks

### COMMITTEE ON NECROLOGY AND MEDICAL HISTORY

F. L. WICKS, Valley City )  
 G. M. WILLIAMSON, Grand Forks ) Co-Chairmen  
 L. H. KERMOTT ..... Minot  
 ROLFE TAINTER ..... Fargo  
 O. C. MAERCKLEIN ..... Mott  
 M. W. ROAN ..... Bismarck  
 JESSE W. BOWEN ..... Dickinson  
 IRA S. AbPLANALP ..... Williston

### COMMITTEE ON PUBLIC POLICY AND LEGISLATION

A. D. McCANNELL, Chairman ..... Minot  
 A. P. NACHTWEY ..... Dickinson  
 PAUL BURTON ..... Fargo  
 G. M. WILLIAMSON ..... Grand Forks  
 G. F. DREW ..... Devils Lake  
 FRANK I. DARROW ..... Fargo  
 F. L. WICKS ..... Valley City  
 L. W. LARSON, ex-officio ..... Bismarck  
 J. F. HANNA, ex-officio ..... Fargo

### COMMITTEE ON PUBLIC HEALTH

G. F. CAMPANA, Chairman ..... Bismarck  
 A. C. MacDONALD ..... Valley City  
 H. T. SKOVHOLT ..... Williston  
 P. L. OWENS ..... Bismarck  
 H. B. HUNTLEY ..... Kindred  
 N. W. FAWCETT ..... Devils Lake  
 L. H. LANDRY ..... Walhalla  
 E. M. WATSON ..... Fargo  
 R. G. WHITE ..... Minot  
 A. S. CHERNAUSEK ..... Dickinson  
 T. Q. BENSON ..... Grand Forks  
 L. F. NELSON ..... Bottineau  
 E. J. BEITHON ..... Hankinson  
 R. C. LITTLE ..... Mayville  
 MARY SOULES ..... New England  
 W. A. GERRISH ..... Jamestown  
 V. R. FERGUSSON ..... Edgeley

### COMMITTEE ON TUBERCULOSIS

J. O. ARNSON, Chairman ..... Bismarck  
 J. P. CRAVEN ..... Williston  
 G. S. SEIFFERT ..... Minot  
 W. L. WALLBANK ..... San Haven  
 VICTOR FERGUSSON ..... Edgeley  
 C. V. BATEMAN ..... Wahpeton  
 J. C. FAWCETT ..... Devils Lake  
 F. O. WOODWARD ..... Jamestown  
 V. J. LaROSE ..... Bismarck  
 F. E. WEED ..... Park River  
 A. F. HAMMARGREN ..... Harvey  
 M. M. HEFFRON ..... Bismarck  
 H. E. GULOIEN ..... Dickinson  
 E. H. RICHTER ..... Hunter



COMMITTEE ON OFFICIAL PUBLICATION

|                        |             |
|------------------------|-------------|
| L. W. LARSON, Chairman | Bismarck    |
| J. O. ARNSON           | Bismarck    |
| H. D. BENWELL          | Grand Forks |
| W. H. LONG             | Fargo       |
| G. W. TOOMEY           | Devils Lake |

COMMITTEE ON CANCER

|                        |             |
|------------------------|-------------|
| L. W. LARSON, Chairman | Bismarck    |
| PAUL BRESLICH          | Minot       |
| G. W. HUNTER           | Fargo       |
| J. H. MOORE            | Grand Forks |

COMMITTEE ON FRACTURES

|                             |             |
|-----------------------------|-------------|
| R. H. WALDSCHMIDT, Chairman | Bismarck    |
| R. D. CAMPBELL              | Grand Forks |
| J. C. FAWCETT               | Devils Lake |
| J. W. BOWEN                 | Dickinson   |
| C. J. MEREDITH              | Valley City |
| J. P. CRAVEN                | Williston   |
| E. J. LARSON                | Jamestown   |
| H. J. FORTIN                | Fargo       |
| A. F. HAMMARGREN            | Harvey      |
| V. G. BORLAND               | Fargo       |

COMMITTEE ON MEDICAL ECONOMICS

|                        |              |
|------------------------|--------------|
| W. A. WRIGHT, Chairman | Williston    |
| P. H. WOUTAT           | Grand Forks  |
| F. E. WOLFE            | Oakes        |
| W. H. LONG             | Fargo        |
| A. D. McCANNEL         | Minot        |
| R. H. WALDSCHMIDT      | Bismarck     |
| R. W. RODGERS          | Dickinson    |
| M. J. MOORE            | New Rockford |

COMMITTEE ON MATERNAL AND CHILD WELFARE

|                       |             |
|-----------------------|-------------|
| J. H. MOORE, Chairman | Grand Forks |
| T. L. DePUY           | Jamestown   |
| P. W. FREISE          | Bismarck    |
| J. D. GRAHAM          | Devils Lake |
| J. F. HANNA           | Fargo       |
| E. M. RANSOM          | Minot       |
| M. D. WESTLEY         | Cooperstown |
| LAWRENCE PRAY         | Fargo       |

COMMITTEE ON CRIPPLED CHILDREN

|                          |           |
|--------------------------|-----------|
| A. R. SORENSON, Chairman | Minot     |
| HARRY J. FORTIN          | Fargo     |
| J. C. SWANSON            | Fargo     |
| R. H. WALDSCHMIDT        | Bismarck  |
| W. W. WOOD               | Jamestown |

COMMITTEE ON PNEUMONIA

|                         |             |
|-------------------------|-------------|
| O. W. JOHNSON, Chairman | Rugby       |
| L. H. FREDRICKS         | Bismarck    |
| J. E. HETHERINGTON      | Grand Forks |
| W. E. G. LANCASTER      | Fargo       |
| W. H. GILSDORF          | Valley City |
| A. W. MacDONALD         | Valley City |
| GUNDER CHRISTIANSON     | Sharon      |

SPECIAL COMMITTEES

COMMITTEE ON INDUSTRIAL HEALTH

|                         |           |
|-------------------------|-----------|
| C. J. GLASPEL, Chairman | Grafton   |
| W. H. BODENSTAB         | Bismarck  |
| W. A. GERRISH           | Jamestown |

COMMITTEE ON WAR PARTICIPATION

|                        |             |
|------------------------|-------------|
| L. W. LARSON, Chairman | Bismarck    |
| N. O. RAMSTAD          | Bismarck    |
| C. J. GLASPEL          | Grafton     |
| F. W. FERGUSSON        | Kulm        |
| A. R. SORENSON         | Minot       |
| FRANK I. DARROW        | Fargo       |
| P. G. ARZT             | Jamestown   |
| A. E. SPEAR            | Dickinson   |
| W. A. WRIGHT           | Williston   |
| C. J. MEREDITH         | Valley City |

COMMITTEE ON NURSING EDUCATION

|                        |             |
|------------------------|-------------|
| G. W. TOOMEY, Chairman | Devils Lake |
| O. A. SEDLAK           | Fargo       |
| R. E. LEIGH            | Grand Forks |
| WOODROW NELSON         | Minot       |
| N. O. RAMSTAD          | Bismarck    |

REFERENCE COMMITTEES—House of Delegates

*To consider the Reports of the President, Secretary and Special Committees:*

|                          |             |
|--------------------------|-------------|
| A. P. NACHTWEY, Chairman | Dickinson   |
| O. A. SEDLAK             | Fargo       |
| PAUL T. COOK             | Valley City |

*To consider the Reports of the Council, Councillors, Delegate to the A.M.A., and Member of the Medical Center Advisory Council:*

|                          |             |
|--------------------------|-------------|
| D. J. HALLIDAY, Chairman | Kenmare     |
| G. L. COUNTRYMAN         | Grafton     |
| P. H. WOUTAT             | Grand Forks |

*To consider the Reports of the Standing Committees, except the Report of the Committee on Medical Economics:*

|                       |              |
|-----------------------|--------------|
| C. C. SMITH, Chairman | Mandan       |
| M. J. MOORE           | New Rockford |
| A. H. REISWIG         | Wahpeton     |

*To consider the Report of the Committee on Medical Economics:*

|                         |           |
|-------------------------|-----------|
| V. G. BORLAND, Chairman | Fargo     |
| A. R. SORENSON          | Minot     |
| R. H. WALDSCHMIDT       | Bismarck  |
| F. E. WOLFE             | Oakes     |
| W. W. WOOD              | Jamestown |

*Committee on Resolutions:*

|                        |             |
|------------------------|-------------|
| W. A. WRIGHT, Chairman | Williston   |
| O. A. KNUTSON          | Buxton      |
| G. W. TOOMEY           | Devils Lake |

*Committee on Credentials:*

|                      |           |
|----------------------|-----------|
| W. W. WOOD, Chairman | Jamestown |
| A. H. WEISWIG        | Wahpeton  |
| R. H. WALDSCHMIDT    | Bismarck  |

Proceedings of the House of Delegates of the NORTH DAKOTA STATE MEDICAL ASSOCIATION

First Session, Sunday, May 26, 1946

The House of Delegates convened in the Rose Room of the Patterson Hotel, Bismarck, North Dakota. It was called to order at 2:00 P.M. by the speaker, Dr. John H. Moore. Dr. W. W. Wood, Chairman of the Committee on Credentials, announced that thirteen elected delegates had presented their credentials and were qualified. The secretary called the roll. Fifteen delegates responded and the speaker declared a quorum present. Delegates present were: Drs. V. G. Borland, Fargo; P. H. Woutat, Grand Forks; W. A. Wright, Williston; A. R. Sorenson, Minot; D. J. Halliday, Kenmare; A. H. Reiswig, Wahpeton; Paul T. Cook, Valley City; C. C. Smith, Mandan; R. H. Waldschmidt, Bismarck; A. P. Nachtwey, Dickinson; W. W. Wood, Jamestown; M. J. Moore, New Rockford; O. A. Knutson, Buxton; O. A. Sedlak, Fargo; G. W. Toomey, Devils Lake.

Introduction of President

The speaker introduced the President, Dr. James F. Hanna, who welcomed the delegates back to a peace-time convention and delivered the following address: "In Valley City, a year ago, we held the first streamlined meeting. At that meeting the House of Delegates discussed the pre-payment medical plan. At that time I could not see the wisdom of it, but as time has gone on, I see it is a wise plan.

"As I have gone on in the office of President, there have been a few things that have struck me that would be beneficial to the Association if they could be adopted. Until I took over the office of President, I had been devoting my life to the practice of medicine. It became apparent after meeting with the different committees that a man elected to a state office should take a more active interest in the affairs of the Association than any of us have done in the past. A presidency used to amount to just going to a convention, having some fun, and then waiting until next year. But now, it means more than that. The President must keep abreast of other things than just the sociability. I think it would be a good idea and I would like to recommend that when a President takes over, he should take on a more active duty. He should address the House of Delegates. I also think the President-Elect should deliver the address to the Convention. By so doing, he will feel more a part of the Association.

I am happy to report a year ago it was decided that we try to procure an Executive Secretary, and we have procured him. I would like to leave the thought with him, and with you as well, that the medical profession needs alliances. I have spoken to some members of the dental association and the lawyers. Their turn is around the corner. It would not be out of line if we could step out of the professional group, and I think it would be a good thing for the medical profession to have liaison to meet with similar groups from other professions. I think that is one thing our new Executive Secretary could look into and I would like to see him do so."

The speaker then introduced several distinguished officials and visitors, including Dr. A. E. Spear, Dickinson, President-Elect; Dr. W. A. Liebler, Grand Forks, Second Vice-President; Dr. George Williamson, Grand Forks, Secretary, Board of Medical Examiners; Dr. N. O. Ramstad, Bismarck, President of the Council; Dr. Alfred W. Adson, Member of the Council on Medical Service and Public Relations, American Medical Association, Rochester, Minnesota; and Dr. L. W. Larson, Secretary of the North Dakota State Medical Association. Dr. Larson announced the procurement of a full-time executive secretary and introduced Mr. E. F. Engebretson, who had been selected for this position.

#### Minutes of 1945 Meeting Approved

On motion made by Dr. Nachtwey, seconded by Dr. Waldschmidt and carried, the reading of the minutes of the 1945 session as published and circulated in the August 1945 issue of the JOURNAL LANCET were dispensed with and the minutes adopted.

#### REPORT OF THE SECRETARY

Dr. L. W. Larson, secretary, presented the following report as presented in the handbook which was referred to the reference committee on reports of the secretary and special committees.

The total membership for 1945 was 379. Of this number 313 paid their annual dues, 9 were honorary members, and the dues of 57 members were cancelled because of military service. Six members died during the past year. Eight of those who paid dues in 1944 failed to pay their 1945 dues. Four new members were admitted to the Association during the year. Table No. 1 shows the annual membership for the past seven years. Although the total membership has remained almost constant during this time, the figures show that we struck an all-time low in 1945. This is due to deaths, removal from the State, and delinquencies. The effect that the marked increase in the dues for 1946-47 will have on our total membership is difficult to predict.

TABLE NO. 1  
Comparison of Annual Membership

|                                     | 1939 | 1940 | 1941 | 1942 | 1943 | 1944 | 1945 |
|-------------------------------------|------|------|------|------|------|------|------|
| Paid Memberships                    | 394  | 387  | 374  | 366  | 331  | 318  | 313  |
| Honorary Membership                 | 3    | 11   | 12   | 10   | 11   | 10   | 9    |
| Dues Cancelled,<br>military service | —    | —    | 14   | 32   | 61   | 59   | 57   |
| Total                               | 397  | 398  | 400  | 408  | 403  | 387  | 379  |

Table No. 2 shows that the annual dues for 1946-47 are being paid quite promptly. To date 305 members have paid their dues, of which 12 are new members. Many of our members who have been discharged from military service within the past six to eight months, have returned to practice in the State, although several are still on terminal leave, or are taking post-graduate courses. Reports from the Component District Societies indicate that several elderly, semi-retired, or retired members, who formerly paid their Association dues, are dropping out of the Association. The reason given is usually that the dues are too high to justify the continuance of membership. The figures indicate that unless a substantial number of new physicians locate in the State, the membership of the Association will not exceed 315 who pay dues.

TABLE NO. 2

|                                     | 1941 | 1942 | 1943 | 1944 | 1945 | 1946 |
|-------------------------------------|------|------|------|------|------|------|
| Paid-up Members                     | 339  | 352  | 316  | 304  | 294  | 305  |
| Honorary Members                    | 12   | 10   | 10   | 10   | 9    | 9    |
| Dues Cancelled,<br>military service | —    | 31   | 58   | 59   | 57   | ?    |
| Total                               | 351  | 393  | 384  | 373  | 360  |      |

*Field Work.* It has been impossible for your Secretary to visit more than a few of the District Societies during the past year. Fortunately, President Hanna has been able, and willing, to attend District Meetings, so the Association has been represented at most of the District Societies at one time or another. Interest in the District Societies is relatively active, although the reports from the smaller societies indicate the need for more frequent meetings and development of better scientific programs.

Your Secretary has tried to maintain contacts with the A.M.A. and the North Central Medical Conference. Unfortunately, he was unable to attend the Annual Conference of State Secretaries, held at the A.M.A. Headquarters during February, because of inclement weather. He did attend the First Annual Conference on Rural Medical Service on March 30th, which was sponsored by the Committee on Rural Medical Care of the A.M.A. Representatives of the American Farm Bureau Federation, Grange, Farmers Union and the Farm Foundation were present at this Conference, and your Secretary discussed one of the papers.

*Committees.* As usual some of the Committees have been very active during the past year. The Committee on Medical Economics has continued its study of the problem of prepaid medical insurance, and has also negotiated with the Veterans Administration relative to a working arrangement between the Veterans Administration and the Association for the provision of medical care for the veteran. The Committee on Tuberculosis has actively cooperated with the State Health Department in the development and promotion of the mass chest X-ray program which is now in operation in the State.

*Medical Economics.* President Truman's Health Program, and the Wagner-Murray-Dingell Bill, are being discussed thoroughly in the Senate Committee hearings on the bill. A request was submitted to Senator Murray, Chairman of the Committee on Education and Labor, for an opportunity to appear before the Committee. Permission was denied, although Senator Murray did request us to submit a brief for the Record. Reports from the Washington headquarters of the Council on Medical Service and Public Relations indicate that the medical viewpoint has been well presented by the few who have been permitted to testify before the Committee. There is some indication that the proponents of the Wagner-Murray Bill are being given more opportunity to present their case than the opponents of the bill. The Council on Medical Service and Public Relations of the A.M.A. is beginning to function in a satisfactory manner. Our members will have an opportunity to hear one of its members, Dr. A. W. Adson, during this meeting.

*North Central Medical Conference.* This organization, which represents the medical profession in Minnesota, Wisconsin, Iowa, Nebraska, North and South Dakota, continues to function as a potent force in the field of medical economics throughout the country. The problems in the area are quite similar, and there is every indication that the cooperative spirit which has developed among the representatives of the states in the Conference area, will be of value to the physicians they represent.

*Full-time Secretary.* I trust that a full-time Secretary will be employed before our 1946 Annual Meeting. There is much he can do to improve our public relations, and also to stimulate the growth and development of our Component District Societies. The hearty response of our members to the material increase in dues this year indicates that our members favor the employment of a full-time Secretary, and are willing to pay for the additional cost.

I wish to thank the Officers of the State Association and the Component District Medical Societies, and the membership, for the cooperation they have given to me and the courtesies extended during the past year. President Hanna has been a worthy successor to Dr. Wicks. He has given freely of his time attending the meetings of the Governor's Health Planning Committee, District Societies, Northwest Regional Conference, and the National Conference on Medical Service. It has been a pleasure for me to work with him. I wish also to commend Dr. W. A. Wright, Chairman of the Committee on Medical Economics, for his willingness to attend local and national meetings during the past year.

#### RECOMMENDATIONS

1. That the Association continue its financial support of the North Central Medical Conference.



2. That the President-Elect and Vice Presidents be utilized more in the future than they have in the past. They should continue as members, or Chairmen, of important committees, or they should be assigned to special duties which will acquaint them with the mechanics of the Association and the problems confronting its membership.

**REPORT OF TREASURER**

Dr. W. W. Wood, treasurer, presented his report as published in the handbook.

|                                             |             |             |
|---------------------------------------------|-------------|-------------|
| Balance in checking account, April 15,      |             |             |
| 1945, less check No. 509, uncashed \$       | 2,712.70    |             |
| Receipts of dues during the year            | 10,865.00   |             |
| Bond interest received                      | 112.50      |             |
|                                             |             | \$13,690.20 |
| <b>Disbursements:</b>                       |             |             |
| Checks No. 511 to 520, incl.                | \$ 2,273.82 |             |
| Bank expense                                | 16.50       |             |
|                                             |             | 2,290.32    |
| Balance in bank, May 1, 1946, check account | \$11,399.88 |             |
| Bonds in safety deposit                     | 4,500.00    |             |
|                                             |             | \$15,899.88 |

**REPORT OF CHAIRMAN OF THE COUNCIL**

1945-1946

Dr. N. O. Ramstad, chairman, presented the following report, which was referred to the reference committee on reports of the council, councillors, and delegate to the American Medical Association.

The Council of the North Dakota State Medical Association met in Valley City, North Dakota, May 20 and 21, 1945. Nine members were present. Also present were President F. L. Wicks and Secretary L. W. Larson of the State Medical Association, who are ex-officio members. Others attending were President-elect J. F. Hanna, Dr. G. M. Williamson, and First Vice President A. E. Spear.

Secretary L. W. Larson reported a paid membership of 304 and 10 honorary members. The dues of 59 members in the military services were omitted. Doctor Larson recommended that Doctor Wright be fully paid for his expenses connected with the Committee on Medical Economics, and that President Wicks be allowed a sufficient sum to meet his travel expenses.

The treasurer, Dr. W. W. Wood, read his report to the House of Delegates. The Association has invested \$4,500 in United State Bonds and had a balance of \$2,772.70 in the bank. The value of the physical assets of the Association, after depreciation, was \$91.15. The Secretary reported that his expenses for the fiscal year were as follows:

|                             |            |
|-----------------------------|------------|
| Postage and office supplies | \$ 296.28  |
| Telephone and telegrams     | 27.97      |
| Travel Expenses             | 90.78      |
| Salary                      | 1,200.00   |
| <b>Total</b>                | \$1,615.03 |

The auditing committee of the Council reported that the accounts of the Secretary and Treasurer had been examined and found to be correct. This report was approved by the Council. The Council also approved the payment of the premiums on the bonds of the Treasurer for \$20,000 and the Secretary for \$5,000.

The contract with the JOURNAL LANCET was renewed for two years.

The following budget for the coming year was prepared and approved by the Council:

|                                            |          |
|--------------------------------------------|----------|
| North Central Conference                   | \$ 50.00 |
| Committee on medical economics             | 100.00   |
| Stenographer for annual meeting            | 150.00   |
| Emergency fund for chairman of the council | 50.00    |
| Emergency fund for the council             | 200.00   |
| 1946 annual meeting                        | 200.00   |
| A.M.A. delegate                            | 125.00   |
| JOURNAL LANCET                             | 650.00   |
| Secretary's salary                         | 1,200.00 |

|                                   |        |
|-----------------------------------|--------|
| Postage and office supplies       | 175.00 |
| Telephone and telegrams           | 50.00  |
| Travel expenses for the secretary | 150.00 |
| Travel expenses for the president | 100.00 |

The editorial committee of official publications was reappointed: L. W. Larson, chairman, J. O. Arnson, H. D. Benwell, W. H. Long, and G. W. Toomey.

The officers elected by the Council for the coming year were N. O. Ramstad, chairman, and C. J. Glaspel, secretary.

After conference with President J. F. Hanna and Secretary L. W. Larson, it was decided that a mid-year meeting of the Council was not necessary.

In December, 1945, Dr. A. D. McCannel reported that the local medical society in Minot could not entertain the State Medical Association in 1946 because of the lack of hotel accommodations. After consulting with President J. F. Hanna, a vote of the members of the Council was taken by mail to choose the location of the 1946 meeting. Bismarck was selected by a majority vote.

No controversial matters were presented for action by the Council during the year.

Respectfully submitted,  
N. O. RAMSTAD, M.D., Chairman of Council

**REPORTS OF THE COUNCILLORS**

The following reports of the Councillors as published in the handbook were referred to the reference committee on reports of the council, councillors, and delegate to the American Medical Association.

**First District**

The following is a resume of the proceedings of the Cass County Medical Society for the year 1945, as submitted by Dr. Charles Heilman, Secretary:

"During 1945, the Cass County Medical Society held nine regular meetings. As has been our custom in previous years, a dinner meeting on the last Monday of each month is held at the Gardner Hotel, following which a business meeting and scientific program is enjoyed by members and their guests. A large number of guests regularly attend these meetings from the surrounding counties in both Minnesota and North Dakota, and the cost of the dinners for these guests is regularly paid for by the Society funds.

During the year the scientific program was furnished on two occasions by members of the Society. At three meetings the program was presented by outside physicians from medical centers, all three this year being from the University of Minnesota. One meeting was furnished in the form of a moving picture by Squibb and Company, and one meeting was devoted to discussion of local and state problems with all of the state officers as special guest speakers. The December meeting was devoted to election of officers and plans for the local Society for the coming year.

One of the outstanding accomplishments of the Society this year was the organization, financing and initiation of a prepayment medical plan for Cass County. This plan includes only surgical, obstetrical and fracture benefits. It is sold by and associated with the Blue Cross organization, and is called The Physicians Service Plan. It is already in operation.

The Society's balance sheet for the year shows evidence of careful budgeting. There is just \$9.00 more in our checking account at the end of the year as compared with the end of the previous year. Assets of the Society include two \$500.00 G Bonds."

**Richland County District**

The following is a resume of the proceedings of the Richland County Medical Society for the year 1945, as submitted by Dr. I. W. Kellogg, President:

"For your information relative to the Richland County Medical Society activities, I may say that the vicissitudes of the war disrupted our Society activities seriously. At the beginning of the war, I had recently been elected President of the local Society. However, our membership was quite small at that time, and when two members went into the armed services and a few others died, we discontinued holding regular meetings. During 1945 our activities have been confined to active participation in regular staff meetings at our local hospital."

PAUL BURTON, M.D., Councillor, First District

### Second District

The Devils Lake District Medical Society held but three meetings in 1945. These meetings were for the most part well attended, and some type of scientific program was provided at each meeting. There has been as much interest shown in the activity of the Society as might be expected during a war year. I have noticed a tendency in the last three or four years for the older men to gradually drop out of activity in the Society and meetings to be attended largely by the younger men. Both attendance and interest should improve over the coming year with the return of a number of the medical personnel from the armed forces.

JOHN C. FAWCETT, M.D., Councillor

### Third District

The Grand Forks District Medical Society held eight regular meetings during the past year.

The September meeting was held in Grafton as per custom, with Dr. J. C. Swanson of Fargo, as guest speaker. The October meeting was at the Deaconess Hospital in Grand Forks, with the entire day devoted to clinics and papers by Drs. Arlie Barnes and George Eusterman of Rochester and Dr. C. D. Creevy of Minneapolis. This meeting was especially well attended.

Other guest speakers during the year were Dr. James Hanna of Fargo, Dr. Dean Rizer of Minneapolis, Dr. John Adams of Minneapolis, Dr. Bayard Horton of the University of Minnesota, and Drs. Charles Graham, Ralph Mahowald and Louis Weller of Grand Forks.

We have a membership of 53, with only one physician in the district not a member. New members of the Society are Drs. Charles Graham, Kenneth Fritzell and Bernice Brown of Grand Forks. There were two deaths during the year, Drs. H. W. F. Law and E. C. Haagenon of Grand Forks.

The following officers were elected at the December meeting: President, Dr. W. E. Dailey, Grand Forks; vice president, Dr. L. J. Alger, Grand Forks; secretary-treasurer, Dr. E. A. Canterbury, Grand Forks; delegates to state convention, Drs. P. H. Woutat, Grand Forks, and G. L. Countryman, Grafton; alternate delegate, Dr. L. H. Landry, Walhalla.

The Traill-Steele Medical Society held three meetings during the past year with the following officers in control: President, Dr. O. D. Dekker, Finley; vice president, Dr. A. A. Kjelland, Hatton; secretary-treasurer, Dr. Syver Vinje, Hillsboro; delegate to state convention, Dr. O. A. Knutson, Buxton; alternate delegate, Dr. R. C. Little, Mayville.

This Society has a present membership of eight, with one man lost by removal from the district, and there are two applications for membership now on file.

Guest speakers during the year discussed the following subjects: Carcinoma of the colon, Calculi in the urinary tract, and Medical and Hospital service in North Dakota.

Every physician in this district is a member of the Society.

C. J. GLASPEL, M.D., Councillor

### Fourth District

The Northwest District Medical Society has held eight meetings during the past year and all were very well attended. The meetings have been held alternately at the Trinity Hospital and St. Joseph's Hospital with the Hospital Staff being responsible for the programs.

We were unfortunate during the year in losing our President, who left to take postgraduate work, and the Vice President, who left the district and moved to San Antonio, Texas, so we carried on in rather a temporary manner until the election of officers, which was at the January 1946 meeting. The following officers were elected: Dr. H. L. Halverson, president; Dr. Mark I. H. Kaufman, vice president; Dr. J. L. Devine, Jr., secretary; Dr. A. R. Sorenson, delegate to the state society, and Dr. D. J. Halliday, Kenmare, being a holdover. The alternate delegates were Drs. M. T. Lampert and R. T. O'Neill, both holdovers.

In March we had a very interesting meeting with Dr. Wallbank presenting a very excellent talk on the various phases of tuberculosis and Dr. Clayman of San Haven presenting an interesting case of bronchopneumonia and gastritis.

In the April meeting, Dr. Gammel gave an outstanding paper on the "Plating of Fractures." At this meeting we had a demonstration of the stethethrone and also had the pleasure

of having Dr. Garrison, who was home on leave, talk on some of his experiences.

The May meeting was devoted to the report from our delegate to the state meeting of the delegates held at Valley City.

The June meeting was well attended and there was much discussion on the state meeting at Valley City. The scientific part of the program was presented by Dr. Breslich, who gave a very interesting talk on pulmonary embolism.

At the March meeting, 1946, Dr. Berton J. Branton of Willmar, Minnesota, chairman of the Minnesota State Medical Society's Prepayment Medical Care Committee, talked to our group at the 6:30 dinner meeting on what they were accomplishing in the state of Minnesota and of the progress that has been made in that state in regard to prepayment medical care. At 8:15 P.M. Dr. Branton also addressed a public meeting held in the Nurses Home and discussed the Wagner-Murray-Dingell Bill, which presentation was very well received by the laymen present.

We have now, in the Northwest District Society, 52 members. Eight members have returned from military service and are now in active practice. We have two new men in the district who are not members of our state society as yet, but will be as soon as their applications are acted upon. The general response of the members to the increased dues of the state society has been very favorable. We have lost, by death, one of our old-time members, Dr. Anthon Flath of Stanley, who practiced in Stanley for a number of years.

ARCHIE D. McCANNEL, M.D., Councillor

### Fifth District

Our society lost two members during the year, Dr. Fred Brown, Valley City, by death, and Dr. S. A. Nesse, Nome, who changed his residence to Minnesota.

We gained three new members during the year, Dr. W. H. Gilsdorf from New England, North Dakota, Dr. G. C. Christianson from Sharon, and Dr. Paul T. Cook, who returned to active practice from military service.

The membership of our society now is ten, all of whom practice in Valley City.

Only two meetings of our society were held during the year, the annual meeting with election of officers in January, and a special meeting in May to discuss and vote on the proposed prepayment medical insurance plan.

Owing to our limited membership and the continued pressure of work, no scientific meetings were held, but some of our members attended meetings of the Cass County Society.

Officers elected for 1946 are as follows: President, Paul T. Cook, M.D.; vice president, J. P. Merrett, M.D.; secretary and treasurer, C. J. Meredith, M.D.; delegate to the state association meeting, Paul T. Cook, M.D.; alternate, A. C. Macdonald, M.D.

Excellent harmony and cooperation prevails in our society.

C. J. MEREDITH, M.D., Councillor

### Sixth District

The Sixth District Medical Society has held four meetings during the past year. They were well attended and were preceded in each instance by a dinner.

The scientific programs were interesting and instructive and were planned to be of special value to the general practitioner. The programs during the year included: Film on "Otitis Media in Pediatrics"; paper on "Amino-Acid Therapy," by Dr. W. B. Pierce; film on "Modern Nutrition," by State Health Department; paper on "Analgesia in Obstetrics," by Dr. M. M. Heffron; paper on "Functional Bleeding in Adolescence," by Dr. E. H. Boerth.

President J. F. Hanna was present at one of our meetings and gave a very interesting talk on "Relief of Pain in Obstetrics."

The members of the Sixth District Society were especially happy to welcome back from the armed services Dr. R. F. Nuessle, Dr. R. W. Henderson, Dr. R. B. Radl, Dr. Ralph Vinje, and Dr. C. H. Arneson. An interesting program dealing with war experiences in the various theaters of war was presented by this group of returning physicians.

There are now 58 paid-up members, including two new members, Dr. William M. Smith from Nassau County Medical Society, New York, and Dr. E. H. Boerth, who transferred from the Cass County Medical Society. Two members have withdrawn and six members have not yet paid their 1946 dues.



The officers elected for the ensuing year are: President, Dr. R. B. Radl; vice president, Dr. C. J. Baumgartner, and secretary-treasurer, Dr. W. B. Pierce.

The affairs of the society have been efficiently conducted and good fellowship has prevailed throughout the year.

N. O. RAMSTAD, M.D., Councillor

**Seventh District**

Only two meetings of our County Medical Society were held this past year because of war conditions, but we hope to improve on this record from now on.

One meeting was held April 26, 1945, at which time President Wicks addressed the Society on the subject of medical economics. After considerable discussion the Society expressed sympathy with the idea of a medical service plan covering catastrophic illnesses.

On February 14, 1946, a meeting was held at which time officers for the ensuing year were elected, and dues for the County Society set at \$10.00 a year, which together with the state dues made a total of \$45.00. To date 12 members have paid dues for 1946, as against 18 last year.

One of our esteemed members has passed on during the year, Dr. H. O. Grangaard of the State Hospital Staff. Dr. Richard Nierling has returned to the Society after more than four years' service to his country.

JOSEPH SORKNESS, M.D., Councillor

**Eighth District**

One meeting of the Southern District Medical Society was held during the year. This at Ellendale January 17, 1946, with six members present. Drs. J. D. Alway and Owen King of Aberdeen were the speakers. Dr. Alway gave a very interesting talk on "Common Disorders of the Eye, Ear and Nose." Dr. Owen King gave an instructive paper on "Fractures" with particular emphasis on fractures of the femur.

Several of the members have attended meetings of neighboring societies during the year.

F. W. FERGUSON, M.D., Councillor

**Ninth District**

The Tri-County Medical Society held two meetings during 1945 and to this date, one in 1946.

Discussion was practically limited to Medical Economics. Having supported the plan of the Medical Economics Committee before the state meeting, the Society showed its consistency by voting at the 1946 meeting to adopt the Cass County Plan.

Work of the Society has been hampered by war conditions and bad roads. However, the meetings have been interesting and successful, and all members are in good standing.

A. E. WESTERVELT, M.D., Councillor

**Tenth District**

During the year the Southwestern District Medical Society has held four meetings, all of which have been well attended. We have had some outstanding programs, all contributed by members of our own Society.

We are very happy to report that two of our members have returned from service in the armed forces, which gives us a membership of 20, all of whom have paid their dues. Dr. W. H. Gilsdorf, formerly of New England, has moved to Valley City.

Throughout the past year there has been a great deal of interest shown in medical economics. There has been no dissension and a universal feeling of good fellowship has prevailed.

W. H. GILSDORF, M.D., Councillor

**REPORTS OF STANDING COMMITTEES**

The following reports of the standing committees were referred to the reference committee on reports of standing committees.

**Medical Education**

Your Committee on Medical Education would call your attention to reports of earlier years which indicate the plan, scope, and needs of the School of Medicine at the University of North Dakota, although these items are pretty well known to all. Since the meeting of last year, the School has again remained in continuous session, the accelerated program demanded by the war effort. Classes have remained of the same size but admissions have come approximately every nine months, many of the students simply assigned to us by the ASTP or

the Navy V-12. The work of transferring has gone on as usual. The admissions under the accelerated program had brought us around to the regular or pre-war opening date, in the fall of 1945. Our present classes will finish the regular year's program in June, 1946. The school has decelerated and will not be in operation during the summer months of 1946. It could be said that the accelerated program—which has run for exactly three years, by accepting an entering class every nine months and considering three terms of thirty-six weeks each an academic year—has enabled the School of Medicine to complete four academic years in the three calendar years.

As reported last year, the Legislative session of 1945 appropriated \$250,000 for a building to house and to make better facilities for the work of the school as it is. The difficulties of getting material, labor, etc., caused the Board of Higher Education to postpone any thought of building in the year of 1945. Because of the continuation of the same difficulties, it is extremely doubtful whether anything can be accomplished toward building, except a possible excavation, in the year of 1946.

The 1945 session also passed Senate Bill 115, as reported last year. This established a Medical Center at the University and provided for the Medical Center Advisory Council. The Council has had two meetings, one in August, 1945, and the other in January, 1946. Much has been accomplished in the way of discussion and planning, but only progress can be reported at this time.

H. E. FRENCH, M.D., Chairman

**Necrology and Medical History  
1946**

In continuance of the traditions of our profession we pause in the activities of life to sincerely pay our respect to those of our colleagues who have left our ranks for the Great Beyond since last we met.

We mark well their worthiness and their accomplishments; their faithful and ethical cooperation and their devotion to our profession.

May those who mourn accept our tendered sympathy with the knowledge that the lives of their loved ones will ever furnish inspiration to those of us who still remain to carry on.

**IRA D. CLARK**

Dr. Ira D. Clark, 77, practitioner of Fargo and a long-time resident of the state, died July 22, 1945, at his lake cottage near Shoreham, Minnesota. Dr. Clark was a native of Berlin, Wisconsin. He received his medical education at the Chicago Homeopathic College, graduating in 1895. He was licensed the same year and began practice at Harvey, where he remained for twenty-seven years. While at Harvey, Dr. Clark served for several years as president of the Tri-County Medical Society. He was a prominent pioneer physician. In 1925 he moved to Fargo to continue his professional life. He practiced at Milnor, North Dakota, from 1939 to 1942, when he again returned to Fargo. He was a member of the Masonic bodies and the Shrine. Surviving are his wife, four sons, Capt. Ira D. Jr.; Lt. William E.; Henry S., stationed in Roswell, New Mexico; and Frank D. of Port Washington, New York, and Lt. Lucille of the U. S. Navy; also a brother, Edward E. Clark of Portland, Oregon, and a half-brother, Jud Rollins of New York.

**CHARLES H. PATTERSON**

Dr. Charles H. Patterson, 60, of Fargo, and a member of the staff of the Veterans Administration Facility at Fargo, died August 8, 1945, following a heart attack suffered three days previously while at his cottage on Pelican Lake, in Minnesota. He died in Fargo at the Veterans Hospital. Dr. Patterson was born in Moorhead, Minnesota, and graduated from Hamline University, Medical Department, with the class of 1908. He was registered in North Dakota in the same year and began his medical career at Alice, North Dakota. Later he practiced at Enderlin and Edinburg, both in North Dakota, and in 1911 he took over his father's practice in Barnesville, Minnesota. Here he remained until 1929, when he joined the Veterans Administration. He served this organization in Washington, D. C., Boise, Idaho, and Minneapolis, Minnesota, coming to Fargo in 1934. Dr. Patterson served as a Lieutenant in World War I. He was a member of the American Legion, Masonic bodies, Scottish Rite, Eastern Star and El Zagal Temple of Fargo. Survivors are Mrs. Patterson, two daughters: Lt. Anna Jane, U. S. Navy, Mrs. Marjorie McClung, Los Angeles; a

sister, Mrs. Olga Anderson, Seattle, and an uncle, Dr. T. C. Patterson of Lisbon, North Dakota.

#### JOSEPH A. SMITH

Dr. Joseph A. Smith, 61, died August 13, 1945, in a Minot hospital, following a heart attack. Dr. Smith was a native of Ellendale, North Dakota, graduated from George Washington University, 1907, and was licensed in North Dakota in 1909. In his youth, he was a page boy in the House of Representatives, Washington, D. C., and was well acquainted with members of Congress from North Dakota. He was located in practice in York, North Dakota, for two years. In World War I, Dr. Smith served as a Captain, MC, and following his discharge, was associated with Dr. A. D. McCannel in practice at Minot. For many years he was in practice in Noonan, North Dakota, and was head of the community hospital at that city. Dr. Smith was active in civic affairs. Shortly before his death, he had relocated in Minot with the Northwest Clinic as a specialist in eye, ear, nose and throat work. He was a member of the Masonic lodge of Crosby; Kem Temple, Shrine, of Grand Forks; Scottish Rite of Minot and the Elks lodge of Minot. Dr. Smith is survived by his wife, a son, Lt. Col. Larry Smith; a son, Aird, and a daughter, Mrs. Souren Avakian of Philadelphia; his mother, Mrs. Ed. A. Smith of Ellendale, North Dakota; five sisters and two brothers, including Lt. Com. Charles E. Smith of Seattle.

#### OTTO WILBER MC CLUSKY

Dr. Otto Wilber McClusky, 71, of Chemawa, Oregon, passed away August 16, 1945, in the Deaconess Hospital at Salem, Oregon. Death was due to a cerebral hemorrhage. Dr. McClusky was a graduate of Rush Medical College with the class of 1905. He was licensed to practice in North Dakota in 1906. He was located in Carrington, where he was instrumental in building the hospital. He served in World War I, and was discharged with the rank of Major. After locating in the west, he was connected with the Civilian Conservation Corps and also was in charge of a hospital in the Indian Service.

#### FREDERICK CHARLES HARRIS

Dr. Frederick Charles Harris, 75, died September 15, 1945, at Cando, North Dakota. Dr. Harris was born in Brant county, Ontario, September 25, 1870. He was educated at Brantford Collegiate Institute and graduated from Trinity University Medical College in the class of 1895, internship at Toronto General Hospital in 1895-96. He came to North Dakota and was licensed in July, 1896, and practiced for three months in Hillsboro in partnership with the late Dr. Haagen-son. He settled in Cando in October, 1896, where he was joined in partnership with Dr. John G. Lamont in 1901, under the firm name of Drs. Harris and Lamont. He continued in practice until about 1920, when he retired to devote his entire attention to large real estate investments in Towner and Ramsey counties. Dr. Harris was formerly coroner and president of the Board of Health of Towner county, and had been a director of the Tuberculosis Sanatorium at San Haven. His death was due to coronary thrombosis with only a few hours illness. He has a son, Robert, who is a Flight Surgeon with the U. S. Army; another son, Frederick, a dentist with the U. S. Navy at San Diego; and the eldest son, Richard, is a geologist for several years employed with the Atlantic Oil Company with headquarters in Philadelphia. A daughter, Lucille, is at home in Cando. Dr. Harris was the youngest in a family of twelve, a few of whom are still living in Brant county. Dr. Harris arrived in Towner county before the early immigration, and for many years was a well-tried pioneer physician of that section.

#### CHARLES SUMMERS MARSDEN

Dr. Charles Summers Marsden, 72, passed away October 13, 1945, in San Diego, California, where he had resided since 1922. Dr. Marsden was a graduate of the University of Michigan, class of 1903, and was licensed the same year in North Dakota. He located at Carrington where he practiced until his removal to Grand Forks in 1906. Having splendid training in eye, ear, nose and throat work, he limited his practice to this specialty during his remaining years in North Dakota. Dr. Marsden was a charter member of the North Dakota Academy of Ophthalmology and Otolaryngology, which was formed in 1919.

#### FREDRICK BROWN

Dr. Fredrick Brown, 65, died November 13, 1945, at his residence in Valley City. Death was due to a heart ailment from which he had suffered for a number of years. He continued in practice as a specialist in eye, ear, nose and throat work, however, until shortly before the fatal attack. Dr. Brown was graduated from the College of Physicians and Surgeons at Chicago in 1905, and was licensed the same year in North Dakota. He had practiced at McClusky until coming to Valley City in 1927. Dr. Brown was a member of the Shrine and the Modern Woodmen of America. He is survived by his wife, one daughter, Virginia, Mrs. Charles T. Trane of Lompoc, California, and four sisters: Mrs. Alfred Shaleen, Mrs. Marie Shaleen, both of Chicago, Mrs. Violet Pierce of Morris, Illinois, and Mrs. Walter Watson of West Franklin, Illinois.

#### HENRY W. F. LAW

Dr. Henry W. F. Law, 74, died December 2, 1945, in a hospital in his home city of Grand Forks. His death resulted from a cerebral hemorrhage. He was a native of Brock, Ontario, and graduated in 1904 from the Detroit Medical College and was licensed in North Dakota in 1906. Dr. Law practiced at Hannah, North Dakota, for a number of years, relocating in Grand Forks in 1913, where later he became associated with the Grand Forks Clinic. Dr. Law had held the position of Chief of Staff of the Deaconess Hospital and had served two terms on the Grand Forks City Commission. Survivors include a son, Cmdr. Frank Law of the U. S. Navy; a daughter, Mrs. Carlton A. Pederson, Burbank, California; two brothers, D. N. Law, Edmonton, Alberta, and John Law, Boissevain, Manitoba, and a sister, Mrs. Charles Beckerjeck, Werner, North Dakota.

#### ANTHON FLATH

Dr. Anthon Flath, 81, died December 4, 1945, at Stanley, North Dakota, after a long period of ill-health. He had been a practitioner in North Dakota for 47 years. Dr. Flath was a native of Ontario and was graduated from the University of Toronto in 1892. He was licensed in North Dakota in 1893. He practiced his profession at Church's Ferry from 1898 to 1912, when he moved to Stanley. Dr. Flath is survived by his wife, two daughters, one sister and two brothers. His daughter, Olive, is a resident of Stanley, as also are two nephews, Dr. M. G. Flath, physician, and Dr. G. O. Flath, a dentist.

#### WILLIAM L. GORDON

Dr. William L. Gordon, 72, of Washburn, passed away in a hospital at Bismarck, December 9, 1945. Death was due to heart failure following an attack of influenza. Dr. Gordon was a native of Kentucky, graduating from the University of Louisville in 1894. He was licensed in North Dakota in 1902. He came to North Dakota in 1901 and located at Steele, where he remained for ten years. He practiced in Underwood for two years and then relocated at Washburn, where he practiced until his last illness. He held the office of health officer and county physician for over twenty-five years. As family physician and friend, Dr. Gordon will be missed by all in a wide territory. Dr. Gordon was a member of the Elks Lodge of Bismarck and the Masonic Lodge of Washburn. He is survived by his wife, daughter Mary Agnes, an employee of the State Health Department of Bismarck, his step-mother, Mrs. R. D. Gordon, and four sisters, all of Winchester, Kentucky.

#### HENRY OSWALD GRANGAARD

Dr. Henry Oswald Grangaard, 64, died February 10, 1946, at Jamestown. His death was caused by a heart attack. Dr. Grangaard was a native of Cass county, attended Luther College of Decorah, Iowa, and was graduated from the School of Medicine, University of Minnesota, in the class of 1908. After practicing at Newark, Illinois, he came to North Dakota in 1910, locating at Douglas, and remained there until 1921, when he moved to Ryder. He was licensed in 1910. In 1943, Dr. Grangaard located at Proctor, Minnesota. On July 1, 1944, he returned to North Dakota, locating at Jamestown, where he became a member of the staff of the State Hospital. He was a member of the Lutheran Church. Survivors are his widow, two sons: Donald H. and Lawrence B., recently discharged from the Army; his mother, Mrs. Jorand Grangaard; three brothers, three sisters and a grandson.



## LEONARD BUSSEN

Dr. Leonard Bussen died at the home of his son in St. Paul, early in March, 1946. He graduated from the University of Minnesota. Dr. Bussen was a practitioner of Valley City in the middle nineties, afterwards practicing at Richardson before leaving the state. Survivors are his wife, a son, Leonard, and a daughter, Nita.

## MARTIN DANIEL WESTLEY

Dr. Martin Daniel Westley, 72, pioneer physician of Coopers-town, passed away in Northwestern Hospital, Minneapolis, March 28, 1946. He died from complications following a surgical operation. Dr. Westley was a native of Norway, and came to this territory with his parents at the age of nine. His early education was obtained in Griggs County schools and Red Wing Academy of Minnesota. He taught school for a few years, then attended Hamline University, St. Paul. He took his medical education at Jefferson Medical College in Philadelphia, graduating with the class of 1904. He was licensed to practice in July of the same year. Dr. Westley returned to his home town to start his medical career and there he remained in service to the end of his allotted time, with the exception of two years spent in the Medical Corps of the Army in World War I, from which he was discharged as a Captain. Dr. Westley was civic-minded and contributed his time and interest as a member of the school board; as the first scoutmaster; as an elder of the Presbyterian Church; medical officer of county and city, and to many other positions. He belonged to the American Legion, the Masonic and Eastern Star lodges. Survivors are Mrs. Westley; a daughter, Ruth Ann, student at Pomona College, Claremont, California; three sons: Richard O. of Chicago, Bruce H. of Little Common, Massachusetts, recently discharged from the army, and Captain Kent F., with the Army Medical Corps in Germany; a brother, O. C. Westley of Pasadena, California, and a sister, Anna, of Minneapolis.

F. L. WICKS, M.D.

G. M. WILLIAMSON, M.D., Co-Chairmen

## Public Policy and Legislation

The following is a report of the Committee on Public Policy and Legislation:

The Committee on Public Policy and Legislation has not been called together this year as there have been no matters of importance called to our attention.

We have kept closely in touch with the program of Compulsory Health Insurance measures and also with the activities of the North Dakota State Health Planning Committee, to see if we could be of any help in either instance in clarifying the State Medical Society's position in these matters. So far there does not seem to be anything we can do until some of the problems are investigated further. We do feel that some of the groups that have been very active, are beginning to get a better idea of medical needs and the solving of the problems of taking care of them.

We specifically approve the policy of the report of the Committee on Medical Economics relating to negotiations with the Veterans Administration and we feel that our State Association should cooperate in every way, with the Veterans' Administration, as they are experiencing some difficulty in taking care of their program and will require the fullest cooperation of the members of our Association.

ARCHIE D. McCANNEL, M.D., Chairman

## Public Health

A meeting of the Public Health Committee of the State Medical Association was held in Bismarck, Sunday, March 24, with the following present: Dr. Sam Chernausek, Dickinson; Dr. H. D. Huntley, Kindred; Dr. Mary Soules, New England; Dr. William Smith, Bismarck (guest); Dr. G. F. Campaña, Bismarck, chairman.

The group went on record as favoring:

1. Extension of immunization in the state with the stipulation that the Medical Society instruct their members so they would be willing to use whatever immunizing materials the Public Health authorities can furnish them;

2. Participation in the North Dakota Tuberculosis Program by all members of the medical profession and Health Officers' Association;

3. Further education of the lay public and physicians in tuberculosis and recommend a refresher course at the Univer-

sity of Minnesota Continuation Center and urge the Anti-Tuberculosis Association to conduct such a course;

4. Recommending to the State Medical Association that they make available to the State Department of Health a roster of speakers. These physicians could then be called upon by the State Department of Health whenever needed to give talks in their respective areas;

5. Recommending that the State Medical Association and/or District Medical Societies or individuals therefrom submit material such as reports of medical society committee meetings, to the newly organized quarterly publication of the State Department of Health, *North Dakota Health News*, for distribution in North Dakota;

6. Recommendation to the Venereal Disease Committee that they consider the establishment of the rapid treatment center plan and state that we as a committee approve the establishment of such a plan;

7. Approval of the establishment of district health units and recommend that the State Medical Association cooperate in establishing the same;

8. Recommending to the Venereal Disease Committee that they make known to the medical profession those services offered by the State Department of Health regarding a new program of follow-up of delinquent patients and contacts so that physicians may avail themselves of the benefits accruing therefrom;

9. Recommending to the medical profession that they become familiar with such proposals as President Truman's Health Program; those bills dealing with hospital construction; maternal and child care, et cetera, and be prepared to evaluate and discuss these needs at the state meeting.

G. F. CAMPANA, M.D., Chairman

## Official Publication

Our relationship with the JOURNAL-LANCET has been satisfactory. The editor and publisher have cooperated in publishing the papers presented at our district and state meetings, and the news items from North Dakota have been interesting and informative. The transactions of the 1945 meeting of the House of Delegates were voluminous, but the JOURNAL LANCET published them completely, in spite of obvious difficulties, such as paper shortage.

L. W. LARSON, M.D., Chairman

## Tuberculosis

The activities of the Tuberculosis Committee of the State Medical Association of North Dakota during the past year was confined to cooperation with the State Health Department, and the North Dakota Antituberculosis Society, in the formulating of plans for the survey of the public of North Dakota for tuberculosis. The representatives of the committee have been in numerous conferences with the above organizations, and we are pleased to report unusual and satisfactory cooperation of all of these agencies, with the result that the program has been launched, and will be extended as rapidly as equipment is available.

At the present time a portable X-ray unit is being used in some of the state institutions. The procedure is as follows: The films are read by the roentgenologists of the state, who are paid for their services. When suspicious pathology is found, the case is referred to his or her private physician and from then on is handled as a private patient. These cases must have a thorough physical examination and 14x17 films of the chest taken. These are to be interpreted by representatives of the state sanatorium. In case of indigence, the State Antituberculosis Society will pay for the examinations. Before the Committee recommended this program, the entire medical profession was canvassed and an overwhelming vote in favor of the program was received. There has been concurrence at all times of the members of the committee in working out the details of the program. Matters are satisfactory to the roentgenologists, to the physicians of the state, and to the committee.

This development is the consummation of an ideal toward which the committee has been working for many years, and undoubtedly is a great forward step in public relations and public beneficence for the State Association. We, as members of the committee, would like the continued support of the House of Delegates and the physicians at large in this program. We trust that nothing will be done which will jeopardize the program.

J. O. ARNSON, M.D., Chairman

### Cancer

The activities of the Committee on Cancer during the past year have been confined to the program of the North Dakota Division of the American Cancer Society. The American Cancer Society has broadened its program and has recently reorganized (March 28, 1946) so that its control is on a democratic basis and each state will have a voice in the affairs of the society. The program of the society includes education, research, and service. The educational work is carried on through the press, radio, and descriptive literature. The research program of the society is controlled by a special committee on growth, which has been named by the National Research Council. This council was primarily responsible for the miraculous scientific achievements of the United States during World War II. Panels on chemistry, biology, genetics, etc., have been named by the committee on growth, and their membership includes foremost specialists in their respective fields. The committee on growth is making an exhaustive survey of cancer research developments to date and of the facilities for research in all types of institutions in this country. It will allocate funds to institutions which apply for aid to carry out a program of research which is approved by the committee on growth. This set-up insures all contributors to the research fund of the American Cancer Society a coordinated effort which, we hope, will result in conquering cancer.

The service program of the society is a new development. Surveys of the facilities available for the diagnosis and treatment of cancer are being made in every state. Problems such as the education of the family physician in the early recognition of cancer, and the provision of adequate diagnostic, treatment, and hospital facilities for cancer patients, will differ in the various states; the society is pledged to assist wherever deficiencies are known to exist. So-called "Cancer Detection Clinics," designed to provide the citizen, who considers himself, or herself, entirely well, with a facility in which cancer can be detected, are being developed in many states. Your Committee on Cancer is studying this problem, particularly from the standpoint of the desirability and practicability of developing such clinics in North Dakota. The House of Delegates of the American Medical Association, which met in Chicago last December, approved the following recommendations of its Council on Medical Service and Public Relations:

1. A cancer detection, cancer prevention or well-person clinic was defined as designed to detect abnormalities, not producing symptoms sufficient to send the patient to the doctor. These clinics do not diagnose or treat disease; and

2. No such clinics shall be established in any community without the approval of the County Medical Society.

Anticipating the development of a state-wide program of service to cancer patients to conform with that of the American Cancer Society, each District Society was urged, last December, to authorize and appoint a committee on cancer. Efforts are being made by the American Cancer Society, in cooperation with the American Medical Association and the American College of Surgeons, to develop standards for detection clinics. These standards will be made available to each District Society as soon as they have been completed. It is evident that they cannot apply specifically to conditions which may prevail in each County or District Society throughout the nation, but they will serve as a broad basis of policy covering the establishment and maintenance of detection clinics.

#### RECOMMENDATIONS

1. That the House of Delegates of the North Dakota State Medical Association approve in principle the objectives of the American Cancer Society.

2. That the House of Delegates of the North Dakota State Medical Association approve the development of a program of service to cancer patients, including the development of cancer detection clinics, established only with the approval of the local District Medical Society in conformity with broad principles of policy which will be forthcoming from the Committee on Cancer of the North Dakota State Medical Association.

L. W. LARSON, M.D., Chairman

### Fractures

Although there was no formal meeting of the Fractures Committee during the year 1945, the members of the committee have endeavored to carry out the same program as outlined by us during the past several years.

R. H. WALDSCHMIDT, M.D., Chairman

### Maternal and Child Welfare

To the House of Delegates of the North Dakota State Medical Association in annual meeting in Bismarck, North Dakota, May, 1946:

Since the E.M.I.C. program became effective in North Dakota, January 1, 1944, and to March 12, 1946, 2648 wives of service men and 1181 children of service men have been cared for under this program. Your Committee believes that the peak load under this program has passed. The physicians of North Dakota have cooperated well with the Maternal and Child Hygiene Division of the North Dakota State Health Department in completing the reports required and the State Health Department is to be congratulated upon having reduced to a minimum the inevitable forms which had to be completed in handling these cases and for the promptness with which they have been handled. Your Committee has been consulted frequently in its advisory capacity to the State Health Department regarding E.M.I.C. and there never has been any disagreement between us and the Division of Maternal and Child Hygiene. Much of the credit for expediting this work must go to Dr. George F. Campana, the state health officer, who, in spite of the many other duties he has, has devoted much extra time to this division.

In 1940 North Dakota had established a low maternal death rate of 1.7 per 1000 live births. In 1941 it had risen to 2.6. In 1942 it was 2.5 and in 1943, 2.9. It is significant to note that in 1943 deaths from obstetric hemorrhage led all other causes of maternal deaths. In 1944 the rate had dropped to 1.8 and the provisional rate for 1945 is 1.1 per 1000 live births, the lowest ever recorded for North Dakota. In 1943 there were listed five deaths from ectopic gestation and eight deaths from puerperal hemorrhage. In 1944 there were no deaths from ectopic gestation and in 1945 there were two; while for puerperal hemorrhage there were six deaths listed in 1944 and three in 1945.

The first dried human plasma, prepared by the State Plasma Bank at the University of North Dakota, had passed all of its tests by August 27, 1944. It is interesting to note the use of plasma in obstetric patients in North Dakota during the first year of operation of the bank, from August 27, 1944, to August 27, 1945. These are given in the table.

TABLE

|                                                | Patients | Units |
|------------------------------------------------|----------|-------|
| Ectopic pregnancy with severe hemorrhage ..... | 9        | 16    |
| Placenta previa .....                          | 16       | 27    |
| Postpartum hemorrhage .....                    | 64       | 92    |
| Abruptio Placentae .....                       | 2        | 2     |
| Cesarean section .....                         | 3        | 8     |
| Abortion .....                                 | 18       | 22    |
| Vaginal bleeding .....                         | 2        | 4     |
| Total .....                                    | 114      | 171   |

During this same period, a total of 663 patients received North Dakota made plasma, thus it will be seen that about 18 per cent of them were obstetric patients.

Your Committee does not attempt any correlation between the foregoing table and the reduction of the maternal deaths from ectopic gestation and puerperal hemorrhage in 1944 and 1945 for these are not the only obstetric conditions in which hemorrhage is a factor; but we do believe that the Plasma Bank program has been very effective in reducing deaths from obstetric hemorrhage and we urge that it be continued.

Your Committee recommends a continuation of the program of immunization against diphtheria and pertussis. Outbreaks of diphtheria still occur in North Dakota and, while they have been comparatively mild in recent years, deaths have occurred and the menace of the disease is ever present, particularly in young children who have not been immunized. Pertussis is particularly dangerous during the first year of life. Intensification of our efforts to immunize against these diseases is particularly important in a Child Welfare program. Smallpox has been very infrequent in North Dakota recently. This may be properly attributed to the large number of vaccinations which were done when the disease assumed almost epidemic proportions a few years ago; but your Committee would point out that another generation of children have been born since that time, many of whom have not been vaccinated, and that these unprotected children offer a fertile field for smallpox. We rec-



ommend that increased emphasis be placed on smallpox vaccination.

Your Committee recommends that before any transfusion of a pregnant woman be done, the Rh factor of both donor and recipient be known.

Your Committee further recommends that the determination of the Rh factor of both applicants for marriage licenses be encouraged and that the Division of Laboratories of the North Dakota State Health Department be requested to make Rh determinations at the request of the physicians of North Dakota.

JOHN H. MOORE, M.D., Chairman

**Crippled Children**

There have been no official meetings of this committee during the past year. A meeting was scheduled in December 1945, but was cancelled by the State Department of Crippled Children, because of bad weather. No subsequent meeting has been called.

A. R. SORENSON, M.D., Chairman

**Pneumonia**

The Pneumonia Control Committee met November 25, 1945, at 10:00 o'clock A.M., at the Gladstone Hotel, Jamestown, North Dakota. Present at the meeting were the chairman, O. W. Johnson, M.D., of Rugby; W. H. Gilsdorf, M.D., of Valley City; and G. F. Campana, M.D., state health officer.

Surgeon A. B. Price of the U. S. Public Health Service was unable to attend the meeting. Recommendations to be brought before the meeting were received from Medical Director Estella Ford Warner. Doctor Warner is also with the U. S. Public Health Service in the position of Medical Director for District No. 7. Her recommendations were read before the meeting and acted upon.

A resume of the Pneumonia Control Program from December 1939, when it was put into operation, to the present time was read, and the following actions were suggested:

Doctor Johnson, acting as chairman of the meeting, suggested the elimination of the typing stations throughout the state with the exception of four; namely the Public Health Laboratory at Bismarck, the Public Health Laboratory at Grand Forks, the Fargo City Laboratory at Fargo, and the First District Health Unit at Minot.

It was suggested that we leave the sub-stations as they are in order that they may continue to act as supply depots. As before upon the request of the physician sulfamerazine, sulfathiazole and sulfadiazine will be furnished. Also serum will be furnished upon request.

*Pleural effusion and empyema.* It was suggested in cases of pleural effusion with empyema in pneumonia that penicillin be injected directly into the pleural cavity. 20,000 to 40,000 units every hour until the fever is normal, parenterally given. When empyema develops use 2500 units after each aspiration of chest if organism is present.

*Pneumococcic meningitis.* It was suggested that no more than 10,000 units of penicillin per dose be administered intrathecally, using extreme caution as there is great danger of a myelitis developing.

The Pneumonia Control Committee feels that physicians of the state are not availing themselves of services the State Health Department is offering them, and urges that they make more use of these services.

The maximum number of X-rays remains at three but it is recommended that in exceptional cases the physician be authorized by the State Health Department to use his own judgment in taking further X-rays.

The Committee wishes to advise that small typing kits are now available through commercial channels for the use of those physicians who wish to carry a kit with them. These are advantageous, especially in making country calls.

*Delacillin.\** This drug is recommended particularly for use in cases of pneumonia in children. Extreme care must be taken in warming so as not to separate the penicillin from the beeswax. 1 cc. vial of 300,000 units is recommended, liquefied and injected with a large 18-gauge needle, to be given immediately as the beeswax solidifies quickly. In giving this to children it saves waking them every three hours for an injection since only one such injection daily is required.

Doctor Johnson requested that the Public Health Laboratories at Grand Forks and Bismarck keep an amount of delacil-

lin on hand. It is difficult for physicians to get a supply at present and in being able to get it from the Laboratories, the physician could either replace the drug or pay for it outright. Delacillin could be purchased from Squibbs at present.

The Committee agreed that the State Health Department pay each physician a fee of 25c for each complete case report of pneumonia, whether the case falls under the pneumonia control plan or not. This is to become effective January 1, 1945.

O. W. JOHNSON, M.D., Chairman

**Report of Committee on Medical Economics**

The past few years, having been prosperous years in North Dakota, economic problems have not loomed as largely as in previous years.

Our relationship with the Welfare Board and the Relief Organizations have been most cordial and there has been no problem in that field.

We have not had any dealings with the Farm Security Administration; however, information obtained from other states has been to the effect that plans have been uniformly failures and in most instances have been discontinued. The present medical director of the F.S.A., Doctor Mott, recently read a paper in Chicago in which he advocated passage of the Wagner-Murray-Dingell Bill. As Doctor Mott is a member of the U.S.P.H.S., presumably he reflects the official opinion of this government agency.

At the present time, we are concerned with phases of medical practice having some economic basis not necessarily connected entirely with the ability of the patient to pay for medical care. We are concerned with improvement in distribution of medical care and its cost. You are all familiar with proposals in this field which are: (1) Voluntary prepayment insurance controlled by the profession. (2) Compulsory insurance as proposed in S-1606, the Wagner-Murray-Dingell Bill.

Since January 1, the chairman of this Committee has attended three national meetings dealing with various phases of this subject. At a meeting of the National Physicians Committee, all proposed federal legislation was carefully studied and measures were proposed whereby the profession could express its opinion on proposed bills. He also attended the National Conference on Medical Care where farm leaders, notably Mr. Jones, vice president of the Farm Bureau, spoke for the farm organizations. The vice president of the A. F. of L. gave a vehement discourse favoring compulsory federal insurance. The American Medical Association sponsored a meeting in March dealing with the subject of improvement of rural medical care. This meeting was addressed by a number of farm organization leaders who seemed to have a real grasp of the situation and were all in favor of accomplishing improvement by the process of evolution rather than by revolution. We have been very much impressed with the sensible viewpoint of farm leaders and believe that the profession should cooperate with these people and it will be to the advantage of both ourselves and farm families.

**PROPOSED FEDERAL LEGISLATION**

At the present time in the Congress there are a number of bills dealing with medical subjects. Most prominent of these is the Senate 1606, or the Wagner-Murray-Dingell, which is in two parts, Title One and Title Two. Title One is concerned with Federal grants in aid to states for various health services such as maternal and child health service, health service for crippled children and care of indigents. The American Medical Association in general favors these provisions. Title Two is the portion of the bill to which we are all definitely opposed. This provides for complete medical service under a Federal Insurance plan. At the present time, hearings are being held on this bill limited largely to those who are favorable to it. Reports of the hearings will be available in the *Journal* of the A.M.A. This bill definitely will not be passed this year, but will reappear next year.

The second bill of interest to the profession is Senate No. 1318, the Pepper Bill. The Pepper Bill provides for the continuation of the E.M.I.C. program among the civilian population. If its provisions were put into effect, any pregnant woman in the United States would be entitled to the full maternity care and any person under the age of 21 years would be entitled to complete medical care. This bill is probably sponsored by Dr. Elliott of the Children's Bureau. While this bill is unlikely to pass this year, it has more chance of passage than the Senate 1606.

\*Name of product since changed to Penicillin in Oil and Wax. —[Ed.]

The third bill is for grants in aid to the states for the purpose of hospital construction. There is some doubt at this time whether this bill will pass or not. The appropriations committee of Congress is becoming increasingly critical of legislation of grants in aid to the states type. There seems also to be a great deal of opinion developing among the states that they will be much better off if they take care of their own needs and do not accept Federal aid.

We would urge all physicians to take every opportunity of getting in touch with their representatives in the Senate and House in order that they may express their views on impending legislation. Legislators are extremely interested in what the folks back home think and are very receptive to suggestions from the profession.

#### VOLUNTARY PREPAYMENT INSURANCE

The Cass County Medical Society has put into operation in Cass county, the prepayment medical plan developed last year by this Committee.

At the present time they are operating through the Blue Cross, offering a contract to the Blue Cross subscriber groups. Their by-laws provide that any district medical society in North Dakota may join and participate in this prepayment plan if they wish to do so.

The Committee on Medical Economics has passed a resolution stating that they approve the plan developed in Cass county and advise other district medical societies to join the North Dakota Physicians Service if a majority of their members so desire.

We do not recommend to the House of Delegates that any other plan be put in operation at this time. The American Medical Association is now actively advocating the adoption in every state of prepayment medical plans and is forming a new organization of approved prepayment plans for the purpose of exchange of information. Some members are proposing the establishment of a national medically controlled prepayment insurance plan.

#### VETERANS' ADMINISTRATION

The Veterans Administration as you all know now is headed by General Bradley with General Hawley as medical director. Under General Hawley are Colonel Magnusson and Colonel Harding. They are faced with a tremendous problem which has two aspects: (1) To provide hospital and general medical care to all veterans. (2) To make examinations to determine pension ratings.

The Veterans' Administration has requested the general medical profession to assist them in taking care of the veterans, and agreements are being sought with the state medical societies. This committee recently met with Dr. Andreassen who is regional director for the states of Minnesota, Wisconsin, Iowa, North Dakota and South Dakota to discuss this problem. Dr. Andreassen proposed that the North Dakota State Medical Association sign an agreement with the Veterans' Administration to furnish two types of medical service:

1. Care of the veteran locally for service connected disability only. (It is to be noted that under present law, the Veterans' Administration can only authorize care outside of the veterans hospital for service connected disabilities. As much as possible of this care will be given in the veterans own locality.)

2. Examination for pension rating. The Veterans' Administration wish to have most of these examinations done by the general medical profession. The practitioner will be called upon to furnish a complete report, including a report on all laboratory and X-ray examinations so that a reviewing body may make a fair pension allotment on the basis of information furnished. These examinations will be tedious and time consuming as the forms must be properly executed.

3. Fee Schedule. The Medical Economics Committee has approved a fee schedule that is in use in Minnesota, Kansas, Michigan and other states for payment of services rendered to the Veterans' Administration. This is a fair schedule and we feel that the doctor will be well repaid. It is our duty to make every effort to give the best possible service under this program. We must do a good job for the veteran and it will be one of the best arguments against state medicine if we do so.

#### PROCEDURE

It is proposed that the Medical Association set up a central office, probably in Bismarck, to handle all the administrative details under this program. The Veterans Administration will

provide a veteran official connected with this office who will act for them. The Veterans' Administration offered to pay a percentage of possibly 7 per cent to 10 per cent of the total amount of bills paid for the administrative cost of the organization. This will be paid to the North Dakota State Medical Association. At the time of writing this report, all details of this plan are not completed. It is to be expected that a supplementary report can be presented to the House of Delegates and that the form of the program will be complete at that time.

W. A. WRIGHT, M.D., Chairman

Dr. W. A. Wright, chairman of the Committee on Medical Economics, added as a supplementary report a sample contract of the agreement with the Veterans' Administration and a fee schedule for that program, both of which had been approved by the Medical Economics Committee. A further supplementary report emphasizing the remarks of Donald Eagles of the Blue Cross Organization was allowed and referred to the proper reference committee. Mr. Eagles pointed out that the Cass County Society put into effect a prepayment medical insurance program effective March 4, 1946. He reported that enrollment has already attained 10 per cent of the population of the city of Fargo. He reported that the Blue Cross has enrolled nearly one-half of the population in that town and was of the opinion that the prepayment medical plan has the same opportunity.

#### REPORTS OF SPECIAL COMMITTEES

The following reports of special committees were referred to reference committee on the report of the president, secretary and special committees.

##### Industrial Health

Your Committee on Industrial Health did not hold an official meeting during the past year and again the Annual Congress, usually held in Chicago, was postponed.

A Regional Industrial Health Conference sponsored by the Council on Industrial Health, American Medical Association, will be held in Denver, Colo., on June 4, 1946. At the time of this report (April 15) it is not known whether or not any member of your Committee will be able to attend.

Your Committee approves of the aims and purposes of the National Committee on Industrial Health and wishes to continue to cooperate with them in every way.

The small number of industries in North Dakota naturally limits the scope of this Committee.

C. J. GLASPEL, M.D., Chairman

##### War Participation

There was little for this Committee to do during the past year. The chairman continued his work as state chairman for the Procurement and Assignment Service for Physicians until April 1, when the office was closed.

The medical profession in North Dakota established an enviable record during World War II. It met the demands of the armed forces for medical officers without difficulty. Those who remained at home carried on in spite of the shortage of physicians in the state, and the increased demands for medical service imposed upon them by a prosperous citizenry.

The medical manpower situation in North Dakota remains serious. There are indications that the majority of North Dakota physicians who entered military service have returned, or will return, to the state to practice. Their number, however, will not compensate for the large number of physicians who have been removed from active practice because of death, disability, age, or removal from the state. It is imperative that our Association continues its efforts to encourage young physicians to locate in the state.

The Committee on War Participation has completed its work, and should be discontinued. The Board of Trustees of the American Medical Association has recommended, through its Committee on National Emergency Medical Service, that a similar committee be appointed by each state medical association. The Board also recommends that the majority of this committee shall include civilian physicians who served during the war. The state committee will cooperate with the A.M.A. Committee on National Emergency Medical Service.

L. W. LARSON, M.D., Chairman

##### Report of the Delegate to the American Medical Association

Dr. A. P. Nachtwey, delegate, submitted the following report which was referred to the reference committee on reports of the



council, councillors, and delegate to the American Medical Association.

Your delegate begs leave to submit the following report of the House of Delegates of the American Medical Association held at Chicago December 3-5, 1945.

The A.M.A. House of Delegates has at the 1945 Session formulated a positive, aggressive policy towards the future position of medicine.

The House of Delegates instructed the Board of Trustees and the Council on Medical Service and Public Relations to develop immediately "a specific National Health Program, with emphasis upon the nation-wide organization of locally-administered prepayment plans." This passed the House without a dissenting vote.

The 1945 Session of the House was told that the Board of Trustees is to engage an expert consultant to examine the entire field of public relations of the medical fraternity.

An unusually large number of resolutions, numbering more than 40, were presented to the House for action. Among the most notable of these resolutions was:

Condemning the Compulsory Health "Sickness" provision of the newest Wagner bill, because (1) The bill is "predicated on the false assumption" that solution of the medical care problem "is a panacea for all the troubles of the needy"; (2) This is the first step in a plan for general socialization not only of the medical profession, but of all profession, industry, business and labor; (3) Experience in other countries proves that "Inferior medical service results from compulsory health insurance"; (4) The program "enormously expensive," would increase taxes for the entire population, and (5) Voluntary prepayment plans, now sponsored by the profession in twenty-four states will accomplish all the objectives of this bill with far less expense to the people and will provide the highest type of medical service without regimentation. It is further urged that Congress delay action on anything like the Wagner Bill until physicians in the armed services have been released. They further instructed the Board of Trustees and the Council on Medical Service and Public Relations to prepare a warning to the American people regarding state medicine.

The House requested and endorsed a proposal that a permanent conference on Medical Care be created with the American Medical Association and government agencies represented.

A previous policy that the benefits under the Veterans Administration be restricted to service-connected disabilities was reaffirmed.

For the first time in the history of the A.M.A. a Section on General Practice in the Scientific Assembly was established.

It was agreed that two sessions of the House of Delegates were to be held annually.

A resolution advocating that licenses be offered in all states to returning medical officers who are graduates of approved schools was disapproved, holding that licensing is a matter for individual states to regulate.

Harrison H. Shoulders of Nashville, Tenn., former speaker of the House, was chosen president-elect and will be installed in San Francisco, July 1, 1946.

The House adjourned, sine die, at 5:30 P.M. on December 5, 1945.

A. P. NACHTWEY, M.D.

#### The Medical Center Advisory Council

A report of the representative of the North Dakota State Medical Association on the activities of the Medical Center Advisory Council to April 1, 1946.

To the House of Delegates, North Dakota State Medical Association, in annual meeting in Bismarck, North Dakota, May, 1946.

As your elected representative to the Medical Center Advisory Council for a three year term at the business sessions of the House of Delegates in Valley City in May, 1945, I submit herewith my report on the activities of the Council:

The organization meeting was held in Grand Forks in August, 1945, upon call of the secretary, H. E. French, M.D., dean of the Medical School, University of North Dakota. Governor Fred G. Aandahl had appointed Mr. W. W. Murrey, Fargo, as a representative of labor, Mr. J. D. O'Keeffe,

Lansford, as a representative of agriculture and Mr. John A. Page, Grand Forks, as a representative of the public at large to the Council. These gentlemen, together with the following, comprise the Council: Mr. Burton Wilcox, Center, North Dakota State Welfare Board; Mr. Fred Traynor, Devils Lake, Board of Higher Education; Mr. Mark I. Forkner, Bismarck, Board of Administration; George F. Campana, M.D., State Health Department; Mr. O. H. Overland, Grand Forks, North Dakota State Hospital Association, and John H. Moore, M.D., North Dakota State Medical Association. All members were present except Mr. Burton Wilcox, who was out of the state at the time. Mr. W. W. Murrey was elected president and Mr. J. D. O'Keeffe was elected vice president for terms that will expire in June, 1946.

The balance of the day-long session was devoted to an informal discussion of the many problems involved in operating a medical center and the consensus was that such a center would be of inestimable value to the people of North Dakota.

The second meeting of the Council was held at 10 A.M. on Tuesday, January 22, 1946, at the University of North Dakota with Mr. W. W. Murrey presiding. Those present were: Mr. W. W. Murrey, Mr. J. D. O'Keeffe, George F. Campana, M.D., Mr. Burton Wilcox, Mr. O. H. Overland, Mr. Lars Frederickson, Mr. C. H. Sherman, Dean H. E. French, Mr. John A. Page, and John H. Moore, M.D.

The following motions were introduced and carried unanimously:

1. The Medical Center Advisory Council recommends to each of the cooperating agencies that such agencies go on record as favoring the establishment of a four-year (or complete) medical course at the University of North Dakota.

2. The Medical Center Advisory Council recommends that the University of North Dakota proceed at once to procure plans for the construction of the science building (approved by the 1945 North Dakota Legislative Session with an appropriation of \$250,000.00) to house the medical school and that the expansion of the school be kept in mind during the planning and construction.

3. The Medical Center Advisory Council recommends that the University invite Dr. Victor Johnson of the American Medical Association and Dr. Fred C. Zaffe of the American Association of Medical Colleges to the University for the purpose of making inspections and giving advice.

4. The Medical Center Advisory Council recommends that the Medical Center establish a teaching hospital with a minimum of 200 beds on the University of North Dakota campus.

5. The Medical Center Advisory Council recommends that the North Dakota State Medical Center employ a Director of the Medical Center. It is further recommended that the director gather information for the next legislative session; seek to obtain surplus government property; seek to raise funds; investigate building costs, including the proposed medical building and such hospital that will be constructed in connection with the Medical Center; and to use his efforts to investigate every phase of the Medical Center development, including a program of educational publicity. The Medical Center Advisory Council further recommends that the Medical Center consider the advisability of employing a professional money raiser to solicit funds on a nation-wide basis.

6. The Medical Center Advisory Council recommends that the cooperating agencies make available their facilities for the development and expansion of the Medical Center as follows: (1) Offer their technical staffs to assist and be associated with the Medical Center. (2) Use the Medical Center Staff in the different institutions in the promotion of a better and more unified health program. (3) Open their institutions to the Medical Center staff for observation and teaching.

After discussing in detail some administrative matters with the president of the University of North Dakota, Dr. John C. West, the Council recommended the appointment of Mr. John A. Page as director of the Medical Center.

Subsequent to this meeting, Mr. Page accepted the appointment as director of the Medical Center and has established his office at the University of North Dakota.

I recommend that the House of Delegates approve the motions as passed by the Medical Center Advisory Council at its meeting on January 22, 1946. In the case of Motion 1, the establishment of a four-year (or complete) medical course at

the University of North Dakota, this was done by the House of Delegates at the May 1945 meeting in Valley City.

Motion 4 and Motion 6 are particularly important to the medical profession of North Dakota and a brief amplification of them is indicated.

The Medical Center, while it is somewhat similar to the Iowa plan in general form, differs radically from the Iowa plan in the matter of centralization. The North Dakota plan is one of decentralization. A teaching hospital of 200 beds is obviously necessary for the teaching of undergraduates in medicine. It is to be a hospital for the acutely ill patient. It is not contemplated that patients are to be transported across the state by ambulance to the University Hospital. It will draw its patients largely from the area adjacent to the University but indigent patients may be admitted to it on proper reference by their local physician or by a proper certifying agency.

Motion 6 goes still further in the matter of decentralization and is the heart of the North Dakota plan. In paragraph 1 of that motion, it is requested that the technical staffs referred to shall actually be members of the University of North Dakota Medical School Faculty. This applies not only to State Institutions such as the State Hospital at Jamestown, the Tuberculosis Sanatorium at Duseith, the School for the Deaf at Devils Lake, the School for the mentally deficient at Grafton and the School for the Blind at Bathgate, but to the larger organized private hospitals throughout the state whose staffs would be willing to teach clinical medicine to undergraduate students by means of clinical clerkships in residence at those several institutions. Here is an opportunity for the private practitioner to gain an intimate knowledge of the teaching of modern medicine and for the student to learn the practical problems of medical practice by the one most competent to teach him, the private practitioner of medicine. In its essentials it is a return to the Preceptor Plan of teaching, used so successfully in the large medical schools in their small-section type of clinical teaching.

Paragraph 2 under Motion 6 suggests a way in which a health program for the people of North Dakota can be worked out under the guidance of the medical profession. A recent report, emanating from the Governor's Postwar Planning Committee for Health, indicated that some 46 small hospitals were requested to date. We, of the medical profession, know that even if those hospitals were built it would be difficult, if not impossible, to find competent doctors to man them. The Medical Center Advisory Council believes that its decentralization plan, based on a knowledge of local or area needs is more economical and efficient from a health standpoint than the indiscriminate building of hospitals. By "Medical Center Staff" is meant those individuals who are actively engaged in teaching in the School of Medicine, part time or full time, and whether located at the University or living at the various contemplated bases throughout the state.

Paragraph 3 of Motion 6 applies particularly to State Institutions as listed above. The working out of details "for observation and teaching" would obviously be administrative matters for the heads of those various institutions to determine.

JOHN H. MOORE, M.D.

## NEW BUSINESS

### Recommendations of the Council

The Council recommended that Chapter 9 of the By-Laws be amended and a new section 6 be added to read "that the dues for non-resident members and former resident members who continue to live in the state but who have retired from active practice, pay dues of \$10.00 per year." In accordance with parliamentary procedure requiring recommendation to be in written form and laid on the table for action during the second session, this recommendation was tabled. The Council by the form of a resolution recommended that returned service men who were members of the association prior to entering the service receive an adjustment on their dues to the extent that one who practices in the state for six months or less of the year shall pay one-half of the annual dues and one who practices more than six months during that year shall pay the full dues. This recommendation was referred to the Committee on Resolutions.

Dr. Larson read a letter which he had received on May 25, 1946, from the President of the North Dakota State Nurses Association requesting the House of Delegates to approve a

proposed bill for an act to provide for the licensing and regulation of practical nurses, providing for training of practical nurses and prescribing penalties for violation thereof which the State Nurses Association expects to introduce at the next session of the state legislature. This letter was referred to the Committee on Resolutions.

Secretary Larson reported the status of the Hospital Licensing Bill which is under consideration of the Subcommittee on Hospitals of the Governor's State Health Planning Board. He reports that at this time the bill has been referred to the Attorney General in an attempt to determine the possibility of some legal implications involving conflict in the proposed bill with existing statutes. Until these matters have been settled there is nothing further to be done in connection with this bill.

### Nominating Committee

The Speaker announced that President Hanna had appointed the following to the Nominating Committee: Dr. O. A. Sedlak, chairman; Dr. A. P. Nachtwey and Dr. D. J. Halliday.

### Adjournment

The First Session of the House of Delegates was adjourned to reconvene at 8:00 P.M. on the same day on motion made by Dr. P. H. Woutat, seconded by Dr. Waldschmidt and carried.

## SECOND SESSION OF THE HOUSE OF DELEGATES

Sunday Evening, May 26, 1946

The second session of the House of Delegates was called to order by the speaker, John Moore, at 8:30 P.M. in the Rose Room of the Patterson Hotel, Bismarck, North Dakota, May 26, 1946. The secretary called the roll. Sixteen delegates responded and the speaker declared a quorum present. The following delegates responded: Drs. V. G. Borland, Fargo; O. A. Sedlak, Fargo; G. W. Toomey, Devils Lake; P. H. Woutat, Grand Forks; L. H. Landry, Grand Forks; W. A. Wright, Williston; A. R. Sorenson, Minot; D. J. Halliday, Kenmare; A. H. Reiswig, Wahpeton; Paul T. Cook, Valley City; C. C. Smith, Mandan; R. H. Waldschmidt, Bismarck; A. P. Nachtwey, Dickinson; W. W. Wood, Jamestown; M. J. Moore, New Rockford; O. A. Knutson, Buxton.

The secretary read the minutes of the first session which were approved as read.

### Election of Officers

Dr. O. A. Sedlak, chairman of the nominating committee, presented the following report. The speaker called for nominations from the floor. Hearing none he declared that a motion would be in order to declare the nominees presented by the nominating committee duly elected to their respective offices. Dr. Woutat moved that the nominees be elected unanimously, seconded by Dr. Waldschmidt and carried unanimously.

Doctors: A. E. Spear, president

Philip G. Arzt, president-elect

W. A. Liebler, first vice president

W. A. Wright, second vice president

W. W. Wood, treasurer

A. P. Nachtwey, delegate to A.M.A., 1947

W. G. Toomey, alternate delegate to A.M.A., 1947

J. C. Fawcett, councillor, second district

Joseph Sorkness, councillor, seventh district

F. W. Fergusson, councillor, eighth district

A. R. Gilsdorf, councillor, tenth district

State Board of Medical Examiners (term three years): Drs. D. J. Halliday, Joseph Sorkness, and George Williamson.

### Selection of 1946 Meeting Place

The secretary announced that a formal invitation had not been received. Dr. A. R. Sorenson stated "I would like to ask the convention to meet in Minot next year." Dr. Woutat moved the acceptance of the invitation from Minot which was seconded and carried unanimously.

## REPORTS OF REFERENCE COMMITTEES

### Reference Committee to Consider the Reports of the President, Secretary and Special Committees

Dr. A. P. Nachtwey, chairman, presented the following report which was adopted section by section and as a whole.

1. Report of the president: The report showed the multitude of activities that are now forced upon the officers of the association. It has been made particularly apparent that the president has faithfully fulfilled his obligation. Among the activi-



ties now incumbent upon a president of this organization is the fact that it is necessary for him to meet with numerous professional groups and to carry the message that the medical association has to give to lay people. The committee reports that this has been done in an exemplary fashion by your president and that he has set a very high goal for his successor.

2. Report of the secretary: The report of the secretary is as usual complete and edifying. The amount of work that the society has seen fit to place on this man is most impressive. All this work has been done in a most admirable fashion. We wish to indorse the secretary's recommendation that the Association continue financial support of the North Central Medical Conference and we would further indorse the recommendation that the president-elect and the vice president be utilized more in the future than they have in the past.

3. Report of the committee on war participation: The opinion of this committee that inasmuch as the work of the committee is accomplished that it be suspended is endorsed by your reference committee. It was further recommended that a similar committee be appointed, this committee to cooperate with the American Medical Association Committee on National Emergency Medical Service.

A. P. NACHTWEY, M.D.  
A. O. SEDLAK, M.D.  
PAUL T. COOK, M.D.

**Reference Committee on Reports of the Council, Councillors and Delegate to the A.M.A.**

Dr. D. J. Halliday, chairman, presented the following report which was adopted section by section and as a whole:

1. Report of the chairman of the council: The reference committee recommends the adoption of the report of the council and further recommends the adoption of a supplementary report of the council regarding dues for returning servicemen.

2. Reports of the councillors. The reports of the various councillors were assembled and we recommend that they be adopted. We notice that some societies have held few meetings during the past year due to stress of wartime conditions. We recommend that these societies resume regular meetings as soon as possible.

3. Report of the delegate to the American Medical Association: Your reference committee has studied the report of the delegate to the American Medical Association. We recommend the adoption of this report. We call your attention especially to the approval of the House of Delegates of the American Medical Association of the voluntary, locally administered, prepayment medical care plans and to the fact that the American Medical Association is urging that individual state or district societies develop such plans.

4. Report of the State Medical Association representative on the Medical Center Advisory Council. The reference committee recommends that this report be adopted and that the action of the Medical Center Advisory Council be approved.

**Reference Committee to Consider the Reports of Standing Committees**

Dr. C. C. Smith, chairman, presented the following report which was adopted section by section and as a whole.

1. Committee on medical education. We recommend the adoption of this report of the committee on medical education and wish to commend Dr. French and his committee for their untiring effort to establish a medical center and a four year course in medicine at the University of North Dakota.

2. Committee on Necrology and Medical History. Your reference committee recommends the adoption of this report. We wish to commend Dr. Williamson and Dr. Wicks for the splendid manner in which they have assembled the information regarding our respected colleagues who have passed on since the last meeting. The speaker of the House of Delegates then requested all present to rise with the delegates for a moment of silence in tribute to the members who had passed on (members of the house of delegates and visitors stood one moment in silent tribute).

3. Committee of public policy and legislation. Your reference committee recommends the adoption of the report of the committee on public policy and legislation.

4. Committee on public health. Your reference committee recommends the adoption of the report of the committee on public health with the following exceptions: (1) That paragraph 5 be referred to the committee on public policy and

legislation. (2) That paragraphs 6 and 8 be referred to the committee on venereal disease. We wish to commend Dr. Campana and his committee for the excellent work they have done throughout the year.

5. Committee on official publication. Your reference committee recommends the adoption of the report of the committee on official publication.

6. Committee on tuberculosis. Your reference committee recommends the adoption of the report of the committee on tuberculosis.

7. Committee on cancer. Your reference committee recommends the adoption of the report of the committee on cancer and wishes to commend Dr. Larson and his committee for the interest and excellent work involving the cancer problem. We also want to emphasize the necessity of approving the recommendations of this committee.

8. Committee on fractures. Your reference committee recommends the adoption of the report of the committee on fractures.

9. Committee on maternal and child welfare. Your reference committee recommends the adoption of the report of the committee on maternal and child welfare. We wish to commend this committee on the excellent work they have done.

10. Committee on crippled children. Your reference committee recommends the adoption of the report of the committee on crippled children.

11. Committee on pneumonia control. Your reference committee recommends the adoption of the report of the committee on pneumonia control and wishes to congratulate this committee on the excellent work they have done.

C. C. SMITH, M.D.  
M. J. MOORE, M.D.  
A. H. REISWIG, M.D.

**Reference Committee Report of Committee on Medical Economics**

Dr. V. G. Borland, chairman, presented the following report which was adopted section by section and as a whole.

The committee on medical economics is to be commended and thanked for their work during the past year, particularly the efforts of their chairman, Dr. W. A. Wright. The reference committee recommends the adoption of the report on medical economics.

The reference committee also recommends the adoption of the supplemental report that was submitted by Dr. Wright to the House of Delegates First Session, already approved by the council, concerning the proposed plan including the contract and fee schedule for the care of veterans in North Dakota.

V. G. BORLAND, M.D.  
A. R. SORENSON, M.D.  
R. H. WALDSCHMIDT, M.D.  
F. E. WOLFE, M.D.  
W. W. WOOD, M.D.

**NEW BUSINESS**

Dr. Sorenson reported that the American Academy of Pediatrics is attempting a survey of the states for facilities for the care of children. Dr. R. E. Dyson of Minot, North Dakota, has been appointed chairman for the committee in the state and he is unable to be here. It was explained that Dr. Dyson wished to get the reaction of the House of Delegates to this proposed survey. Secretary Larson read excerpts from the instructions which had been submitted to Dr. Dyson which explained the purpose and scope of the survey. It was moved by Dr. Sorenson that the physicians in the state cooperate in the survey as requested by the American Academy of Pediatrics, seconded by Dr. Landry (alternate delegate for Dr. Countryman) and carried. It was explained by Dr. Hanna that the Minnesota State Medical Association has completed a meeting within the week May 21, 22 and 23. At that meeting the very vital discussion on the problem of prepayment plan of medical insurance was held. Dr. Adson, a member of that association, was given the floor for a few remarks concerning this subject:

Dr. Adson explained that two plans had been under consideration in Minnesota, there designated as being Plan A and Plan B. Plan A is a voluntary doctors plan, while Plan B was one underwritten by commercial insurance companies. He explained that the commercial companies definitely indicated their interest in developing prepayment medical insurance in Minne-

sota and that the Blue Cross was of course opposed to their participation and wanted to develop this field alone. The profession was circularized as to their desires and after a consideration of the reports from these questionnaires and the remarks of Dr. Will and several other past presidents, the council voted 15 to 6 for the doctor sponsored plan. The reference committee reported the doctor sponsored plan back to the House of Delegates with approval stipulating however that no further steps be taken to carry out the plan until \$100,000 has been fully subscribed and paid. The reference committee also recommended cooperation with any commercial insurance company now selling or proposing to sell prepaid medical insurance to the end that the largest number of residents in Minnesota be provided with some form of prepaid medical care in the shortest possible time. Dr. Adson remarked that if the insurance companies do drive us out of business we still feel that we have won because we have accomplished the goal we set out to do, that is to extend the medical service on a prepayment or installment plan as widely as possible.

Dr. W. A. Wright, chairman of the resolutions committee, offered the following amendment to the By-Laws suggested by the council: That a new section, section 6, be added to Chapter Nine of the By-Laws, to read: "The annual Assessment for Resident Members who have retired from the practice of medicine, and of non-resident members, shall be \$10.00 per capita, unless otherwise ordered by the House of Delegates," seconded by Dr. Nachtwey and carried.

A further report was presented and adopted unanimously as follows:

1. WHEREAS, the physicians of the Sixth District Medical Society have contributed much to the success of the 1946 meeting of the House of Delegates,

BE IT THEREFORE RESOLVED, that a vote of thanks be extended to the members of the Sixth District Society for their contribution.

2. WHEREAS, the City of Bismarck and its Commerce Association has provided comfortable, suitable and adequate facilities for the 1946 meeting of the House of Delegates,

BE IT THEREFORE RESOLVED, that a vote of thanks be extended to the City of Bismarck and the Bismarck Chamber of Commerce for the courtesies extended and the facilities provided.

Dr. Toomey, member of the committee on resolutions, reported that the committee on resolutions to which the memorandum concerning a legislative plan for the North Dakota Nurses Association concerning the licensing and regulation of practical nurses was referred has studied the memorandum and proposed legislative bill. It became apparent in the committee discussions that this matter presents many different problems in different sections of the state, hence requires considerable more study than it is possible to give in the time at our disposal. Accordingly the committee recommends that the incoming president continue the Committee on Nursing Education and that this matter be thoroughly studied by this committee in conjunction with our committee on legislation and public policy and the appropriate committee from the North Dakota State Nurses Association and other interested groups. Dr. Toomey moved the adoption of this resolution as a continuation of the report of the resolutions committee, seconded by Dr. Ferguson and carried.

W. A. WRIGHT, M.D.

O. A. KNUTSON, M.D.

G. W. TOOMEY, M.D.

#### Adjournment

The house of delegates adjourned sine die at 10:00 P.M.

#### SCIENTIFIC PROGRAM

MONDAY, MAY 27, 1946. *City Auditorium.*

9-12 A.M. Registration. View Exhibits.

1-1:45 P.M. Scientific cinema, *City Auditorium.* Registration. View Exhibits, *World War Memorial Building.*

1:45-2:45. Early Diagnosis of Brain Tumors—A. W. Adson, Department of Neurosurgery, Mayo Clinic, Rochester.

2:45-3:15. Obstetrical Emergencies—M. Edward Davis, Obstetrician and Gynecologist to Chicago Lying-in Hospital; Attending Gynecologist to the Albert Merritt Billings Hospital, Chicago; Professor of Obstetrics and Gynecology, University of Chicago.

3:15-3:45. Intermission. View Exhibits.

3:45-4. Menopausal Bleeding—M. Edward Davis.

4-4:30. Intermission. View Exhibits.

4:30-5:30. Early Diagnosis of Cancer—Leo G. Rigler, Professor of Radiology, University of Minnesota Medical School, Minneapolis.

Announcements.

#### SPECIAL EVENING SESSION

8:00 P.M. *City Auditorium.* Medical Economics—Alfred W. Adson, Member of the Council on Medical Service and Public Relations, American Medical Association.

TUESDAY, MAY 28. *City Auditorium.*

8:30-9 A.M. Movies at Bismarck City Auditorium.

9-9:30. Blood Plasma Program in North Dakota—Melvin Koons, Director, Department of Laboratories, State Health Department, Grand Forks.

9:30-9:45. Vocational Rehabilitation in North Dakota—A. C. Fortney, Fargo.

9:45-10:30. Ocular Injuries—Hugo L. Bair, Mayo Clinic, Rochester, Minn.

10:30-11. Intermission. View Exhibits.

11-11:45. Choice of Anesthesia in General Surgical Practice—Ralph T. Knight, Director of Division of Anesthesiology, Department of Surgery, University of Minnesota Medical School, Minneapolis, Minn.

11:45-12:45. Common Dermatologic Diseases—M. G. Fredricks, Duluth Clinic, Duluth, Minn.

2-2:30. Presidential Address—J. F. Hanna, President, North Dakota State Medical Association, Fargo.

2:30-2:45. Inauguration of Incoming President.

2:45-3:30. Medical Program of the Veterans' Administration—Einar C. Andreassen, Assistant Medical Director, Veterans' Administration, Minneapolis, Minn.

#### Installation of President

DR. HANNA: It is with a great deal of pleasure that I appoint an honorary escort to accompany Dr. Spear, the Incoming President, to the platform. Dr. Rodgers from Dickinson, and Dr. Long, who is one of our past presidents and formerly of Dickinson, will please accompany Dr. Spear to the stage. (Dr. Rodgers and Dr. Long escorted Dr. Spear to the platform.)

DR. HANNA: Dr. Spear, it is certainly a great honor and gives me happiness to congratulate you. I am certainly happy to turn over to you an Association that is waiting for leadership; a House of Delegates and a Council that are always willing to serve you. I wish you the best of luck. If there is anything I can do to assist you, I will be only too happy to have you call upon me.

DR. SPEAR: Mr. President, Members of the Board of Directors, and Council, Members of the Association and Visitors:

Words cannot express my appreciation for the honor and privilege of serving you for the ensuing year. It is especially pleasant to be thus remembered at a time when I should expect to be forgotten. I will do my best, but don't expect too much! My only policy will be to carry out your wishes, and that we may have a successful year, I ask your confidence and cooperation.

In behalf of the Members of the North Dakota Medical Association, I wish at this time to express our appreciation and thanks to the officers and committees who have done such a good job during the past year.

The President, Doctor Hanna, has faithfully and diligently performed more than his duty.

The Speaker, Doctor Moore, and the House of Delegates, have done a wonderful job in handling many complex and difficult problems. They are a grand and capable group of men under a capable speaker.

The Council and its Chairman deserve the highest praise for managing the business affairs of the Association.

All the committees have done fine work. I want especially to commend the work of the Committee on Medical Economics under their Chairman, Dr. W. A. Wright. Dr. Wright has given freely of his time and effort. He has had a difficult job and has done it with commendable success.

There is one man who, I believe, above all others, has contributed to the progress of our Association. Men are measured by what they accomplish; the contribution they make to progress and development. Our Secretary, Dr. L. W. Larson, with



great sacrifice to himself, and in addition to his regular duties has given of his time, his best efforts, and his great ability, in the interests of our Association. Every member of the Association is deeply indebted to Dr. Larson for the service he has rendered, and I suggest that we all give him a hand.

The response of the members of the Association to the increase in dues has been very gratifying. It shows that the members are conscious of the need for the organization and appreciate its activities. The employment of a full-time Secretary will allow the scope of these activities to be even more extensive and beneficial.

I wish to extend to the doctors who have returned from the Services a hearty welcome. We have missed you sorely, both professionally and personally. There are many fine locations in the state open to each of you. Doctors returning from the Service present no problem in our Association; the only problem is to get them back fast enough.

I was very much interested in reading the recent report of the Hospital Sub-Committee of the North Dakota State Health Planning Board. All too often the work of investigating committees consists first of magnifying some condition until it becomes an emergency, or even creating an emergency, then recommending appointment of another committee or bureau to take care of this emergency.

But this committee has an entirely different attitude. They first made an extensive survey of the Medical Care and Health Facilities of the state. They then drew up a plan for a "Hospital Program" for the whole state. They do not propose any far-fetched plan involving a hospital at every crossroad, or even in every village or hamlet. Their plan urges the consideration of hospital needs on an area basis instead of a community basis. It also provides for "base" hospitals as centers for the most highly specialized medical services, and the training of medical personnel. Under this plan the larger hospitals of the state would be designated "regional" hospitals where practically all types of specialist care would be available; and the smaller hospitals, designated as "district" hospitals, not so highly specialized. Patients at "district" hospitals, found to be in need of services not available, would be referred to a "regional" or "base" hospital.

Under the plan it would be necessary that the two-year medical course at the University be extended to a four-year course.

The report shows sincere effort and constructive work, and is well worth reading.

Plans for changing the medical course at the University from two to four years are progressing. This plan would work in nicely with the plans for one or more "base" hospitals of the Health Planning Board. I believe it would also eventually help solve the problem of shortage of doctors in the state. The plan, I believe, deserves our support.

The plan for care of veterans, between the V.A. and this Association seems very fair. This job fell to Dr. Wright's Economics Committee and as usual was well handled. The fees are reasonable, and the paper work has been reduced to a minimum. I think it should be acceptable to all.

The monster, "Socialized Medicine," again rears its ugly head as S. B. 1606. This Bill—you are all familiar with it—provides for compulsory prepaid federally controlled medical insurance and is socialized medicine at its worst, claims of the President and Mr. Murray to the contrary notwithstanding. Of course, this is only one feature of the Bill, which proposes to furnish complete "Social Security" for millions of people on a compulsory fee payment plan. There is nothing new in this "Social Security" idea. It has been tried many times by many countries with disastrous results. In our own country it existed up to 1863 under its right name, "Slavery". The peo-

ple involved, or covered, enjoyed all the advantages of the present proposed plan. They were completely protected from "cradle to grave," but at the cost of their freedom. Any compulsory Social Security plan today will deprive those covered of their freedom and liberty as American citizens. We believe that there is no such thing as social security except in the grave or as slaves.

I believe that we, in our deep and justifiable concern for the future of the science and practice of medicine, have neglected to consider sufficiently the best good of our patients, the general public. In our consideration of this subject we must forget our personal preference and advantage, for it must eventually be solved in the interest of the patient. If the Government can take better care of the patients than the doctors can, we should not oppose the plan or we could be rightly accused of promoting our personal interest to the detriment of the public.

Anyway, whatever system is good for the patient should also be good for the doctor, but we do not believe "Socialized Medicine" is to the best interest of either. It would most certainly mean loss of freedom and the constitutional right of liberty for both. It would result in poorer medical care for the patient and regimentation of both patient and doctor. The immense overhead expense of bureaus, committees, and personnel for administration would be appalling and would but result in a much bigger and better "pork barrel"; yet this dangerous plan is being vigorously championed by many intelligent and sincere, if misinformed and misguided people. It is also being championed by many for their own individual or political advantage.

The challenge is here—what are we going to do about it? We will accomplish nothing by merely picking flaws in the proposed system. The situation demands constructive thinking and acting.

It is not enough to defend the principles of private practice and the confidential relationship of patient and physician.

The public should be informed as to the dangers of federally controlled medicine. Nothing is "given" to the public or individual by the Government but what much more is demanded in return. The price of Social Security is too high, for it means the loss of our liberty, freedom of personal effort and individual advancement.

President Dodds of Princeton wrote, "Concentration upon security as a goal is suicidal. When we make the mistake of placing our hope in measures of Security rather than in willingness to venture toward larger growth, decay has begun." And Dr. Louis Karnosh says, "Man cannot have security and freedom at the same time."

The goal of American medicine should be such a distribution of medical service that no patient in these United States need ever lack the best possible care at a price he can afford to pay. American medicine has come a long way toward this goal during the past few years. Blue Cross Plan for prepaid hospital service now has over 20 million members. Prepaid medical service plans are now in use in fifteen states. Dr. J. E. McCormick, chairman of the A.M.A. Council on Medical Service and Public Relations, says, "Within a year there will be at least forty state-wide medical society sponsored plans in operation." The Council is also prepared to establish an interim national casualty company that will offer coverage where no other plan exists.

In view of the progress that has already been made and the high type of leadership which we have, I am confident that American medicine will be able to meet the challenge and solve the problem to the best interest of both the public and the profession without the evils of compulsion or federal regimentation.

# Presidential Address

J. F. HANNA, M.D.

Fargo, North Dakota

The honor conferred upon me a year ago of being elected President of the North Dakota State Medical Association is an honor deeply appreciated. There have been many fine men and able leaders in medicine and community welfare who have preceded me in this office. To join their ranks is indeed an honor.

I am most happy to welcome you back to a peacetime State Medical Meeting. We are all happy to welcome back to civilian practice the members of this Society who had joined the colors. Their service to their country and their aid to our young boys and girls in their hour of need, have built a proud heritage for the North Dakota State Medical Society. They gave of themselves, of their time, and of their financial opportunity. For us and for the nation as a whole this is a sacrifice which cannot be repaid. Let us not forget their sacrifice and make our words their only reward. Words are easy. If the opportunity should arise to show our appreciation, let us make it a working principle that all other things being equal, the doctor veteran shall come first. Let us make their readjustment to civilian practice less difficult.

As one looks backward over a year's time, it is seldom that one can say, "I have done all and accomplished all that I had planned." My term of office has left unfinished many of the objectives I had hoped to accomplish. Not the least of these has been my inability to visit a number of the local medical societies. As you know, there is much to be discussed and many plans to be made for the future of medicine. The focal point of interest in the future of medicine is to be the County Medical Society, large or small as it may be.

It is the voice of the County Society with its membership of men actively engaged in the practice of medicine and a part of the people in a county or legislative district that must speak out. That is the voice that our national and state legislative bodies wish to hear to help them shape their actions accordingly. They have become too familiar with the radio voices and press releases of organized medicine on a national level. The American Medical Society knows this all too well.

No member of our legislative bodies will hesitate to criticize the National Society, but will surely give serious thought before attacking the Local Medical Society in his own district. And so, realizing the importance of the local unit, it is with extreme regret that, as State President, I did not visit as many county societies as I had desired.

I would like to suggest at this late date, if I may, that each County Society's Program Committee reserve one meeting a year for a report to you of the proposals and problems facing your State Society.

Since assuming the presidency, it has become very apparent to me that state officers should take a more active part in the affairs of the State Society. The vice president and president-elect should start their appren-

ticeship upon election to office. They could arrange to meet with the local societies in their nearby district. In this way, all the county societies could be visited by their state officers. The local society would thus receive state and national medical reports, and the state officer in turn would become acquainted with the desires and plans of the local county members. In this way, too, a wide diversity of opinions might be discussed in a friendly manner, and general benefits result to the state profession as a whole. The attendance of such officers at meetings of state and local health planning groups would also be important and beneficial to all. The experience and knowledge gained would well prepare them to carry on the duties of the state presidency. I have too well discovered my lack of apprenticeship for the presidency by assuming all its duties in one year.

As the war years closed in 1945, it is self-satisfying to look back on the dangers that were met and overcome. To look forward to the challenge of 1946, we see that our resources will again be tested. The coming year will be important in the field of medicine. It will require careful planning, consistent work, and last but not least, faith in our ultimate objectives.

We must face the fact that 1946 ushers in a period of readjustment and new alignments. If we have nothing to offer the future but the experience of the past, we shall lose prestige as a directing force to the people of the state. It is inevitable that we must show a willingness to accept some change in methods, but let us be determined to preserve the fundamentals of medical practice that have given to this country and to the world, the highest type of health protection to be found anywhere.

We see on all sides the striving for equitable adjustments between industry and labor. We and all the other professions share with industry and labor the same general problems. Group leadership can help in leading us. The medical profession is made up of small units with the American Medical Association at the head. In the main, the battle shall be fought, won or lost, in the small units known as the County Medical Society.

As much as I would like to discuss with you a purely medical subject, I feel that you should hear from me in some small way regarding the Medical Social Economic Situation in the state.

I would like to review with you some of the problems facing the medical profession of North Dakota in the postwar period. I have classified them under three headings:

1. Equitable distribution of physicians.
2. Equitable distribution of medical facilities.
3. Equitable distribution of medical costs.

The first two subjects have been presented to us by the findings of the North Dakota Health Planning Committee. The third subject has received attention in the social and economic efforts in past and present reso-



lutions and bills that have been introduced into Congress dealing with the extension of the Social Security Program for the provision of health insurance. The latest effort in this regard has been the Wagner-Murray Bill of November 1945, introduced into the Senate as S. B. No. 1606.

One of the major problems facing the profession in North Dakota is the equitable distribution of medical care and medical facilities in some of the rural counties. If one gives any thought or study to the national situation, it becomes very apparent that the greatest deficiencies exist in the small villages and their adjacent areas. Membership in the North Dakota State Society during 1945 was 360 physicians, 57 of whom had joined the Armed Services. The report of the North Dakota State Health Planning Committee of March 1945 listed 335 effective physicians. The ideal ratio of one physician to 1500 patients exists in only four counties, representing 23 per cent of the population of the state.

War dislocation caused the physician-patient ratio in about a third of all U. S. counties to drop to one physician for 3000 patients. The last twenty years has shown a decline in the number of physicians in the rural areas of North Dakota. Economic conditions have played a major role in this change but other factors have combined to this end, such as the improvement in state highways, and the mass production of automobiles with the decrease in cost, making ease of transportation available to the large majority of our rural population. One result has been the development of trade areas in the state into economic, medical and educational centers.

The once self-sufficient small town or village has become a passing point in the rural populations seeking merchandise values or medical care.

A natural result has been the desertion on the part of the rural populations of two important members of their community, the doctor and the merchant. They were both forced to move to centers of larger population.

The advances in medical science have stimulated the development of medical specialties and increased the need for conferences and consultations among physicians.

Medical education of today stresses the need of modern methods in diagnosis and treatment.

The rural population of today has also become medically educated. They are not satisfied with other than modern methods in diagnosis and treatment. Two decades ago, we had an adequate distribution of physicians in rural areas. This can be explained on the basis that medical knowledge was limited and all graduates were on a fairly equal level as to training. To some, rural practice offered the internship service of that time.

The medical graduate of today, however, is predominantly from the urban centers. He affiliates for his internship and fellowship in a large urban hospital. Upon completion of his hospital tour of duty, he wishes to retain the contacts he has made and to practice under the same ideal conditions. It is only natural that he wishes to remain in the city.

Medical knowledge has advanced so rapidly during the past few decades that it has become impossible for an individual to keep pace with its progress in all

branches of medicine. This has caused the medical students' training to lead to specialization.

Medical educators should give thought to the problems resulting from over-specialization. If the large urban hospitals would offer intern training pointing to specialization in rural practice from six months to one year, let us say, to be spent in an affiliated rural hospital, the young doctor would obtain rural medical experience and contacts in the rural area so vital to one starting his practice. The country as a whole needs specialists in rural training; specialists who are competent to meet an emergency under unfavorable conditions, who have a broad concept of disease and a sound sense of diagnosis and therapy.

To offset the medical trend towards the cities, the suggestion has been made that state universities offer tuition-free medical courses to students who agree to practice a specified time within a state in a designated community.

Organized farm groups strongly urge medical training for worthy farm boys under a medical scholarship plan, tuition free. This is the type of student who knows rural life and who would be interested in returning to the smaller towns to practice. Our state university offers two years of pre-medicine and the first two years of the regular four year medical course. It was with the thought in mind of keeping our own boys in the state after graduating in medicine that the medical center legislation was passed in 1944. The medical care of the state depends a great deal on the return of native sons and daughters to North Dakota to practice. They know the state, its people, and its medical needs.

Intimately related with the distribution of medical personnel is the location and distribution of medical facilities. The hospital has been rightly called the doctors' "workshop". To interest the medical graduate of today in a community to practice, access to hospital facilities is a major influence. If we hope to attract and hold young men for practice in this state, facilities must be given the young doctor to do satisfactory work for himself and for his patients.

In every state of the Union certain areas have developed that have neither sufficient medical personnel or medical facilities. This need exists predominantly in states where the majority of the population lives in rural areas and presents the most challenging problems in the whole field of hospital and medical care.

The hospital facilities of North Dakota maintain high standards in numbers, location and quality of service. The total number of hospitals in the state is 46 with a bed capacity of 6,243. Of this number, 20 are approved by the American College of Surgeons, and 41 by the American Medical Society. The estimated civilian population of the United States by counties as of November 1, 1943, by the Bureau of Census shows the number of beds in approved and unapproved general care hospitals in the state to be 4.9 to each 1000 population. The ideal ratio is placed at 4.5 beds to each 1000 population.

Unfortunately, there are counties and communities in the state that have no medical facilities. It is their hope to attract doctors by building small hospitals to make

medical practice more attractive in their locality. In localities of this type, the greatest care must be exercised.

The history of hospital construction is that facilities often have been built with no particular interest in community need. Misguided civic enthusiasm often results in duplication and waste, the natural outgrowth of unguided expansion.

The coordinated hospital service existing between a district hospital and a community center offers the best solution to the problem of rural medical care. This co-ordination of hospitals best exists in areas covered by a radius up to 50 miles, the condition of roads and ease of travel and transportation deciding the size of the area.

The district hospital would act as a diagnostic center and would undertake the treatment of patients with more involved illness. The community center with ten beds and office space for doctors and dentist would care for the more routine cases. The district hospital must in no way take over functions or patients that could be cared for in the smaller hospitals. This idea offers unlimited possibilities.

The district hospital's monthly staff meetings, the weekly pathological conferences, and the grand rounds of the surgical and medical staff all would be open to the doctors practicing in the co-ordinated hospital area. The problem of nursing care in the community center could be improved by nursing affiliation with the district hospital. This coordination could also exist between the Board of Trustees and Superintendents, the community center having the advantage of experienced management and reduced buying costs.

The sound working relationship between the rural and urban district hospital does away with size as a measure of efficiency in the rural hospital or community center. The quality of care for rural dwellers would approach, or reach parity with, the urban dwellers. The fear and danger of professional stagnation which dissuades young physicians from taking up country practice would be largely removed.

To some, the idea of hospital cooperation may sound visionary and impractical. The idea of competition and individualism has deep roots in our thinking, due to past success. Hospital coordination is practical and beneficial to the small hospital as well as the large. It is practical because it has already proven so in one of our oldest and most conservative states.

The last link in the triad of postwar medical planning is the equitable distribution of medical cost, making medical care available to all classes of people. This social-economic adjustment affecting the people and the medical profession of the nation may well be one of the great social changes of a generation.

To implement this noble ideal, two plans have been suggested: (1) Compulsory insurance administered under government control and financed by taxation. (2) Voluntary insurance free of compulsion and financed by the individual. The main contention of those in favor of a government supervised plan is that it will help all classes of people. All employed persons receiving \$3,600 or less will be taxed 4 per cent of their yearly salaries no matter how meager they be. Under the same system

of compulsion it will also make medical care available to those with incomes above \$3,600, to those with salaries of \$15,000 yearly, as well as to national celebrities with salaries of \$100,000 or more. These also shall receive medical service for a tax of 4 per cent on their incomes up to \$3,600, amounting to \$144 a year. This is something new in Medical Economics, the poor paying for the rich. The great majority of the taxpayers are those in the moderate to low income group and under the plan they must help to pay the cost of medical care for the high income group.

The cost of Federal Insurance has no actuarial basis by which to estimate the cost to the nation. It is stated the cost will be no more than medical payments under our present voluntary regime. The estimated cost of medical care in normal times amounts to over 2 billions, (\$2,008,000,000). The Department of Labor in 1940 reported a cost of \$59 annually for medical care to the average American wage earner; of this amount \$13 covered the physician's charge.

The present estimated expense of Compulsory Personal Health Service is approximately 3½ to 4 billion dollars. This stupendous sum is to be supplemented by appropriations from general revenue. This is an alarming figure in view of the heavy tax burden we now carry.

Let us use as a yardstick one federal venture into medical economics. The Emergency, Maternal and Infant Care Act was increased from an initial appropriation of \$1,200,000 to \$42,800,000 in 1946, representing a 41 million dollar increase in three years. This was for a limited number of persons in the nation.

The self-employed, which includes farmers, will be taxed 4 per cent of their income. Those with incomes of \$3,600 pay \$180 annually or 50 cents a day. If one or more of his family are employed on a full or part-time basis, they would also be taxed. A premium of \$180 yearly is not inexpensive insurance.

The cost for medical service under government compulsory insurance at a tax of 4 per cent on yearly incomes is exorbitant when compared to (some) voluntary plans. Many persons under group insurance are insured for \$60 a year plus their dependents in home sickness, accident, hospitalization and surgical service. The combined voluntary plans of Blue Cross Hospitalization, Physician Service, Co-operatives Health and Accident and Mutual Medical service plans insure about 50 million people. The greatest increase in membership has been in the past five years with the physician service plans producing the largest enrollment in the last two years. Many voluntary insurance plans have doubled their membership during this time. It is true no one is compelled to seek medical care under the compulsory system of insurance, but he will be compelled to pay taxes to support a system he may not believe in. This is certainly a curtailment of freedom.

There are a great many people who wish to have medical treatment but who do not see why government should force them to save for it any more than it forces them to save to buy better food, better clothing or better housing, all of which are certainly essential to good



health. The veteran when employed will be taxed for medical care that has been promised him free of any cost in the G. I. "Bill of Rights," the gift of an appreciative nation.

According to conservative estimates, it would take at least 600,000 additional salaried government employees to administer the Compulsory Health Insurance Program. The total number of effective physicians in the United States is 160,000. For every physician there would be about four bureaucrats. This army would draw on an average of \$3000 a year each, according to the present average federal salary pay. To quote a liberal of international fame, "The expenditure for ink will exceed that for iodine." The cost of this venture into medical economics should not be considered if it is to procure better medical care for the nation.

The medical facilities and medical personnel of this nation stand second to none, and the highest health standards and the lowest mortality rates are ours. Will the people be satisfied with the health records of England or Germany? Both nations are comparable to ours, being highly industrial with a large rural population. They have enjoyed the benefits of compulsory insurance, Germany for nearly 60 years, and England for nearly 35 years.

Much has been made in this country of draft statistics in the past three years. The rejection rate of those called for induction into the U. S. Army was about 38 per cent for physical reasons. In the English Army, where lower standards for induction prevail, the rate of rejection was 50 per cent. This was after the English Nation had the benefits of compulsory insurance for a third of a century.

Again to cite the draft statistics, 280,000 were rejected for syphilis. The education of the public as to the dangers of this disease and the availability of free treatment to all has been carried on for years by the U. S. Public Health Service. This group cannot be used therefore by those that tell us "Inability to pay is the only bar to good medical care."

Will an increase in the rate of cardiac disease, cancer

and diabetes be acceptable to labor and certain farm organizations? That is the record under compulsion in Germany and England when compared with the present voluntary system of medical care offered by this nation.

Medical education is no longer centered in the universities and clinics of Europe. Graduates of foreign countries seeking advanced training now come to the universities and clinics of this country. Can this high standard of medicine be continued under a system of compulsion? Is it not possible that political medicine will rob the young doctor of his competitive spirit, and his desire to render the best in service?

There is one other factor in the situation which is disturbing and should concern the citizens as well as the physician. That is the spectre of the bureaucrat. Gradually in such a system, there will emerge "The Man Behind the Desk," the official whose task it will be to see that the interests of government are protected. It is this man whom a free medical profession fears. His influence will filter down through the whole medical system.

Will the enactment of federal insurance give equitable medical care to all those taxed for its support in that section of the United States requiring the greatest amount of federal assistance and with the highest morbidity or mortality rates? Anyone familiar with the records of their representatives on a national and state level has grave reasons for doubt. The protection and exercise of a very fundamental, moral and constitutional right is denied a large number of a class of citizens by the failure of their representatives to support a Fair Employment Practices Act.

This rather lengthy discussion of state medical needs to which the large majority of us agree in principle must be implemented by action. If the medical profession in the state and the nation as a whole does not act quickly to offer a workable plan that will insure adequate medical care, coordinated hospital service, and medical cost within the means of all, political medicine will take over. We must plan for community welfare in both preventative and curative medicine. The democratic way is to meet medical cost through a budget set up for illness through voluntary insurance by those able to do so. The less fortunate may be aided by insurance contracts financed at state or county levels. If we do not accept this challenge and refuse to give our time to its support, we can well expect and rightly so, to face the enactment of measures politically administered, followed by the degradation of bureaucratic control. On the other hand, if we act with united effort and zeal capable of the profession as a whole, our efforts will convince the people of our honest desire to lead them on the road to health. We shall then be able to pass on to a future generation of doctors the proud heritage we have enjoyed under a democratic system of medical practice.

## NORTH DAKOTA STATE MEDICAL ASSOCIATION ROSTER--1946

### MEMBERSHIP BY DISTRICTS

#### CASS COUNTY MEDICAL SOCIETY

|                            |          |                     |               |
|----------------------------|----------|---------------------|---------------|
| <b>PRESIDENT</b>           |          |                     |               |
| Borland, V. G.             | Fargo    | Fortin, H. J.       | Fargo         |
| <b>SECRETARY-TREASURER</b> |          | Fortney, A. C.      | Fargo         |
| Heilman, Charles           | Fargo    | Foster, G. C.       | Fargo         |
| Bacheller, S. C.           | Enderlin | Gronvold, F. O.     | Fargo         |
| Baillie, W. F.             | Fargo    | Hanna, J. F.        | Fargo         |
| Bond, John H.              | Fargo    | Haugrud, E. M.      | Fargo         |
| Borland, V. G.             | Fargo    | Hawn, H. W.         | Fargo         |
| Burt, A. C.                | Fargo    | Heilman, Charles O. | Fargo         |
| Burton, P. H.              | Fargo    | Hendrickson, G.     | Enderlin      |
| Clark, I. D., Jr.          | Fargo    | Hunter, G. W.       | Fargo         |
| Clay, A. J.                | Fargo    | Huntley, W. B.      | Kindred       |
| Darner, C. B.              | Fargo    | Ivers, G. U.        | Fargo         |
| Darrow, F. I.              | Fargo    | Joistad, A. H.      | Fargo         |
| Darrow, K. E.              | Fargo    | Klein, A. L.        | Fargo         |
| DeCesare, F. A.            | Fargo    | Lancaster, W. E. G. | Fargo         |
| Dillard, J. R.             | Fargo    | Larson, G. A.       | Fargo         |
| Elofson, Carl E.           | Fargo    | Lewis, T. H.        | Fargo         |
| Fjelde, J. H.              | Fargo    | Long, W. H.         | Fargo         |
|                            |          | Mazur, B. A.        | Fargo         |
|                            |          | Miller, H. W.       | Casselton     |
|                            |          | Morris, A. C.       | Fargo         |
|                            |          | Nichols, A. A.      | Fargo         |
|                            |          | Nichols, W. O.      | Fargo         |
|                            |          | Oftedal, Trygve     | Fargo         |
|                            |          | Ostfield, J. R.     | Fargo         |
|                            |          | Patterson, T. C.    | Lisbon        |
|                            |          | Pray, L. G.         | Fargo         |
|                            |          | Richter, E. H.      | Hunter        |
|                            |          | Sedlak, O. A.       | Fargo         |
|                            |          | Skelsey, A. W.      | Fargo         |
|                            |          | Stafne, Wm. A.      | Fargo         |
|                            |          | Stolinsky, A.       | San Francisco |
|                            |          | Swanson, J. C.      | Fargo         |
|                            |          | Taintor, Rolfe      | Fargo         |
|                            |          | Tronnes, Nels       | Fargo         |
|                            |          | Urenn, B. N.        | Fargo         |
|                            |          | Watson, E. M.       | Fargo         |
|                            |          | Weible, Ralph D.    | Fargo         |

DEVILS LAKE MEDICAL SOCIETY

|                                    |  |                                 |                                      |
|------------------------------------|--|---------------------------------|--------------------------------------|
| PRESIDENT                          |  | Fawcett, J. C. .... Devils Lake | Palmer, Dolson W. .... Cando         |
| Palmer, D. W. .... Cando           |  | Fawcett, N. W. .... Devils Lake | Reed, Paul .... Rolette              |
| SECRETARY-TREASURER                |  | Graham, J. D. .... Devils Lake  | Ruud, John E. .... Devils Lake       |
| Fawcett, D. W. .... Devils Lake    |  | Greengard, Milton .... Rolla    | Sihler, W. F. .... Devils Lake       |
| Clayman, Sidney .... San Haven     |  | Horsman, A. T. .... Devils Lake | Smith, Clinton .... Devils Lake      |
| Engesather, J. A. D. .... Brockett |  | Hughes, B. J. .... Rolla        | Stickelebrger, Josephine .... Oberon |
| Fawcett, D. W. .... Devils Lake    |  | MacDonald, J. A. .... Cando     | Toomey, G. W. .... Devils Lake       |
|                                    |  | McKeague, D. H. .... Maddock    | Vigeland, J. G. .... Brinsmade       |

GRAND FORKS DISTRICT MEDICAL SOCIETY

|                                    |  |                                      |                                     |
|------------------------------------|--|--------------------------------------|-------------------------------------|
| PRESIDENT                          |  | French, H. E. .... Grand Forks       | Panek, A. F. .... Milton            |
| Dailey, C. W. .... Grand Forks     |  | Fritzell, K. E. .... Grand Forks     | Peake, Margaret F. .... Grand Forks |
| SECRETARY-TREASURER                |  | Glaspel, C. J. .... Grafton          | Quale, V. S. .... Grand Forks       |
| Canterbury, E. A. .... Grand Forks |  | Goehl, R. O. .... Grand Forks        | Rand, C. C. .... Grafton            |
| Alger, L. G. .... Grand Forks      |  | Graham, Chas. M. .... Grand Forks    | Ruud, H. O. .... Grand Forks        |
| Bartle, J. P. .... Langdon         |  | Griffin, V. M. .... Grand Forks      | Ruud, M. B. .... Grand Forks        |
| Benson, T. Q. .... Grand Forks     |  | Grinnell, E. L. .... Grand Forks     | Savre, M. T. .... Northwood         |
| Benwell, H. D. .... Grand Forks    |  | Hardy, N. A. .... Minto              | Silverman, Louis .... Grand Forks   |
| Brown, Bernice E. .... Grand Forks |  | Haugen, C. O. .... Larimore          | St. Clair, R. T. .... Northwood     |
| Brown, G. F. .... Grand Forks      |  | Hetherington, J. E. .... Grand Forks | Thorgrimson, G. G. .... Grand Forks |
| Burrows, F. N. .... Bathgate       |  | Jensen, A. F. .... Grand Forks       | Tompkins, C. R. .... Grafton        |
| Campbell, R. D. .... Grand Forks   |  | Lamont, John G. .... Grafton         | Vance, R. W. .... Grand Forks       |
| Canterbury, E. A. .... Grand Forks |  | Landry, L. H. .... Walhalla          | Vollmer, Fred J. .... Grand Forks   |
| Caveny, K. P. .... Langdon         |  | Leigh, R. E. .... Grand Forks        | Waldren, G. R. .... Cavalier        |
| Countryman, G. L. .... Grafton     |  | Liebler, W. A. .... Grand Forks      | Waldren, H. M., Jr. .... Drayton    |
| Countryman, J. E. Arch Cape, Ore.  |  | Lohrbauer, L. T. .... Grand Forks    | Weed, Frank E. .... Park River      |
| Dailey, Walter C. .... Grand Forks |  | Lommen, C. E. .... Fordville         | Welch, W. F. .... Larimore          |
| Deason, Frank W. .... Grafton      |  | Mahowald, R. E. .... Grand Forks     | Williamson, G. M. .... Grand Forks  |
| Field, A. B. .... Forest River     |  | Moore, John H. .... Grand Forks      | Witherstine, W. H. .... Grand Forks |
| Flaten, A. N. .... Edinburg        |  | Mulligan, V. A. .... Langdon         | Woutat, P. H. .... Grand Forks      |
|                                    |  | Muus, O. H. .... Grand Forks         | Youngs, Nelson A. .... Grand Forks  |

KOTANA DISTRICT MEDICAL SOCIETY

|                                 |  |                                 |                                |
|---------------------------------|--|---------------------------------|--------------------------------|
| PRESIDENT                       |  | Craven, J. D. .... Williston    | Korwin, J. J. .... Williston   |
| Korwin, J. J. .... Williston    |  | Craven, J. P. .... Williston    | Lund, C. M. .... Williston     |
| SECRETARY-TREASURER             |  | Hagan, Edward J. .... Williston | McPhail, C. O. .... Crosby     |
| Johnson, A. K. .... Williston   |  | Johnson, A. K. .... Williston   | Skovholt, H. T. .... Williston |
| AbPlanalp, L. S. .... Williston |  | Jones, Carlos S. .... Williston | Wright, W. A. .... Williston   |

NORTHWEST DISTRICT MEDICAL SOCIETY

|                                  |  |                              |                                 |
|----------------------------------|--|------------------------------|---------------------------------|
| PRESIDENT                        |  | Fischer, V. J. .... Minot    | Knudson, K. O. .... Glenburn    |
| Halverson, H. L. .... Minot      |  | Flath, M. G. .... Stanley    | Kositsky, A. .... Drake         |
| SECRETARY-TREASURER              |  | Fox, W. R. .... Rugby        | Lampert, M. T. .... Minot       |
| Devils, John L., Jr. .... Minot  |  | Fulton, A. M. .... Minot     | Malvey, Kenneth .... Bottineau  |
| Blatherwick, W. D. .... Van Hook |  | Gammell, R. T. .... Kenmare  | McCannel, A. D. .... Minot      |
| Breslich, Paul J. .... Minot     |  | Garrison, M. W. .... Minot   | McCannel, M. D. .... Minot      |
| Call, A. M. .... Rugby           |  | Gerber, L. S. .... Crosby    | McIntosh, Hugh A. .... Kenmare  |
| Cameron, A. L. .... Minot        |  | Goodman, R. .... Powers Lake | O'Neill, R. T. .... Minot       |
| Carr, A. A. .... Minot           |  | Halliday, D. J. .... Kenmare | Parnall, Edward .... Minot      |
| Conroy, Martin P. .... Minot     |  | Halverson, C. H. .... Minot  | Ransom, E. M. .... Minot        |
| Craie, O. S. .... Towner         |  | Halverson, H. L. .... Minot  | Rowe, P. H. .... Minot          |
| Cronin, Donald J. .... Minot     |  | Hanson, Geo. C. .... Minot   | Seiffert, G. S. .... Minot      |
| Devine, J. L., Jr. .... Minot    |  | Itkin, Paul .... Mohall      | Sorenson, A. R. .... Minot      |
| Devine, J. L., Sr. .... Minot    |  | Johnson, C. G. .... Rugby    | Stone, Oral, Jr. .... Bottineau |
| Downing, W. M. .... Minot        |  | Johnson, H. Paul .... Minot  | Timm, John F. .... Makoti       |
| Durnin, W. G. .... Bottineau     |  | Johnson, O. W. .... Rugby    | Wall, W. W. .... Minot          |
| Dyson, R. E. .... Minot          |  | Kaufmann, M. I. H. .... Vela | Wheelon, Frank .... Minot       |
| Erenfeld, F. R. .... Minot       |  | Keller, E. T. .... Rugby     | White, R. G. .... Minot         |
| Erenfeld, H. M. .... Minot       |  | Kermott, Henry .... Minot    | Woodhull, R. B. .... Minot      |
|                                  |  | Kermott, Louis H. .... Minot | Yeomans, T. N. .... Minot       |

RICHLAND COUNTY MEDICAL SOCIETY

|                               |  |                               |                               |
|-------------------------------|--|-------------------------------|-------------------------------|
| PRESIDENT                     |  | Bateman, C. V. .... Wahpeton  | Miller, H. H. .... Wahpeton   |
| Kellogg, I. W. .... Fairmount |  | Beithon, E. J. .... Hankinson | Reiswig, A. H. .... Wahpeton  |
| SECRETARY-TREASURER           |  | Kellogg, I. W. .... Fairmount | Thompson, A. H. .... Wahpeton |
| Reiswig, A. H. .... Wahpeton  |  |                               |                               |

SHEYENNE VALLEY MEDICAL SOCIETY

|                                  |  |                                   |                                   |
|----------------------------------|--|-----------------------------------|-----------------------------------|
| PRESIDENT                        |  | Almklov, L. .... Cooperstown      | Macdonald, A. C. .... Valley City |
| Cook, Paul T. .... Valley City   |  | Christianson, G. .... Valley City | Macdonald, A. W. .... Valley City |
| SECRETARY-TREASURER              |  | Cook, Paul T. .... Valley City    | Meredith, C. J. .... Valley City  |
| Meredith, C. J. .... Valley City |  | Dodds, G. A. .... Valley City     | Merrett, J. P. .... Valley City   |
|                                  |  | Gilsdorf, W. H. .... Valley City  | Wicks, F. L. .... Valley City     |



SIXTH DISTRICT MEDICAL SOCIETY

|                                 |  |                                    |                                  |
|---------------------------------|--|------------------------------------|----------------------------------|
| PRESIDENT                       |  | Driver, D. R. .... Bismarck        | Pierce, W. B. .... Bismarck      |
| Radl, R. B. .... Bismarck       |  | Fredricks, L. H. .... Bismarck     | Quain, E. P. .... Bismarck       |
| SECRETARY-TREASURER             |  | Freise, P. W. .... Bismarck        | Quain, F. D. .... Bismarck       |
| Pierce, W. B. .... Bismarck     |  | Gaebe, O. C. .... New Salem        | Radl, R. B. .... Bismarck        |
| Arneson, C. A. .... Bismarck    |  | Griebenow, F. .... Bismarck        | Ramstad, N. O. .... Bismarck     |
| Arnson, J. O. .... Bismarck     |  | Grorud, A. C. .... Bismarck        | Ray, R. H. .... Garrison         |
| Baer, DeWitt .... Steele        |  | Heffron, M. M. .... Bismarck       | Roan, M. W. .... Bismarck        |
| Baumgartner, C. .... Bismarck   |  | Heinzeroth, G. E. .... Turtle Lake | Rosenberger, H. P. .... Bismarck |
| Benson, O. T. .... Glen Ullin   |  | Henderson, R. W. .... Bismarck     | Salomone, E. .... Elgin          |
| Berg, H. M. .... Bismarck       |  | Hetzler, A. E. .... Mandan         | Schoregge, C. W. .... Bismarck   |
| Bertheau, H. J. .... Linton     |  | Hill, F. J. .... Minneapolis       | Smith, C. C. .... Mandan         |
| Bodenstab, W. H. .... Bismarck  |  | Jacobson, M. S. .... Elgin         | Smith, W. M. .... Bismarck       |
| Boerth, E. H. .... Bismarck     |  | LaRose, V. J. .... Bismarck        | Speilman, G. H. .... Mandan      |
| Brandes, H. A. .... Bismarck    |  | Larson, L. W. .... Bismarck        | Strauss, F. B. .... Bismarck     |
| Brandt, A. M. .... Bismarck     |  | Lipp, G. R. .... Bismarck          | Swingle, A. J. .... Mandan       |
| Breslin, R. H. .... Mandan      |  | Monteith, George .... Hazelton     | Vinje, E. G. .... Hazen          |
| Brink, Norvel .... Bismarck     |  | Moyer, L. B. .... Bismarck         | Vinje, Ralph .... Beulah         |
| Buckingham, T. W. .... Bismarck |  | Nickerson, B. S. .... Mandan       | Vonnegut, F. F. .... Linton      |
| Constans, G. M. .... Bismarck   |  | Nuessle, R. F. .... Bismarck       | Waldschmidt, R. H. .... Bismarck |
| DeMouilly, O. M. .... Flasher   |  | Orr, August C. .... Bismarck       | Weyrens, P. J. .... Hebron       |
| Diven, W. L. .... Bismarck      |  | Owens, P. L. .... Bismarck         | Wheeler, H. A. .... Mandan       |
|                                 |  | Perrin, E. D. .... Bismarck        | Williams, Maysil .... Bismarck   |

SOUTHERN DISTRICT MEDICAL SOCIETY

|                           |  |                               |                               |
|---------------------------|--|-------------------------------|-------------------------------|
| PRESIDENT                 |  | Fergusson, F. W. .... Kulm    | Miller, Samuel .... Ellendale |
| Wolfe, F. E. .... Oakes   |  | Fergusson, V. D. .... Edgeley | Mitchell, George .... Milnor  |
| SECRETARY-TREASURER       |  | Lynde, Roy .... Ellendale     | Van Houten, R. W. .... Oakes  |
| Meunier, H. J. .... Oakes |  | Meunier, H. J. .... Oakes     | Wolfe, F. E. .... Oakes       |

SOUTHWESTERN DISTRICT MEDICAL SOCIETY

|                                        |  |                                  |                                  |
|----------------------------------------|--|----------------------------------|----------------------------------|
| PRESIDENT                              |  | Dukart, C. R. .... Richardton    | Nachtwey, A. P. .... Dickinson   |
| Dukart, C. R. .... Richardton          |  | Gilsdorf, A. R. .... Dickinson   | Olesky, E. .... Mott             |
| SECRETARY-TREASURER                    |  | Guloiien, H. E. .... Dickinson   | Reichert, H. L. .... Dickinson   |
| Reichert, H. L. .... Dickinson         |  | Gumper, A. J. .... Dickinson     | Rodgers, R. W. .... Dickinson    |
| Bloedau, E. L. .... Santa Rosa, Calif. |  | Hill, S. W. .... Regent          | Schumacher, N. W. .... Hettinger |
| Bowen, J. W. .... Dickinson            |  | Lyons, M. W. .... Beach          | Schumacher, W. A. .... Hettinger |
| Chernauek, S. .... Dickinson           |  | Maercklein, O. C. .... Mott      | Smith, O. S. .... Killdeer       |
| Dach, J. L. .... Hettinger             |  | Moreland, J. W. .... New England | Soules, M. E. .... New England   |
|                                        |  | Murray, K. M. .... Scranton      | Spear, A. E. .... Dickinson      |

STUTSMAN COUNTY MEDICAL SOCIETY

|                                 |  |                                    |                                  |
|---------------------------------|--|------------------------------------|----------------------------------|
| PRESIDENT                       |  | Christiansen, H. A. .... Jamestown | Larson, E. J. .... Jamestown     |
| Nierling, R. D. .... Jamestown  |  | Culbert, M. H. .... Medina         | Nierling, R. D. .... Jamestown   |
| SECRETARY-TREASURER             |  | Cuthbert, W. H. .... Jamestown     | Peake, Francis M. .... Jamestown |
| Larson, E. J. .... Jamestown    |  | DePuy, T. L. .... Jamestown        | Roth, J. H. .... Jamestown       |
| Arends, A. L. .... Jamestown    |  | Fisher, A. M. .... Jamestown       | Sorkness, Joseph .... Jamestown  |
| Arzt, Philip G. .... Jamestown  |  | Gerrish, W. A. .... Jamestown      | Wood, W. W. .... Jamestown       |
| Carpenter, G. S. .... Jamestown |  | Holt, G. H. .... Jamestown         | Woodward, F. O. .... Jamestown   |

TRAIL-STEELE MEDICAL SOCIETY

|                             |  |                                 |                              |
|-----------------------------|--|---------------------------------|------------------------------|
| PRESIDENT                   |  | Cable, Thomas M. .... Hillsboro | Knutson, O. A. .... Buxton   |
| Dekker, O. D. .... Finley   |  | Cleary, H. G. .... Sharon       | LaFleur, H. A. .... Mayville |
| SECRETARY-TREASURER         |  | Dekker, O. D. .... Finley       | Little, R. C. .... Mayville  |
| Vinje, Syver .... Hillsboro |  | Kjelland, A. A. .... Hatton     | Vinje, Syver .... Hillsboro  |

TRI-COUNTY MEDICAL SOCIETY

|                              |  |                                |                                       |
|------------------------------|--|--------------------------------|---------------------------------------|
| PRESIDENT                    |  | Donker, A. E. .... Carrington  | Schwinghamer, E. J. .... New Rockford |
| Boyum, P. A. .... Harvey     |  | Ford, F. W. .... New Rockford  |                                       |
| SECRETARY-TREASURER          |  | Hammargren, A. F. .... Harvey  | Seibel, L. J. .... Harvey             |
| Seibel, L. J. .... Harvey    |  | Matthaei, D. W. .... Fessenden | Van de Erve, H. .... Carrington       |
| Beck, Charles J. .... Harvey |  | Moore, M. J. .... New Rockford | Westervelt, A. E. .... Bowdon         |
| Boyum, P. A. .... Harvey     |  |                                |                                       |

ROSTER

North Dakota State Medical Association-1946

|                                 |                                  |                                        |
|---------------------------------|----------------------------------|----------------------------------------|
| AbPlanalp, I. S. .... Williston | Bartle, J. P. .... Langdon       | Blatherwick, W. D. .... Van Hook       |
| Alger, L. J. .... Grand Forks   | Bateman, C. V. .... Wahpeton     | Bloedau, E. L. .... Santa Rosa, Calif. |
| Almklov, L. .... Cooperstown    | Baumgartner, Carl .... Bismarck  | Bodenstab, W. H. .... Bismarck         |
| Arends, A. L. .... Jamestown    | Beck, Charles A. .... Harvey     | Boerth, E. H. .... Bismarck            |
| Arneson, Chas. A. .... Bismarck | Beithon, Elmer J. .... Hankinson | Bond, John H. .... Fargo               |
| Arnson, J. O. .... Bismarck     | Benson, O. T. .... Glen Ullin    | Borland, V. G. .... Fargo              |
| Arzt, P. G. .... Jamestown      | Benson, T. Q. .... Grand Forks   | Bowen, J. W. .... Dickinson            |
| Bachelor, S. C. .... Enderlin   | Benwell, H. D. .... Grand Forks  | Boyum, P. A. .... Harvey               |
| Baer, DeWitt .... Steele        | Berg, H. M. .... Bismarck        | Brandes, H. A. .... Bismarck           |
| Baillie, W. F. .... Fargo       | Bertheau, Herman J. .... Linton  | (retired)                              |

|                      |                 |                     |                    |                    |                  |
|----------------------|-----------------|---------------------|--------------------|--------------------|------------------|
| Brandt, A. M.        | Bismarck        | Freise, P. W.       | Bismarck           | LaRose, V. J.      | Bismarck         |
| Breslich, Paul J.    | Minot           | French, H. E.       | Grand Forks        | Larson, E. J.      | Jamestown        |
| Breslin, R. H.       | Mandan          | Fritzell, K. E.     | Grand Forks        | Larson, G. A.      | Fargo            |
| Brink, N. O.         | Bismarck        | Fulton, A. M.       | Minot              | Larson, L. W.      | Bismarck         |
| Brown, Bernice E.    | Grand Forks     | Gaebe, O. C.        | New Salem          | Leigh, R. E.       | Grand Forks      |
| Brown, G. F.         | Grand Forks     | Gammell, R. T.      | Kenmare            | Lewis, T. H.       | Fargo            |
| Buckingham, T. W.    | Bismarck        | Garrison, M. W.     | Minot              | Liebler, W. A.     | Grand Forks      |
| Burrows, F. N.       | Bathgate        | Gerber, L. S.       | Crosby             | Lipp, G. R.        | Bismarck         |
| Burt, A. C.          | Fargo           | Gerrish, W. A.      | Jamestown          | Little, R. C.      | Mayville         |
| Burton, P. H.        | Fargo           | Gilsdorf, A. R.     | Dickinson          | Lohrbauer, L. T.   | Grand Forks      |
| Cable, Thomas M.     | Hillsboro       | Gilsdorf, W. H.     | Valley City        | Lommen, C. E.      | Fordville        |
| Call, A. M.          | Rugby           | Glaspel, C. J.      | Grafton            | Long, W. H.        | Fargo            |
| Cameron, A. L.       | Minot           | Goehl, R. O.        | Grand Forks        | Lund, C. M.        | Williston        |
| Campbell, R. D.      | Grand Forks     | Goodman, Robert     | Powers Lake        | Lynde, Roy         | Ellendale        |
| Canterbury, E. A.    | Grand Forks     | Graham, Chas. M.    | Grand Forks        | Lyons, M. W.       | Beach            |
| Carpenter, G. S.     | Jamestown       | Graham, John D.     | Devils Lake        | McCannel, A. D.    | Minot            |
| Carr, Andrew         | Minot (retired) | Greene, E. E.       | Westhope           | McCannel, M. A.    | Minot            |
| Caveny, K. P.        | Langdon         | Greengard, M.       | Rolla              | Macdonald, A. C.   | Valley City      |
| Chernausek, S.       | Dickinson       | Griebenow, F.       | Bismarck           | Macdonald, A. W.   | Valley City      |
| Christiansen, H. A.  | Jamestown       | Griffin, V. M.      | Grand Forks        | MacDonald, J. A.   | Cando            |
| Christianson, Gunder | Valley City     | Grinnell, E. L.     | Grand Forks        | McIntosh, H. A.    | Kenmare          |
| Clark, Ira D., Jr.   | Casselton       | Gronvold, F. O.     | Fargo              | McKeague, D. H.    | Maddock          |
| Clay, A. J.          | Fargo           | Grorud, A. C.       | Bismarck           | McPhail, C. O.     | Crosby           |
| Clayman, Sidney G.   | San Haven       | Guloien, Hans E.    | Dickinson          | Maercklein, O. C.  | Mott             |
| Cleary, H. G.        | Sharon          | Gumper, A. J.       | Dickinson          | Mahowald, R. E.    | Grand Forks      |
| Conroy, Martin P.    | Minot           | Hagen, Edward J.    | Williston          | Malvey, Kenneth    | Bottineau        |
| Constans, G. M.      | Bismarck        | Halliday, D. J.     | Kenmare            | Matthaei, D. W.    | Fessenden        |
| Cook, Paul T.        | Valley City     | Halverson, C. H.    | Minot              | Mazur, B. A.       | Fargo            |
| Countryman, G. L.    | Grafton         | Halverson, H. L.    | Minot              | Meredith, C. J.    | Valley City      |
| Countryman, J. E.    | Arch Cape, Ore. | Hammargren, A. F.   | Harvey             | Merrett, J. P.     | Valley City      |
| Craise, O. S.        | Towner          | Hanna, J. F.        | Fargo              | Meunier, H. J.     | Oakes            |
| Craven, Joseph D.    | Williston       | Hanson, George C.   | Minot              | Miller, H. H.      | Wahpeton         |
| Craven, John P.      | Williston       | Hardy, N. A.        | Minto              | Miller, H. W.      | Casselton        |
| Cronin, Donald J.    | Minot           | Haugen, C. O.       | Larimore           | Miller, Samuel     | Ellendale        |
| Culbert, M. H.       | Medina          | Haugrud, E. M.      | Fargo              | Mitchell, George   | Milnor           |
| Cuthbert, W. H.      | Jamestown       | Hawn, H. W.         | Fargo              | Monteith, George   | Hazleton         |
| Dach, J. L.          | Hettinger       | Heffron, M. M.      | Bismarck           | Moore, John H.     | Grand Forks      |
| Dailey, Walter C.    | Grand Forks     | Heilman, Charles O. | Fargo              | Moore, M. J.       | New Rockford     |
| Darner, C. B.        | Fargo           | Heinzeroth, G.      | Turtle Lake        | Moreland, J. W.    | New England      |
| Darrow, Frank        | Fargo           | Henderson, R. W.    | Bismarck           | Morris, A. C.      | Fargo            |
| Darrow, Kent E.      | Fargo           | Hendrickson, G.     | Enderlin           | Moyer, L. B.       | Bismarck         |
| Deason, Frank W.     | Grafton         | Hetherington, J. E. | Grand Forks        | Mulligan, V. A.    | Langdon          |
| DeCesare, F. A.      | Fargo           | Hetzler, A. E.      | Mandan             | Murray, K. M.      | Scranton         |
| Dekker, O. D.        | Finley          | Hill, F. J.         | Minneapolis, Minn. | Muus, O. H.        | Grand Forks      |
| DeMouilly, Oliver M. | Flasher         | Hill, S. W.         | Regent             | Nachtwey, A. P.    | Dickinson        |
| DePuy, T. L.         | Jamestown       | Holt, George H.     | Jamestown          | Nichols, A. A.     | Fargo            |
| Devine, J. L., Jr.   | Minot           | Horsman, A. T.      | Devils Lake        | Nichols, W. C.     | Fargo            |
| Devine, J. L., Sr.   | Minot           |                     | (retired)          | Nickerson, B. S.   | Mandan           |
| Dillard, J. R.       | Fargo           | Hughes, B. J.       | Rolla              | Nierling, R. D.    | Jamestown        |
| Diven, W. L.         | Bismarck        | Hunter, G. W.       | Fargo              | Nuessle, R. F.     | Bismarck         |
| Dodds, G. A.         | Valley City     | Huntley, H. B.      | Kindred            | Oftedal, Trygve    | Fargo            |
| Donker, A. E.        | Carrington      | Ittkin, Paul        | Mohall             | Olesky, Elmer      | Mott             |
| Downing, W. M.       | Minot           | Ivers, George U.    | Fargo              | O'Neill, R. T.     | Minot            |
| Driver, D. R.        | Bismarck        | Jacobson, M. S.     | Elgin              | Orr, August C.     | Bismarck         |
| Dukart, C. R.        | Richardton      | Jensen, A. F.       | Grand Forks        | Ostfield, J. R.    | Fargo            |
| Durnin, Charles      | Westhope        | Johnson, Alan K.    | Williston          | Owens, P. L.       | Bismarck         |
| Dyson, Ralph E.      | Minot           | Johnson, C. G.      | Rugby              | Palmer, D. W.      | Cando            |
| Elofson, Carl E.     | Fargo           | Johnson, H. Paul    | Minot              | Panek, A. F.       | Milton           |
| Engesather, J. A. D. | Brocket         | Johnson, O. W.      | Rugby              | Parnall, Edward    | Minot            |
| Erenfeld, Fred R.    | Minot           | Joistad, A. H.      | Fargo              | Patterson, T. C.   | Lisbon (retired) |
| Erenfeld, H. M.      | Minot           | Jones, C. S.        | Williston          | Peake, Francis M.  | Jamestown        |
| Fawcett, D. R.       | Devils Lake     | Kaufmann, M. I. H.  | Velva              | Peake, Margaret F. | Grand Forks      |
| Fawcett, John C.     | Devils Lake     | Keller, E. T.       | Rugby              | Perrin, E. D.      | Bismarck         |
| Fawcett, Newton W.   | Devils Lake     | Kellogg, I. W.      | Fairmont           | Pierce, W. B.      | Bismarck         |
| Fergusson, F. W.     | Kulm            | Kermott, Henry      | Minot              | Pray, L. G.        | Fargo            |
| Fergusson, V. D.     | Edgeley         | Kermott, L. H.      | Minot              | Quain, E. P.       | Bismarck         |
| Field, A. B.         | Forest River    | Kjelland, A. A.     | Hatton             | Quain, Fannie D.   | Bismarck         |
| Fischer, Verrill J.  | Minot           | Klein, A. L.        | Fargo              | Quale, V. S.       | Grand Forks      |
| Fisher, A. M.        | Jamestown       | Knudson, K. O.      | Glenburn           | Radl, R. B.        | Bismarck         |
| Fjelde, J. H.        | Fargo           | Knutson, O. A.      | Buxton             | Ramstad, N. O.     | Bismarck         |
| Flaten, A. N.        | Edinburg        | Korwin, J. J.       | Williston          | Rand, C. C.        | Grafton          |
| Flath, M. G.         | Stanley         | Kositsky, A.        | Drake              | Ransom, E. M.      | Minot            |
| Ford, F. W.          | New Rockford    | LaFleur, H. A.      | Mayville           | Ray, R. H.         | Garrison         |
| Fortin, H. J.        | Fargo           | Lamont, J. G.       | Grafton            | Reed, Paul         | Rolette          |
| Fortney, A. C.       | Fargo           | Lampert, M. T.      | Minot              | Reichert, H. L.    | Dickinson        |
| Foster, George C.    | Fargo           | Lancaster, W. E. G. | Fargo              | Reiswig, A. H.     | Wahpeton         |
| Fox, W. R.           | Rugby           | Landry, L. H.       | Walhalla           | Richter, E. H.     | Hunter           |
| Fredricks, L. H.     | Bismarck        |                     |                    | Roan, M. W.        | Bismarck         |



|                          |              |                               |               |                          |                    |
|--------------------------|--------------|-------------------------------|---------------|--------------------------|--------------------|
| Rodgers, R. W. ....      | Dickinson    | Soules, Mary E. W. ....       | New England   | Vollmer, Fred J. ....    | Grand Forks        |
| Rosenberger, H. P. ....  | Bismarck     | Spear, A. E. ....             | Dickinson     | Vonnegut, F. F. ....     | Linton             |
| Roth, J. H. ....         | Jamestown    | Speilman, G. H. ....          | Mandan        | Waldren, G. R. ....      | Cavalier           |
| Rowe, P. H. ....         | Minot        | St. Clair, R. T. ....         | Northwood     | Waldren, H. M., Jr. .... | Drayton            |
| Ruud, H. O. ....         | Grand Forks  | Stafne, Wm. A. ....           | Fargo         | Waldschmidt, R. H. ....  | Bismarck           |
| Ruud, John E. ....       | Devils Lake  | Stickelberger, Josephine .... | Oberon        | Wall, W. W. ....         | Minot              |
| Ruud, M. B. ....         | Grand Forks  | Stolinsky, A. ....            | San Francisco | Watson, E. M. ....       | Fargo              |
| Salomone, E. J. ....     | Elgin        | Stone, Oral H., Jr. ....      | Bottineau     | Weed, F. E. ....         | Park River         |
| Savre, M. T. ....        | Northwood    | Stratte, J. J. ....           | Grand Forks   | Weible, R. ....          | Fargo              |
| Schoregge, C. W. ....    | Bismarck     | Strauss, F. B. ....           | Bismarck      | Welch, W. F. ....        | Larimore (retired) |
| Schumacher, N. W. ....   | Hettinger    | Swanson, J. C. ....           | Fargo         | Westervelt, A. E. ....   | Bowdon             |
| Schumacher, W. A. ....   | Hettinger    | Swingle, Alvin J. ....        | Mandan        | Weyrens, P. J. ....      | Hebron             |
| Schwinghamer, E. J. .... | New Rockford | Tainter, Rolfe ....           | Fargo         | Wheeler, H. A. ....      | Mandan             |
| Sedlak, O. A. ....       | Fargo        | Thompson, A. M. ....          | Wahpeton      | Wheeler, F. E. ....      | Minot              |
| Seibel, L. J. ....       | Harvey       | Thorgrimson, G. G. ....       | Grand Forks   | White, R. G. ....        | Minot              |
| Seiffert, G. S. ....     | Minot        | Timm, John F. ....            | Makoti        | Wicks, F. L. ....        | Valley City        |
| Sihler, W. F. ....       | Devils Lake  | Tompkins, C. R. ....          | Grafton       | Williams, Maysil ....    | Bismarck           |
| Silverman, Louis ....    | Grand Forks  | Toomey, G. W. ....            | Devils Lake   | Williamson, G. M. ....   | Grand Forks        |
| Skelsey, A. W. ....      | Fargo        | Tronnes, Nels ....            | Fargo         | Witherstine, W. H. ....  | Grand Forks        |
| Skovholt, H. T. ....     | Williston    | Urenn, B. M. ....             | Fargo         | Wolf, F. E. ....         | Oakes              |
| Smith, C. C. ....        | Mandan       | Vance, R. W. ....             | Grand Forks   | Wood, W. W. ....         | Jamestown          |
| Smith, Clinton ....      | Devils Lake  | Van de Erve, H. ....          | Carrington    | Woodhull, R. B. ....     | Minot              |
| Smith, O. S. ....        | Killdeer     | Van Houten, R. W. ....        | Oakes         | Woodward, F. O. ....     | Jamestown          |
| Smith, Wm. M. ....       | Bismarck     | Vigeland, J. G. ....          | Brinsmade     | Woutat, P. H. ....       | Grand Forks        |
| Sorenson, A. R. ....     | Minot        | Vinje, E. G. ....             | Hazen         | Wright, W. A. ....       | Williston          |
| Sorkness, Jos. ....      | Jamestown    | Vinje, Ralph ....             | Beulah        | Yeomans, T. N. ....      | Minot              |
|                          |              | Vinje, Syver ....             | Hillsboro     | Youngs, Nelson A. ....   | Grand Forks        |

## MEET OUR CONTRIBUTORS

DR. WESLEY W. SPINK has been associated with the University Hospitals, Minneapolis, Minnesota, since 1937. He is a graduate of Harvard Medical School, class of 1932, with A.B. and M.D. degrees, and did graduate work there from 1934 to 1937. His specialty is internal medicine. He is president of the Minnesota Pathological Society, secretary of the American Society for Clinical Investigation, member of the American Association of Physicians, Minnesota State Medical association, and the Hennepin County Medical society. During World War II he was consultant to the Secretary of War on epidemic diseases and a member of the Commission on Hemolytic Streptococcus Diseases.

DR. OWEN WANGENSTEEN, chief of the Department of Surgery, University of Minnesota Medical School, is a frequent and valued contributor to JOURNAL LANCET.

DONALD J. PLETSCH is Associate Entomologist at the Montana Agricultural Experiment Station, Bozeman. He is a graduate of the University of Minnesota, receiving his M.S. in 1936 and his Ph.D. in 1942. He is a member of Sigma Xi.

### Book Reviews

**Electrocardiography in Practice**, by ASHTON GRAYBIRD, M.D., and PAUL D. WHITE, M.D. Second edition, 458 pages with 323 illustrations. Philadelphia: W. B. Saunders Co., 1946. \$7.00.

The first edition of this worth-while volume was very well received when it was published a few years ago. Recent advances in clinical electrocardiography, however, have made this new second edition necessary.

The general style of presentation of the material has not changed any. Many revisions have been made, and greater emphasis than heretofore has been placed upon the interpretation

of normal patterns. A larger number of records, illustrating both normal and abnormal conditions, have been included, as well as a new series of test electrocardiograms for practice in interpretation.

This book should be of great value to everyone interested in electrocardiography, the cardiologist, internist, as well as the general practitioner.

T. Z.

**Pneumoperitoneum Treatment**, by ANDREW LADISLAU BANYAI, M.D., F.A.C.P., F.C.C.P.; Associate Clinical Professor of Medicine, Marquette University Medical School, Milwaukee, Wisconsin; Member, Editorial Board, *Diseases of the Chest*; formerly Preceptor in Tuberculosis, School of Medicine, University of Wisconsin, Madison, Wisconsin. With 74 illustrations. St. Louis: C. V. Mosby Company, 1946. \$6.50.

During the past few years pneumoperitoneum has increased in popularity and its uses have been somewhat extended. Therefore, it is fitting that Banyai should have prepared this monograph. In the historical review he calls attention to the procedure having its origin in 1872 when, in the course of a laparotomy for another purpose, tuberculous peritonitis was discovered, from which the patient completely recovered following the surgery. Subsequently, laparotomy was strongly recommended for tuberculous peritonitis, as it was thought that the air and light so introduced had a favorable influence on the disease. In 1893 oxygen was injected intraperitoneally for the treatment of peritonitis. Since that time a large number of physicians have introduced oxygen or filtered air into the peritoneal cavity for the treatment of this condition.

In this monograph, Banyai presents chapters on the use of pneumoperitoneum in such conditions as tuberculous enterocolitis, tuberculous empyema, tuberculous salpingitis, pulmonary abscess, bronchial asthma, bronchiectasis, pulmonary emphysema, pulmonary hemorrhage and pulmonary tuberculosis. In these chapters he includes the indication and the results of the treatment as reported by various authors. Chapters are included on technique of administration, physiological changes following pneumoperitoneum, air embolism and mediastinal emphysema as complications. This book of 376 pages is a thoroughgoing presentation of pneumoperitoneum. It is well illustrated and contains a fine bibliography and index. The author, who has long been recognized as an authority on this subject, is to be congratulated on making such a complete presentation of the subject in such concise and readable form. This book should be available to all physicians in the field of tuberculosis and chest diseases in general. All other physicians can read the book with profit.

J. A. M.

# The JOURNAL LANCET

Serves the Medical Profession of  
MINNESOTA, NORTH DAKOTA, SOUTH DAKOTA AND MONTANA

Official Journal of the American Student Health Assn., Great Northern Railway Surgeons' Assn., Minneapolis Academy of Medicine, Montana State Medical Assn., North Dakota Society of Obstetrics and Gynecology, North Dakota State Medical Assn., Northwestern Pediatric Society, Sioux Valley Medical Assn., South Dakota Public Health Assn., South Dakota State Medical Assn.

## ADVISORY COUNCIL

### North Dakota State Medical Assn.

Dr. James F. Hanna, *Pres.*  
Dr. A. E. Spear, *Pres.-Elect*  
Dr. L. W. Larson, *Secy.*  
Dr. W. W. Wood, *Treas.*

### North Dakota Society of Obstetrics and Gynecology

Dr. Paul Freise, *Pres.*  
Dr. G. Wilson Hunter, *Vice Pres.*  
Dr. F. A. DeCesare, *Secy.-Treas.*

### Minneapolis Academy of Medicine

Dr. Russell W. Morse, *Pres.*  
Dr. Paul F. Dwan, *Vice Pres.*  
Dr. J. C. Miller, *Secy.*  
Dr. Ragnvald S. Ylvisaker, *Treas.*  
Dr. Henry E. Hoffert, *Recorder*

### South Dakota State Medical Assn.

Dr. F. S. Howe, *Pres.*  
Dr. H. R. Brown, *Pres.-Elect*  
Dr. J. L. Calene, *Vice Pres.*  
Dr. Roland G. Mayer, *Secy.-Treas.*

### South Dakota Public Health Assn.

Dr. J. M. Butler, *Pres.*  
Dr. C. E. Sherwood, *Vice Pres.*  
Dr. Gilbert Cottam, *Secy.-Treas.*

### Sioux Valley Medical Assn.

Dr. D. S. Baughman, *Pres.*  
Dr. Will Donahoe, *Vice Pres.*  
Dr. R. H. McBride, *Secy.*  
Dr. Frank Winkler, *Treas.*

### Montana State Medical Assn.

Dr. M. A. Shillington, *Pres.*  
Dr. L. W. Allard, *Pres.-Elect*  
Dr. H. T. Caraway, *Secy.-Treas.*

### Northwestern Pediatric Society

Dr. G. B. Logan, *Pres.*  
Dr. Geo. Kimmel, *Vice Pres.*  
Dr. Northrop Beach, *Secy.-Treas.*

### Great Northern Railway Surgeons' Assn.

Dr. W. W. Taylor, *Pres.*  
Dr. R. C. Webb, *Secy.-Treas.*

### American Student Health Assn.

Dr. Ralph I. Canuteson, *Pres.*  
Dr. Laurence Chenoweth, *Vice Pres.*  
Dr. G. T. Blydenburgh, *Secy.-Treas.*

## BOARD OF EDITORS

DR. J. A. MYERS, *Chairman*

Dr. J. O. Arnsion  
Dr. A. B. Baker  
Dr. D. S. Baughman  
Dr. Ruth E. Boynton  
Dr. Gilbert Cottam  
Dr. H. S. Diehl  
Dr. L. G. Dunlap  
Dr. Ralph V. Ellis  
Dr. W. A. Fansler

Dr. A. R. Foss  
Dr. James M. Hayes  
Dr. A. E. Hedback  
Dr. E. D. Hitchcock  
Dr. R. E. Jernstrom  
Dr. A. Karsted  
Dr. L. W. Larson  
Dr. W. H. Long  
Dr. O. J. Mabee

Dr. J. C. McKinley  
Dr. Irvine McQuarrie  
Dr. Henry E. Michelson  
Dr. C. H. Nelson  
Dr. N. J. Nessa  
Dr. Martin Nordland  
Dr. J. C. Ohlmacher  
Dr. K. A. Phelps  
Dr. C. E. Sherwood

Dr. M. A. Shillington  
Dr. J. C. Shirley  
Dr. E. Lee Shrader  
Dr. E. J. Simons  
Dr. J. H. Simons  
Dr. S. A. Slater  
Dr. W. P. Smith  
Dr. S. E. Sweitzer

Dr. W. H. Thompson  
Dr. E. L. Tuohy  
Dr. M. B. Visscher  
Dr. O. H. Wangensteen  
Dr. S. Marx White  
Dr. H. M. N. Wynne  
Dr. Thomas Ziskin,  
*Secretary*

LANCET PUBLISHING CO., *Publishers*, 84 South Tenth St., Minneapolis 2, Minnesota

MINNEAPOLIS, MINNESOTA, SEPTEMBER, 1946

## CO-OPERATIVE HEALTH UNIT ORGANIZED

A number of delegates from various co-operative groups met in the first national conference on Co-Operative Health Plans at Two Harbors, Minnesota, August 15th, 1946, in a four day session for the purpose of setting up a new organization to be known as the Co-Operative Health Federation of America. Participants at the meeting included Charles Wilkenson, president of the Two Harbors Health Center, George W. Jacobson, Group Health Mutual, St. Paul, and Gladys Edwards, Farmers Union Terminal Association. A paper by Dr. James P. Warbasse, who is known as a "lecturer on co-operation" and president emeritus, the Co-Operative League, U.S.A., was read. Dr. Kingsley Roberts, director, Medical Administration Service, Inc., New York City, spoke on administrative phases of co-operative medicine. The Rev. M. M. Coady, extension department, St. Xavier University, Antigonish, Nova Scotia,

gave an address on "Mobilizing the People for Democracy through Co-operation."

The conference approved by a resolution "the principle of public responsibility for assuring the availability of health and medical services for all the people without economic or other barriers." The Principles of Medical Ethics of the American Medical Association unequivocally states "The poverty of a patient should command the gratuitous services of a physician." We do not know what the "other barriers" refer to. The real purpose of the organization as its name would imply is simply to put the cost of medical care on a co-operative basis, and we understand that co-operative groups enjoy certain tax exemption benefits.

Dr. Haven Emerson, professor emeritus of public health, Columbia university, New York City, was principal speaker at a dinner meeting climaxing the session of the new organization and took occasion to criticize the Murray-Wagner-Dingell public health bill, declaring that



it would lower the quality of medical care while increasing its cost. He charged that the term "public health" as used by Sir William Beveridge and "that trio of impractical political propagandists, Murray, Wagner and Dingell" implies services and promises that cannot be fulfilled under any financial or administrative structure proposed to date. He advised a program of *co-operation of patients with their physicians self-chosen groups*, and "Let us from now forward discard the dishonest, politically inexpedient, but misleading and intellectually deceptive and confusing term, 'health insurance' and commit ourselves at least at the present stage of our immediate and pressing concern to insurance that medical care will be available and paid for."

When Ray Lyman Wilbur was Secretary of the Interior fifteen years ago, he said "Why physicians practice charity toward those unfortunate people who belong to the whole community, is beyond the understanding of anyone except a doctor who has been accustomed to it, and the people who have been taking it for granted. Nobody else does it; and yet we go on, with these complicated economic conditions, at a time when the conditions in every direction are compelling us to consider economics as never before. We have on the one hand much talk regarding the high cost of medical service and on the other hand many people who fail to pay their hospital and medical bills promptly if at all. It would be possible to improve this chaotic situation very much if the whole business were handled intelligently."

Physicians are not averse to getting paid for their services but they squirm a bit at the thought of outsiders arranging the program and handling the gate receipts.

A. E. H.

### THE TRANSMISSION OF POLIOMYELITIS

Although thirty-eight years have elapsed since Landsteiner and Popper first demonstrated clearly the virus etiology of poliomyelitis, controversy persists regarding the mode of spread of the infection. During outbreaks such as the present one in the midwest this controversy forces itself clearly upon the attention of medical and lay personnel alike and becomes of paramount importance in motivating the public to demand control measures consistent with the varied ideas as to mode of transmission. It is well therefore to examine briefly the several hypotheses that are most commonly held.

The earliest and still the most widely accepted hypothesis is that poliomyelitis is spread through the secretions of the nose and throat, thus spreading in a manner comparable to measles, smallpox or other respiratory-spread infections. The virus has been isolated repeatedly from the upper respiratory tract of paralyzed cases, non-paralytic cases, abortive infections and family contacts of cases. The monkey (the only animal susceptible to all strains) can be infected more readily by intranasal instillation than by any other normal avenue of entry. There can be little doubt therefore of the possible spread through respiratory exchange.

The distribution of cases, as well as of persons carrying antibodies, is consistent with the well recognized patterns of respiratory-spread diseases. Infection appears earlier in life in urban than in rural areas, a phenomenon not characteristic of infections spread through the gastrointestinal tract or by insects. The evolution of an outbreak is also typical according to the respiratory pattern, cases spreading outward in concentric circles

from various foci of infection. Where the disease appears first it ends first, where it begins late it ends late.

Against the respiratory hypothesis is the frequently raised argument of seasonal occurrence, an argument based on the erroneous concept that there is a characteristic winter peak of other respiratory infections. In reality diphtheria usually reaches its peak in November, the month which is most commonly the month of minimum incidence of whooping cough, while chickenpox reaches its peak in December or January, scarlet fever in March and measles in May. There is thus no standard respiratory pattern. On the contrary the peak of poliomyelitis more closely approximates that of diphtheria than does measles.

A second hypothesis which has attracted much attention during recent years is that of spread through the alimentary tract, an hypothesis of considerable antiquity, but most recently re-advanced and championed by Trask and Paul. These investigators demonstrated that the virus can be found very readily and in large quantity in the feces of all types of cases and of familial contacts and that it can be isolated from sewage. Furthermore isolation from the stool is accomplished more readily than from the respiratory tract and the virus can be shown to persist in the intestinal tract for several months after recovery. The similarity in seasonal curves of poliomyelitis and typhoid has been advanced as further evidence of intestinal spread.

Against this hypothesis is the fact that no outbreak of poliomyelitis consistent with the idea of spread through water has ever been reported, for the disease occurs and spreads without reference to distribution of water supplies. Food-borne infections are likewise highly problematical. The hypothesis would explain a few isolated and very minor outbreaks but could never explain the radial spread of infection from the initial foci or the well recognized migration of the disease from one part of the country to another in successive years. The presence of tubercle bacilli or of pneumococci in the stool certainly does not indicate intestinal spread of those infections.

A third hypothesis is that of insect-spread. It is true that on two or three occasions virus has been recovered from flies having access to sewage from which virus could likewise be isolated, an observation of considerable interest but hardly adequate to warrant the assumption that flies are the chief vector and that their destruction through DDT spraying will stop an outbreak. The summer incidence of poliomyelitis has been advanced in further support of insect-spread, as has also the mistaken idea that outbreaks cease abruptly with the advent of frost. This latter idea is without support, for the curve of the outbreak is not altered in the least by frost or other abrupt seasonal changes. On the contrary it may frequently rise after frost, if the outbreak has begun late in the season. The Melbourne, Australia, outbreak of 1937 began shortly after the most severe series of frosts in the history of that area. Winter outbreaks are far from rare.

It is apparent from the above that strong and compelling arguments can be raised against the hypothesis of spread by insects or the alimentary tract as mechanisms which explain the general occurrence of poliomyelitis. No one would deny that an occasional case might be so transmitted, but the hypothesis of respiratory-spread remains the only one consistent with the known facts and adequate to account for the general spread of infection throughout the community as a whole.

So long as we thought of poliomyelitis only in terms of paralytic cases, the respiratory hypothesis was grossly inadequate. Today, however, we recognize that infection with the poliomyelitis virus is probably as common as measles, but that only a few persons respond with paralytic manifestations. The rest of us appear to acquire resistance from this infection, which is usually so mild as to cause no symptoms and therefore such cases escape recognition. It is not improbable that the mystery of poliomyelitis may be found not in the study of mechanisms of spread but of those individual physiological factors that determine the human response to the virus. Why is it that a few persons respond with neurologic involvement and paralysis while for most of us infection with the virus is a minor affair that immunizes without sickening?

GAYLORD ANDERSON, M.D.,  
University of Minnesota

## News Items

The 68th annual meeting of the Montana State Medical Association was held July 18-20 at Great Falls, Montana. Dr. M. A. Shillington of Glendive was elected president, and Dr. L. W. Allard of Billings, president-elect. Dr. C. H. Frederickson of Missoula was named vice-president, and Dr. H. T. Caraway of Billings, secretary. Delegate to the A.M.A. convention is Dr. R. T. Peterson of Butte, with Dr. Thomas Hawkins of Helena first alternate.

Guest speakers at the scientific session were Dr. John A. Anderson, Salt Lake City, professor and head of the department of pediatrics, University of Utah, "Herpetic Infections in Infants and Children" and "Quantitative Aspects of Fluid Therapy in Infants and Children"; Dr. Charles E. McLennan, Salt Lake City, professor and head of the department of obstetrics and gynecology, University of Utah school of medicine, "Gynecologic Bleeding" and "Pregnancy in Diabetes"; Dr. O. Theron Clagett, assistant professor of surgery, University of Minnesota, and head of section, division of surgery, Mayo Clinic, Rochester, "Surgery of the Stomach" and "Surgery of the Aged"; Dr. Emil Goetsch, New York City, professor of surgery, Long Island College of Medicine, "Surgery of the Thyroid"; Dr. Byron E. Hall, assistant professor of medicine, University of Minnesota, and department of medicine, Mayo Clinic, Rochester, "Effect of Folic Acid on the Macrocytic Anemias" and "Radioactive Phosphorous Therapy"; Dr. Kenneth Swan, Portland, Oregon, professor and head of the department of ophthalmology, University of Oregon medical school, "Eye Emergencies"; Dr. Walter S. Priest, Chicago, associate in medicine, Northwestern University school of medicine, and Dr. Eugene Hildebrand, Great Falls, Montana, formerly pathologist at Passavant Memorial Hospital, Chicago, "Antibiotic Therapy of Sub-acute Bacterial Endocarditis with Autopsy Findings in Ten Cases."

The Montana Academy of Oto-Ophthalmology held the 47th semi-annual meeting in Great Falls in conjunction with the Montana State Medical Association July 17-18. Dr. Kenneth Swan, Professor of Ophthalmology of the University of Oregon Medical School, presented two papers with illustrated slides in color "Tumors of the Eye and Adnexa" and "Infections of the Eye." Dr. Robert Movius of Billings and Dr. F. H. Burton of Butte were elected to active membership. The next meeting of the Academy will be held in Lewistown, February 22-23, 1947.

Dr. William C. Bernstein has reopened offices at 934 Lowry Medical Arts building, St. Paul, Minnesota, for the practice of proctology. Dr. Bernstein has recently returned from the armed services where he was a major in the army medical corps, and was the proctologist at the Oak Ridge hospital, Oak Ridge, Tennessee, which served the personnel of the atomic bomb project. Dr. Bernstein will also resume his clinical work at the University of Minnesota hospital.

Dr. Ruth E. Taylor has resigned as Director of the

Health Service, University of Chicago, Illinois. Dr. Clayton Loosli has been appointed to replace her.

The annual convention of the National Association of Coroners will be held in Minneapolis, Minnesota, September 26-27-28, 1946, at the Nicollet Hotel. Dr. Russell R. Heim of Minneapolis is chairman. Speakers from many states will participate in the scientific program. There will also be a series of round table discussions to be held at the luncheons.

Dr. A. V. Stoesser, Minneapolis General Hospital, Minnesota, was appointed representative to the Scientific Exhibit from the section on Pediatrics for the 1947 session at the recent meeting of the American Medical Association in San Francisco. He was also elected chairman of the Committee of Press Releases and to the editorial board of the "Annals of Allergy" at the meeting of the American College of Allergists in San Francisco which preceded that of the A.M.A.

## Deaths

Dr. Frank H. Alexander, 78, St. Paul, Minnesota, died August 3. He was a member of the Ramsey County Medical Society and the Minnesota State Medical Association. He is survived by a daughter.

Dr. Arnold L. Hamel, 58, a Minneapolis physician for 32 years, died July 31. He was on the staff of St. Mary's hospital, and was a member of the Hennepin County Medical Society, Minnesota State Medical Association, and the American Medical Association. Surviving are his wife, five daughters and five sons.

Dr. Frederick B. Strauss, 67, pioneer physician in Bismarck, North Dakota, died July 26. He was first secretary of the sixth district unit of the North Dakota State Medical association and past president of the same organization. Surviving are his wife, two sons, and a daughter.

Dr. Hans Haugen, 70, who practiced in Fargo, North Dakota, since 1918, died July 11. He was born in Norway in 1875. He left there at the age of 16 to live in Abercrombie, North Dakota. He attended Fargo College and was a graduate of Northwestern University medical school, 1906. He is survived by his wife, two sons, and a daughter.

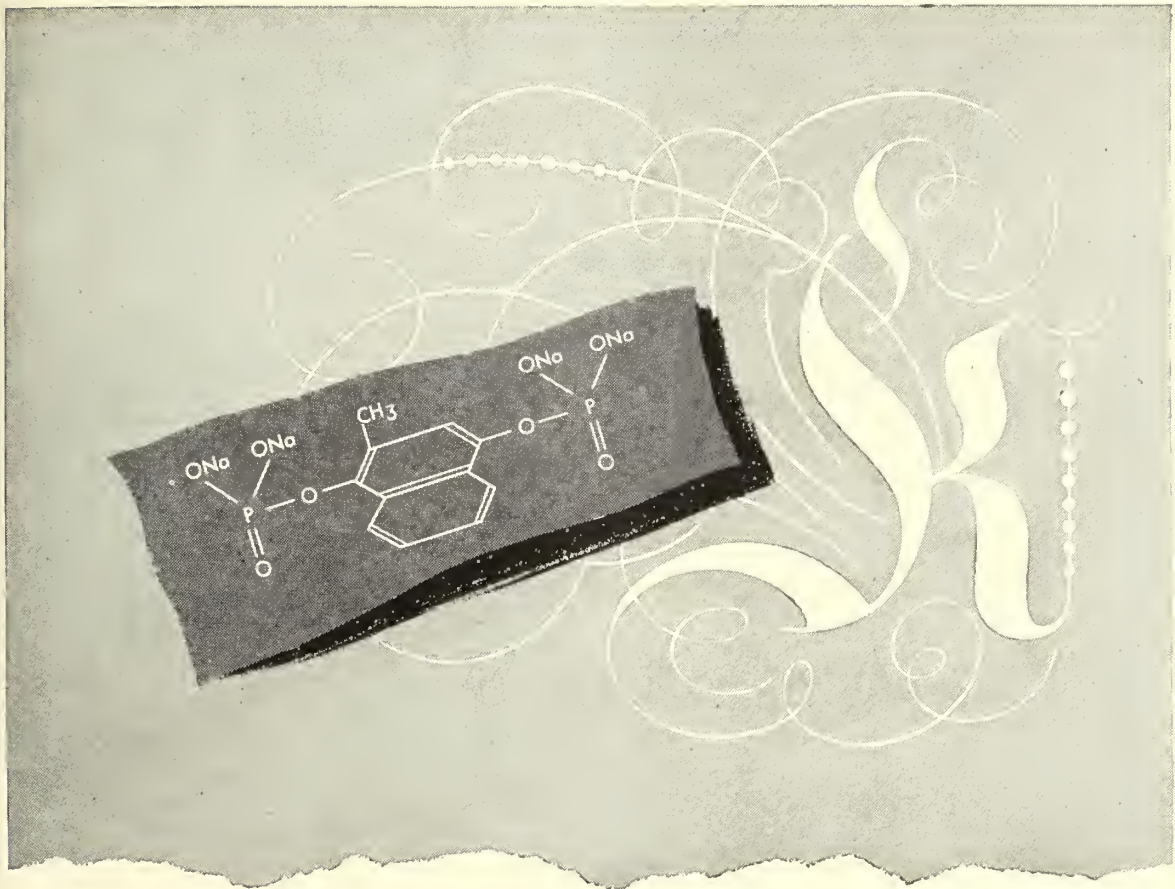
Dr. J. E. Shull, 77, physician in Alpena, South Dakota, since 1901, died July 12. He is survived by his wife and one sister.

Dr. Nels A. Gunderson, 50, who practiced surgery in Minneapolis, Minnesota, for 26 years, died July 17. He was a member of the A.M.A., Hennepin County Medical Association, and was at one time chief of staff of Swedish hospital. He is survived by his wife, three sons, and a sister.

Dr. Joseph M. Hall, 58, practicing physician in Minneapolis for 32 years, died July 19. Surviving are his wife, his mother and one son.

Dr. G. W. Glaspell, 81, Grafton, North Dakota, died June 27, after 58 years as practicing physician in that community. He is survived by his wife, a daughter, and a son.





## WHEN VITAMIN K IS NEEDED...

**S**ynkayvite\* 'Roche' is the choice of many physicians because of its distinctive clinical advantages. Synkayvite is water-soluble, stable and—molecule for molecule—has "an antihemorrhagic activity even greater than that of fat soluble menadione" (J. G. Allen, *Am. J. M. Sc.*, 205:97, 1943). It may be taken orally without the use of nauseous bile salts or administered parenterally. Synkayvite is available in oral tablets, 5 mg each, and 1-cc ampuls, 5 mg and 10 mg each.

HOFFMANN-LA ROCHE, INC., Nutley 10, New Jersey

\* 2-methyl-1, 4-naphthohydroquinone  
diphosphoric acid ester tetrosodium salt

# SYNKAYVITE 'ROCHE'

## Classified Advertisements

### PHYSICIAN WANTED

Wanted: physician to join the medical staff of the North Dakota State Hospital. If interested correspond with Superintendent, North Dakota State Hospital, Jamestown, North Dakota.

### TECHNICIAN WANTED

Female technician who can do laboratory and x-ray work, in medical firm situated in lake region of Minnesota. Good salary from the start. Address Box 846, care of this office.

### ATTENTION DOCTORS—DENTISTS

Available modern offices equipped with gas and compressed air in well established medical center on West Broadway, Minneapolis, Minnesota, serving a large residential community. Address Box 761A, care of this office.

### GENERAL PRACTICE FOR SALE

Montana, midway between Yellowstone and Glacier National Parks. Gross \$35,000. Fully equipped office. Excellent hospital facilities. Fine home, 4 bedrooms, oil heat, garage. Immediately available. Write for particulars. John J. Elliott, M.D., Lewistown, Montana.

### ASSISTANT WANTED

Wanted by well established surgeon in suburb of Twin Cities, an assistant interested in general practice and internal medicine. Excellent opportunity for an adaptable individual. Address Box 843, care of this office.

### ASSISTANCE AVAILABLE

Aznoe's, established in 1896, has available a number of well trained physicians (diplomates of the specialty boards, industrial physicians and surgeons, general practitioners, psychiatrists, tuberculosis specialists and residents). For histories, write Ann Woodward, Aznoe's-Woodward Medical Personnel Bureau, 30 North Michigan Ave., Chicago 2, Ill.

### SOUTH DAKOTA PHEASANT GUIDE

The original South Dakota pheasant guide, prepared especially to help out-state hunters plan their trips to South Dakota's famed hunting grounds and advertised elsewhere in this issue, offers an extra service this year by securing licenses for hunters in advance of the season, unofficially scheduled to open October 15. Each guide book contains a license application form, in addition to giving full information on hunting conditions, hotels, travel facilities, gunsmiths, locker plants, laws and regulations, plus a fund of facts gotten up by experts, on guns, ammunition, dogs, preservation of birds and preparation for the dining table. The guide is endorsed by South Dakota game commissioner Peterson. Extra license applications and reservations for the guide may be made by writing to Madison, S. D.

## Philcapco's DIAVETANS

|                      |        |
|----------------------|--------|
| Powdered Jambul Seed | 3 grs. |
| Sodium Arsenite      | 1/20   |
| Ext. Gentian         | 1/2    |
| Strychnine Arsenite  | 1/100  |
| Lithium Benz         | 1/3    |
| Quassin              | 1/67   |

A useful combination; restores vitality, stimulates the hepatic function and corrects the acidity of the urine. Suggested in glycosuria of tropic origin, in diabetes accompanied by albuminuria.

Samples and literature on request

A product of

PHILADELPHIA CAPSULE CO., INC.  
Philadelphia, Penna.



## Season of Storm

CAUGHT in the storm center of the menopause—bewildered by vasomotor disturbances, mental depression, pain and tension—many patients may be restored to comparative tranquillity by well timed estrogenic therapy.

When you base your treatment on an estrogenic product of unquestioned purity and potency, you can feel certain you have given your patient the best assistance possible through medication.

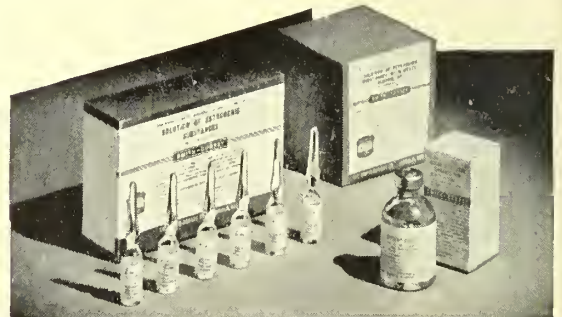
Physicians using Solution of Estrogenic Substances, Smith-Dorsey, may rest upon that certainty . . . for Smith-Dorsey's product is manufactured under rigidly regulated conditions . . . to meet the highest standards of the industry.

A reliable product . . . judiciously administered . . . receding menstrual "storm" symptoms.

SOLUTION OF  
*Estrogenic Substances*

**SMITH-DORSEY**

Supplied in 1 cc. ampuls and 10 cc. ampul vials representing potencies of 5,000, 10,000 and 20,000 international units per cc.



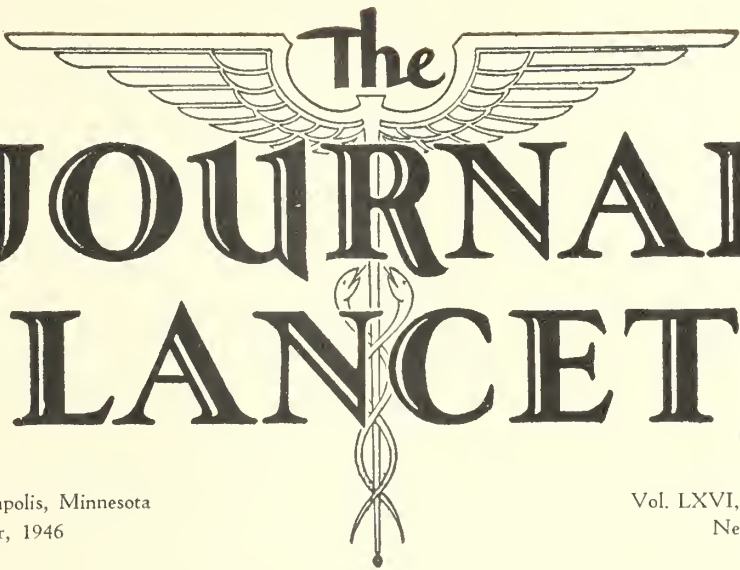
## THE SMITH-DORSEY COMPANY

LINCOLN, NEBRASKA • DALLAS • LOS ANGELES

Manufacturers of Pharmaceuticals to the Medical Profession Since 1908



# The JOURNAL LANCET



Minneapolis, Minnesota  
October, 1946

Vol. LXVI, No. 10  
New Series

## Diet and the Liver

Harry O. Drew, M.D.  
Billings, Montana

**T**HE LIVER finally seems to be assuming the important role in the physiology of the body which its size warrants. For many centuries, the main liver function was believed to be the formation and secretion of bile. Eventually, Claude Bernard called attention to its ability to store carbohydrates as glycogen and the release of this glycogen as glucose.

During the last twenty-five years, the intense studies which were made relative to food chemistry have brought out the significance of the liver in metabolism, and have revealed the following more or less interlocking functions of the liver:

1. Bile formation.
2. Formation and destruction of red blood cells (with its relationship to jaundice).
3. Protein metabolism.
4. Fat metabolism.
5. Carbohydrate metabolism.
6. Antitoxic and protective functions.
7. Blood coagulation and vitamin K relativity.
8. Formation of fibrinogen.

As the oldest known, and most spectacular of these functions, bile formation should be considered first. Bile is composed of bile pigments, bile salts, cholesterol, lecithin and mucin. The bile pigment, bilirubin, is formed from hemoglobin from destroyed red blood cells by the reticulo-endothelial cells. It is excreted by the liver cells into the bile capillaries. Biliverdin is formed in the bile capillaries by oxidation of bilirubin. The bile salts, sodium taurocholate and sodium glycocholate, are salts of cholalic acid which is closely related to cholesterol and ergosterol. The taurocholates are derived from taurine

and cholalic acid. Taurine is probably derived from cystine as it contains sulphur. The glycocholates are derived from cholalic acid and the amino-acid glycine.<sup>1</sup>

Cholesterol, which is found in nearly all body tissues, varies in amount in the bile directly in proportion to that found in the blood.<sup>1</sup> Some tissues have rather large amounts present. These are the suprarenal glands, the ovaries, and the brain. While it is ingested in foods, especially egg-yolk, butter and other fats, and pork, there is reason to think that some is formed in the body. This is proven by the fact that on some diets the output of cholesterol is greater than the intake. In some diseases the blood-cholesterol greatly increases. There is no direct evidence that the cholesterol is formed by the liver. It may be a secretion from the blood.<sup>1</sup> Cholesterol is so closely related chemically to the androgens, the estrogens, and the cortico-adrenal hormone that it may be the "mother substance" from which they are derived.<sup>2</sup> The mucin found in bile seems to be a secretion from the epithelium of the gallbladder.

Bile secretion is dependent on food intake to a great extent because during fasting the secretion is reduced to a minimum. High protein feeding raises the bile salt excretion to a maximum. The bile salts are largely reabsorbed by the intestine. This is also true of the cholesterol content of the bile. Bile function in the intestinal tract seems to be to aid in the emulsification of fat and to facilitate the actions of the pancreatic enzymes.

Fat metabolism and liver function have interesting relationships. The liver desaturates fatty acids and forms phospholipines by combining them with phosphoric acid and nitrogenous bases. The phospholipines are then sent to the tissues where they are utilized. The amount of fat present in the liver is usually about 3 per cent. This

Read before the Billings Clinical Association, April 19, 1946, Billings, Montana.

varies, however, dependent on diet or disease.<sup>1</sup> A high fat diet will produce an increase in liver fat as will a high carbohydrate diet. Paradoxically, fasting will produce a temporary increase in liver fat.<sup>3</sup> Pyridoxine and biotin or vitamin H and some of the synthetic estrogens have been blamed for fatty infiltration of the liver. Prolonged fatty infiltration of the liver is blamed by some investigators for the development of cirrhosis.<sup>3</sup>

The storage of carbohydrate in the liver is one of the best known of the liver functions. It occurs in the liver as glycogen or "animal starch" with a formula of  $C_6H_{10}O_5$ . It is readily converted into glucose ( $C_6H_{12}O_6$ ) and serves as a reservoir for blood sugar and a quick source of energy. The source of liver, as well as muscle, glycogen is the sugars and starches from food and the non-nitrogenous residue from protein digestion. Fat does not seem to be a source of glycogen. When glucose supplies are inadequate, the complete combustion of fats to carbon dioxide and water does not take place, and the "ketone bodies"  $\beta$ -oxybutyric acid and aceto-acetic acid are formed.<sup>1</sup> Carbohydrates therefore are antiketogenic and act as an aid in completing fat combustion. The glycerine of fat and the carbohydrate from protein digestion serve in a similar manner. As we shall see later, an important function of carbohydrates is to spare the use of proteins for more important uses.

When we consider the problem of protein metabolism and the role the liver plays in this complicated subject, we find that all of the liver functions are interlocked with it. Some of these are the antitoxic and protective actions through the formation of the globulins, the role it plays in blood coagulation by the formation of prothrombin and fibrinogen, the probable formation of hemoglobin and the maintaining of normal proteinemia.

The products of protein digestion reach the liver by the portal vein as amino-acids. These are substances which are essentially organic acids with an amino group attached. Many years ago, Emil Fischer was able to combine a number of these amino-acids into compounds with all of the properties of polypeptids. This is unquestionably the manner in which the liver synthesizes the body proteins. Some of the amino-acids pass directly into the general circulation and are utilized by tissue cells to build up the substance worn down by their activity.<sup>1</sup> Other amino-acids are de-aminized and the ammonia is converted into urea by the liver cells. All urea is formed in the liver and excreted by the kidneys, and the amount found in the urine is an indication of the amount of nitrogenous matter ingested as food. Normally, there is a distinct balance between the amount of nitrogenous matter ingested and the amount lost by excretion. The de-aminized residue of the amino-acids is utilized by the liver as carbohydrates. Others of the amino-acids are synthesized by the liver into proteins which are essential to body metabolism.

Among the proteins synthesized by the liver are the so-called plasma proteins. These consist of at least six proteins—two albumens, three globulins, fibrinogen (a globulin possessing distinctive chemical and physical characteristics), and prothrombin. Much evidence has been accumulated concerning the formation of plasma pro-

teins in dogs by means of an Eck fistula. This is done by anastomosing the portal vein with the inferior vena cava. This, of course, cuts off the supply of blood to the liver from the intestines and the plasma proteins are rapidly depleted. Another method for the study of plasma protein formation in the dog is plasmapheresis which consists in exsanguination of the dog and the re-injection of the washed red blood cells. By feeding these dogs various types of proteins and mixtures of amino-acids, and estimating the amounts of plasma proteins as they appear in the blood, much valuable information has been gained.

While about forty amino-acids have been identified, but twenty-two of them have been found to be nutritionally important. These have been divided into the essential and the non-essential amino-acids. Rose<sup>5</sup> gives the following list of the nutritionally important amino-acids:

| <i>Essential:</i> | <i>Non-essential:</i> |
|-------------------|-----------------------|
| Arginine          | Alanine               |
| Histidine         | Aspartic acid         |
| Isoleucine        | Citrulline            |
| Leucine           | Cystine               |
| Lysine            | Glutamic acid         |
| Methionine        | Hydroxyglutamic acid  |
| Phenylalanine     | Hydroxyproline        |
| Threonine         | Norleucine            |
| Tryptophan        | Proline               |
| Valine            | Serine                |
|                   | Tyrosine              |

The criterion for this classification is the ability of the body to synthesize certain of these substances. If an amino-acid cannot be synthesized by the body, it is called essential because it must be supplied from food. Its absence from the diet will interfere with some essential body function such as growth or a positive nitrogen balance. W. C. Rose made the original studies on rats but others found that the same amino-acids were essential to dogs for continued growth and good health. These essential amino-acids have been found to meet human requirements. Protein foods are valuable in proportion to the number of the essential amino-acids they contain. Those of animal origin are of more value because they are "complete" or contain all of the ten essential amino-acids. All of the essential amino-acids can be obtained from a mixed vegetable diet but no one vegetable seems to contain all of them.

Not only are the body proteins synthesized from the amino-acids, but the hormones and enzymes are also of protein origin. As an example, the thyroid hormone, thyroxin, is derived from diiodotyrosine which in turn is derived from tyrosine. The analysis of crystalline insulin shows that the molecule is composed of 88 per cent of amino-acids. There is also the question of the vitamins which seem to act as bio-catalytic agents in the formation of both proteins and enzymes. Some of these problems are slowly being solved. The fundamental problems of the specific functions of each of the essential amino-acids must first be solved.

One of the important functions of the liver is to detoxify certain poisons. It has long been known that chloroform anesthesia is followed by necrosis of liver cells and that death can follow if this destruction is great enough. Miller and Whipple<sup>6</sup> found that dogs



withstood chloroform anesthesia in proportion to the proteinemia present. They showed that as protein stores were depleted by a low protein diet, or by plasmapheresis, the dogs were able to withstand less and less of the anesthetic. A normal well-fed dog can stand one hour of chloroform anesthesia without showing any ill effects, but a protein depleted dog will die in two or three days following only twenty minutes of anesthetic. Protein depleted dogs which were fed a protein meal but a few hours before anesthesia were protected from liver damage. Messenger and Hawkins<sup>7</sup> investigated the question of the effect of diet and arsphenamine liver damage in dogs. They found that dogs could withstand large doses of the arsenical without liver damage if the protein stores were high.

Miller, Ross, and Whipple<sup>6</sup> showed quite conclusively that methionine and cystine were the specific amino-acids that protected the liver against chloroform damage. This was proven by giving a variety of combinations of the various amino-acids to hypo-proteinemic dogs and subjecting them to varying periods of chloroform anesthesia. Their conclusions were: (1) Methionine and, to a less extent, cystine given by mouth or vein twenty-four to five hours before anesthesia, give a remarkable and almost complete protection to the protein-depleted dog against chloroform poisoning. (2) Other non-sulphur-containing amino-acids alone, or in various combinations as tested, convey no protection against chloroform poisoning in similar experiments. (3) The protein-depleted dog will succumb to fifteen to twenty minutes light chloroform anesthesia and show extensive liver necrosis. The dog protected by methionine will tolerate forty minutes chloroform anesthesia with little or no clinical disturbance and no evidence of liver injury.

They<sup>6</sup> suggest that the sulphhydryl groups combine with chloroform. This combination may inactivate enzyme systems and thus bring about cell death unless there is an adequate reserve of cystine and methionine.

Here is definite evidence of the specificity of certain of the amino-acids and liver functions. It also brings up the interesting relationship of sulphur and its importance to various functions of the body. When we consider the sulphur compounds which have become so important in therapeutics in the last few years, such as the thiocyanates, thiouracil, and sulfonamides, it would seem that we know very little of the part played by the various body minerals in metabolism. According to Eddy,<sup>8</sup> the manner in which methionine protects the animal against liver damage is not clear but there is evidence to support the belief that its value depends primarily on the sulphur content of the amino-acids.

The antitoxic function of the liver seems to depend on, or be greatly enhanced by, methionine and, to a lesser extent, by cystine. This has been made use of clinically and there are a number of reports in the last year where the specificity of methionine seems to have been proven. Eddy reports a number of cases of both TNT and carbon tetra-chloride poisoning with toxic hepatitis which recovered by treatment with methionine. He also reports a few cases of infectious hepatitis which seemed to recover quickly. He gave doses of 6 to 8 grams daily and

reported no toxic reactions. A report by Wilson, Pollack and Harris<sup>9</sup> on a group of British soldiers with infectious hepatitis did not show this improvement. They did not, however, use as large doses. Hoagland et al.<sup>10</sup> report 200 cases of infectious hepatitis which were divided into groups, some being treated with methionine, some with choline hydrochloride, some with liver extract, and some as controls. They could see little difference between these groups but they were all on a high protein diet. Beams<sup>11</sup> has recently reported a series of cases of cirrhosis treated by choline and cystine with a high protein diet and Brewers yeast. He seems to think that the fatty changes in the liver were favorably effected. The above cited work has shown the specificity of but two of the essential amino-acids. The other essential amino-acids have not yet been worked out.

When we consider that plasma proteins are synthesized in the liver, it is well to look at some of the problems involved when their balance is upset by disturbances of liver function. Water balance is maintained between tissue cells and the circulating blood by osmosis. The colloid osmotic pressure exerted by the plasma proteins is the principal intravascular factor for maintaining the blood volume. If hypoproteinemia is present, this colloid osmotic pressure is reduced by an escape of fluid through the capillary walls and a reduction in blood volume. This condition in itself can cause a reduction in blood pressure, an increased load on the heart, and can contribute to anoxia. Reduction in globulin, especially in the Gamma fraction, can materially effect the patient's ability to withstand infection.<sup>12</sup> Reduction in the fibrinogen and the prothrombin can profoundly affect the clotting power of the blood. Reduction of the albumens and the other protein constituents in the plasma can affect all tissues in the body.

The causes of hypoproteinemia may be divided into three classes: pre-hepatic, hepatic, and post-hepatic. The latter two are directly related to hepatic function. The pre-hepatic cause of protein deficiencies is due to inadequate supplies of amino-acids reaching the liver. This may be due to many factors. Among them might be mentioned excessive vomiting, diarrhea, anorexia from any cause, indigestion (the patient is afraid to eat because of pain, as in gastric and duodenal ulcers), and carcinoma of the gastro-intestinal tract. Also, elimination diets in some allergic conditions and poorly balanced diabetic diets may be a cause. A high metabolic rate from thyrotoxicosis or fever may produce hypoproteinemia because of an increased need for carbohydrates which may be supplied by the de-amination of amino-acids otherwise used to synthesize proteins. Probably the most common cause of hypoproteinemia is inadequate intake.

The direct hepatic causes of hypoproteinemia are related to impaired liver function. This may be the result of toxins lowering the functional capacity of the liver cells, from exhaustion of the liver cells from an increased demand for protein synthesis, or from disease of the liver itself which causes destruction of the liver cells. The liver has enormous powers to regenerate new tissue and in the presence of adequate supplies of amino-acids it

has been shown that the functional capacity of the liver can be materially increased.<sup>16</sup> A low protein diet will produce liver damage which can materially interfere with liver function.<sup>13</sup> Here we have a vicious cycle in which liver function is retarded by low intake and the resulting hypoproteinemia results in further liver damage.

The post-hepatic causes of hypoproteinemia are due to excessive losses of nitrogenous materials which may result from repeated hemorrhages, drainage from large abscesses, seepage from burned areas or any other source of loss of plasma proteins. Some forms of nephritis can be the cause of excessive loss of albumen. Trauma may cause hypoproteinemia by increasing endothelial permeability and tissue protein breakdown.<sup>14</sup> Surgical procedures of all types, as well as general anesthesia, have a measurable effect on the plasma proteins. Trauma and hemorrhage incident to major surgical operations can cause sufficient loss of plasma proteins to jeopardize the life of a patient already hypoproteinemic.<sup>15</sup>

Since hypoproteinemia is so intimately connected with liver function as well as with food intake, let us consider some of the diagnostic measures which can give us some information about it. Clinically, the patient may show signs of malnutrition and weight loss. Many laboratory tests have been developed to estimate various phases of liver function, but few of these have proven exact and then only for some one phase. The estimation of the plasma proteins is reliable as to the amount of protein present and may be used as direct evidence of the degree to which the liver is able to synthesize protein. Dehydration of the patient with a consequent concentration of all blood elements can give quite normal findings in the presence of hypoproteinemia and should be taken into account. Normal plasma proteins average about 7 grams per 100 cc.<sup>16</sup> As this figure approaches 5, nutritional edema may ensue because of the reduction in intravascular osmotic pressure.<sup>15</sup> Another valuable test to determine liver function indirectly is bleeding time, which gives an estimate of the prothrombin present. If this is altered, it probably means a lowering of all plasma proteins.<sup>17</sup> It has been advocated that an accurate estimation of liver function can be found by measuring the prothrombin response to vitamin K.<sup>18</sup> This has been found to be quite accurate. The clinical estimation of the patient's state of nutrition can be an extremely useful guide as to the presence or absence of hypoproteinemia. One that is losing weight, or has recently lost weight, from whatever cause, should be suspected of having low plasma proteins and probably will prove to be a poor surgical risk.

When hypoproteinemia is present, the obvious remedy is to administer an adequate supply of amino-acids both to restore as much liver function as possible and to cut down the destruction of tissue proteins. Obviously, saline solution intravenously, with or without glucose, can be of little help. The use of normal salt solution in a patient with low intravascular osmotic pressure may hasten edema. The use of glucose is more rational as it supplies an immediate source of energy and spares the liver from having to deaminate protein substances to obtain glycogen. However, from both experimental and clinical evi-

dence, amino-acids are needed to protect the liver from damage and to give it material with which to synthesize proteins for both plasma and tissues. Varco,<sup>15</sup> in a recent comprehensive article on diet, severely condemns the giving of glucose with the idea of protecting the liver.

Hypoproteinemia can be corrected, whether it is due to impaired liver function or inadequate intake of proteins. A high protein diet may be very successful if alimentation is reasonably normal. A variety of proteins should be given to assure getting all of the essential amino-acids. Varco has developed liquid diets composed of high protein, high carbohydrate, and low fat which make it possible to give 6,000 to 7,000 calories per day for two weeks without disturbances. He depends on skim milk powder to maintain a high protein content. Such a diet contains all of the essential amino-acids and minerals necessary and, with the addition of some vitamins, seems to be complete. If alimentation is impossible, or in an emergency, the transfusion of blood or plasma may be used. However, the effect is transient and has to be repeated often, and means a prohibitive cost to the patient. Recently, protein digests have been developed containing all of the essential amino-acids in solution which can be safely used intravenously if necessary.<sup>19</sup> These solutions seem to be as safe to use as blood transfusions, as far as reactions are concerned. Their application, based on both experimental and clinical evidence, seems to be rational if we wish to restore liver function as much as possible and build up the tissue proteins from the natural constituents.

#### SUMMARY

I have tried to show the intimate connection between the functions of the liver and the diet as far as the patient's wellbeing is concerned. As for reasoning from the surgical standpoint, this modern method seems to make sense. It has been interesting to watch the various phases of surgical preparation of the patient which have been used the last twenty-five years. We were then just emerging from the era in which the patient was starved and purged for two or three days before some planned surgical procedure. Purging was at that time being frowned on by some, but starvation was still considered good practice. Then the "saline and glucose intravenously" enthusiasts had their day. This gradually led to the use of blood transfusions for everything. We are now slowly accepting the idea that food is essential, protein food especially, to give the liver a chance to best utilize its many functions.<sup>20</sup>

#### REFERENCES

1. Wright, P.: *Applied Physiology*, 482. 1935.
2. Drew, H. O.: *Sex Hormones and Their Relationships*. *Journ. Lancet*, LXIV: 35, 1944.
3. Greene, C. H.: *Liver and Biliary Tract*. *Arch. Int. Med.*, 69: 691 (April), 1942.
4. *Proteins and Amino-Acids*. Arlington Chemical Co. 1944.
5. *Protein Nutrition in Health and Disease*. Council on Foods and Nutrition, A.M.A. 1945.
6. Miller, L. L., and Whipple, G. H.: *Chloroform Liver Injury Increases as Protein Stores Decrease*. *Am. J. Med. Sc.*, 199: 204, 1940.
7. Messinger, W. J., and Hawkins, W. B.: *Arsphenamine*



Liver Injury Modified by Diet. *Am. J. Med. Sc.*, 199: 216, 1940.

8. Eddy, J. H.: Methionine in Treatment Toxic Hepatitis. *Am. J. Med. Sc.*, 210: 216, 1940.

9. Therapeutic Trial of Methionine in Infectious Hepatitis. *Br. Med. J.*, 1: 139 (March), 1945.

10. Hoagland, C. L., and Shank, R. E.: Infectious Hepatitis. *J.A.M.A.*, 130: 615 (March 9), 1946.

11. Beams, A. J.: Cirrhosis of Liver. *J.A.M.A.*, 130: 190 (Jan. 26), 1946.

12. Blood Fractionation; Symposium. *Int. Med. Digest*, 45: 181 (Sept.), 1944.

13. Handler, P., and Dubin, I. N.: The Significance of Fatty Infiltration in Development of Hepatic Cirrhosis Due to Choline Deficiency. *Jour. Nutrition*, 31: 141, 1946.

14. Abbott, W. E., Hirshfield, J. W., et al.: Metabolic Al-

terations Following Thermal Burns. *Surg., Gyn. & Obstet.*, 81: 25, 1945.

15. Varco, R. L.: Preoperative Dietary Management for Surgical Patients. *Surgery*, 19: 303 (March), 1946.

16. Gottardo, P., and Winters, W. L.: Portal Cirrhosis. *Am. J. Med. Sc.*, 204: 205 (Aug.), 1942.

17. Sweet, N. J., Lucia, S. P., and Aggeler, P. M.: Clinicopathological Correlation Between Hepatic Damage and the Plasma Prothrombin Concentration. *Am. J. Med. Sc.*, 203: 665, 1942.

18. Vitamin K and Liver Function. (Edit.) *Int. Med. Digest*, 40: 251 (April), 1942.

19. Davis, H. H.: Routine Use of Protein Digest Intravenously Following Major Surgical Procedures. *Surg., Gyn. & Obstet.*, 81: 31, 1945.

20. Diet and Liver Injury. (Edit.) *Lancet* (London), p. 274, (Feb. 23), 1946.

## Anesthesia in General Practice

Ralph T. Knight, B.A., M.D., F.A.C.S.\*

Minneapolis, Minnesota

THERE can be two interpretations of the subject of anesthesia in general practice, both of which I shall endeavor to touch upon. The first might be restated in this way: "Anesthesia as a Part of General Practice." A general practitioner may be a skilled obstetrician, and skilled in the diagnosis and treatment of the pneumonias, the blood discrasias and diabetes, and many surgical conditions. Why may he not be a skillful anesthetist? The fact is that he may, in many communities he is. In these communities he has largely solved the anesthesia problem by providing good anesthesia for his own and his colleagues' patients. He should be given every encouragement in participating in this worth-while activity. Perhaps in most communities the general practitioner has shunned anesthesia on three counts: He considers it a nurse's job; he considers it a nuisance; or he considers himself unqualified. This is everybody's fault, and must be corrected.

The general practitioner is needed in anesthesia. He himself has been so busy that he has depended upon the nurse, with or without training, to give whatever anesthetic she could. Nurses with anesthesia training are now practically unavailable for smaller hospitals. The large hospitals are now unable to get as many nurse anesthetists as they want. Great advances have been made in the quality of anesthesia. In many centers the operative morbidity and mortality, and surgical recovery have been improved beyond dreams of a few years ago, largely by new and better anesthesia. To spread this into all communities will require the active interest and participation of hundreds and thousands of doctors. Many new medical graduates will decide to enter anesthesiology as a specialty, and many more will make it an integral part of their general practice.

As to considering it a nuisance, this has two phases, economic and professional. Anesthesia may be done as a dull routine which arouses little interest or skill. Due

to underestimation, and routine assignment of the job to an unskilled helper, the doctor usually classifies anesthesia as an underpaid chore. However, when doctors are fully aware of the value to their patients of well conducted anesthesia, when they provide it for them, and explain its value, people pay equitably for it as for other medical services and the economic part of the nuisance does not exist.

As to the qualification of the general practitioner for conducting anesthesia, the rapid change, advancement and apparent complexity of anesthesia in the last ten and more years as it has been developed in university hospitals, and the crowding of time by other enlarging subjects, has made it seem impossible to give medical students and interns any real practical experience in anesthesia. At the University of Minnesota we are greatly expanding our numbers of graduate students in anesthesiology fellowships who are preparing for certification by the American Board. Within a few months, when the entire service is covered by these graduate students and they have gained experience, we will be able to assign medical students and interns to them to participate in the administration of anesthetics. More than that, we hope also to be able to accept practitioners for periods of three months or longer so that they can become acquainted with all of the present procedures in anesthesiology. We shall continue to offer continuation courses of a week duration. These have drawn an attendance of about fifty and will continue to increase. Thus, new medical graduates will have more interest and knowledge in anesthesia, and general practitioners will have the opportunity to become proficient in the field.

The second interpretation of this subject may be restated in this way: "Anesthesia for the Needs of General Practice." How shall a man manage the anesthesia for his surgery in general practice? If he has a colleague nearby who is interested and skilled, and who has enough special equipment for a few efficient variations in anesthesia, the problem is solved. The patient in such a community is fortunate.

Presented at the annual meeting of the North Dakota State Medical Association, May 26-28, 1946.

\*Clinical Professor and Director, Division of Anesthesiology, University of Minnesota.

Let us consider some questions which arise in carrying on anesthesia with the help of a nurse who has, or has not had, anesthesia training. A few salient points should be stressed.

The ideal in each case is to have a free choice of anesthesia with any drug and any variation of technique, of intravenous or inhalation anesthesia with the best of equipment and complete assortment of gases and liquids, and to use them separately, or in any combination desired. If one has not had sufficient training in the use of anesthetic gases, semi-open drop ether is the best general anesthetic. Proper premedication must always precede it. The patient must be quiet, at least a little drowsy, and saliva and mucus must be under control. In children, from 1/40 grain to 1/8 grain of morphine with 1/800 to 1/150 of atropine, or 1/1000 to 1/200 of scopolamine; in adults, from 1/8 to 1/4 grain of morphine with 1/200 to 1/150 of atropine or scopolamine, according to the size and vigor of the patient. In emergencies, the premedication is even more important and, if there is not at least a 3/4 hour lapse between premedication and anesthesia, it should be given intravenously very slowly in 2 or 3 cc. of water over a period of at least two minutes.

Induction can be made much more pleasant for both children and adults by starting with vinyl ether until unconsciousness arrives. A small fluff is best for the vinyl ether. The ether mask is superimposed over this. The ether must then be added very rapidly. The patient will tend to awaken from the vinyl ether, thus a little of this must be added on the mask from time to time, while pouring on the ether rapidly until the anesthesia is sufficient and stabilized. Induction may be quickly and pleasantly accomplished also with sodium pentothal, 2½ per cent, slowly injected intravenously until unconsciousness arrives. The ether must then be given cautiously at first to avoid laryngospasm, which is rather encouraged by pentothal. The needle should be kept in the vein for a while so that small amounts may be added if necessary before the ether has full effect. With these two agents available, vinyl ether and sodium pentothal, one is hardly justified in subjecting a patient to the prolonged and distressing induction with ether alone.

Vinyl ether alone is a wonderful anesthetic for very short procedures such as myringotomy, incision of boils, etc., but is unsatisfactory for maintaining smooth anesthesia for longer procedures.

Much should be said about sodium pentothal. It is the most perfect hypnotic we have ever had. The induction and the awakening are so pleasant that it has achieved tremendous popularity, both among the laity and among the profession. It has achieved far too much popularity, because its hypnotic quality is almost its only good point. It does not stop pain stimuli or depress reflex activity with any efficiency. Surgeons are apt to use it, with or without the request of the patient, because of its pleasantness. In order to achieve quietness in the presence of severe stimulation, very large doses are administered, with the result that the patient's brain and medulla are greatly overdepressed. Pentothal should be used freely for inductions and for short operations which

are not greatly stimulating. It is very satisfactory for dilatation and curettage if one avoids skin clips, for cystoscopy, and for reducing most fractures. It is not satisfactory for operations upon the skin because these are so stimulating that the surgeon is apt to require large doses. Sodium pentothal is excellent in maintaining light unconsciousness during local or spinal anesthesia. Most of us believe that it should not be used for any purpose in higher than 2½ per cent solution. This avoids phlebitis and makes the anesthesia more accurate and controllable. Sodium pentothal should be accompanied routinely whenever possible by N<sub>2</sub>O and O<sub>2</sub>. The best combination is 500 cc. per min. each. This yields approximately 30 per cent oxygen.

The greatest boon to general anesthesia has been the advent of curare. By the careful administration of curare in the form of Intocostrin\*, relaxation can be achieved while administering only moderate or light doses of general anesthetic. It is no longer necessary to produce deep anesthesia with ether, chloroform, sodium pentothal or any other agent. The necessary dose of Intocostrin depends directly upon the muscular vigor of the patient and inversely upon the depth of general anesthesia which is already present. It is best not to decide immediately on the dose, but to keep the needle in the vein, inject 20 or 30 units to begin with, and add 10 or 20 units at a time at intervals of 45 seconds until the desired relaxation is obtained.

During the last year, I have been working with the combination of sodium pentothal and curare in fixed ratios accompanied by light nitrous oxide anesthesia. This is very promising for all types of surgery and I have hopes that it may prove to be the best all-around type of anesthesia for most types of surgery in general practice, if used with proper precautions. I am not yet quite ready to advocate it in this way.

In the absence of a skilled anesthetist, the surgeon in general practice has leaned very heavily upon spinal anesthesia. This is certainly justifiable if all of the proper precautions are taken. However, there has been a tendency to use it ad lib with no more equipment or preparation than a spinal needle, a syringe and an ampule of anesthetic. Any man who administers a spinal anesthetic should look upon it as a major procedure, worthy of the most careful thought and management of all details. He should become well acquainted with one or two drugs and use them consistently without too much variation in technique. Procaine and pontocaine should probably be the first two in anyone's repertoire. Procaine should never be injected in stronger solution than 5 per cent as it leaves the syringe. Pontocaine should never be injected in stronger solution than 0.5 per cent as it leaves the syringe.

Procaine is always heavier than spinal fluid and will tend to gravitate downward. The head of the table may be lowered slightly after injection until anesthesia reaches the level desired. Trendelenburg position should never be employed sooner than 10 or 15 minutes after injection.

Pontocaine is best used in the crystalline form, called

\* E. R. Squibb and Sons.



niphanoid. It is then dissolved in spinal fluid and the result is always slightly heavier than the patient's spinal fluid. It does not spread readily from the site of injection and needs to be encouraged by tilting the head of the table downward until the desired level is reached. Pontocaine has the reputation of being responsible for more failures in anesthesia than any other anesthetic. The reason for this is that it does not spread readily and therefore the height of anesthesia is apt to be lower than expected. If one realizes this, he can take the proper measures by using a higher interspace, and also by tilting the table and waiting sufficient time until the anesthesia is high enough. Pontocaine which comes in a solution form has a specific gravity almost exactly equal to average spinal fluid, but spinal fluids differ considerably and therefore one never knows whether the solution is lighter or heavier than the spinal fluid in the case at hand. It is much better if this solution is being used, to keep with it 3 cc. ampules of 10 per cent dextrose and dilute the solution with an equal amount of the dextrose before injecting it. This results in 0.5 per cent pontocaine and 5 per cent dextrose, which is always heavier than spinal fluid. One knows then definitely how to manage.

The salient point to be stressed in giving any kind of anesthesia in general practice is the need of taking necessary precautions for the patient's welfare. Certainly no anesthetic should be given in a hospital without having at hand a cylinder of oxygen attached to a well-

fitting mask and a breathing bag. This is minimum equipment. No anesthesia is trivial enough to be given without this at hand. This simple equipment will suffice for an emergency but an anesthesia machine is to be preferred. Whenever there is the slightest doubt during general, spinal, or local anesthesia as to whether the patient is breathing freely and correctly, or as to whether the patient's color and pulse are good, the mask should be applied snugly and the respiration should be helped by synchronous pressure upon the breathing bag. This procedure should become commonplace wherever anesthetics are administered and should never be postponed until the condition of the patient causes concern. Even for an anesthesia given in a home, the physician would do well to carry this extra equipment with him.

The patency of the patient's airway should never be taken for granted. Rubber artificial airways should be used freely during any general anesthesia in addition to holding the jaw forward. One must never be satisfied for a minute unless the breathing is perfectly free and practically noiseless.

In conclusion, the most important procedure, in my opinion the simplest, is that after an anesthesia the patient must be turned upon his side and remain so upon the litter and in bed until he is thoroughly recovered. There is no inconvenience important enough to forestall this maneuver for even a short time. Many lives have been lost, and many cases of pneumonia and lung abscess have been caused by neglect of this simple measure.

---

### SUBACUTE BACTERIAL ENDOCARDITIS

A significant proportion of patients acquire bacterial endocarditis as a result of dental procedures, especially extraction of a tooth. For this reason, all patients who have valvular heart disease, either rheumatic or congenital, should be warned that they must never have any dental operation performed except under conditions where adequate prophylactic measures can be instituted. What constitutes a satisfactory prophylactic regimen has not yet been clarified. One patient developed the disease after tooth extraction in spite of full doses of sulfadiazine plus 25,000 units of penicillin every three hours for two days. At present Dr. Thos. H. Hunter, New York City, gives sulfadiazine plus 100,000 units of penicillin every three hours for forty-eight hours followed by several days of sulfadiazine alone. Whether or not this will prove adequate remains to be seen.

It may be said that subacute bacterial endocarditis is a disease fundamentally amenable to cure by chemotherapy and that penicillin has proved the most satisfactory agent so far. Because of the varying sensitivity to penicillin of different strains of nonhemolytic streptococci, it is strongly recommended that the sensitivity of the organism be determined in each individual case. The dosage necessary to effect cure of the disease varies widely from case to case depending primarily on the susceptibility of the infecting strain. With intensive and persistent therapy, it is possible to cure the infection in almost every patient, although at times as much as 20,000,000 units a day may be required.—From *Modern Concepts of Cardiovascular Disease*, August 1946.

---

# Thiouracil in the Management of Hyperthyroidism

Richard L. Egan, M.D.\*  
Omaha, Nebraska

**T**HIOURACIL, a drug without known therapeutic application five years ago, and possessing a specific action on the thyroid gland, has recently been released for general use. It is the first major change in the management of hyperthyroidism since Plummer<sup>1</sup> introduced iodine as a preoperative measure in 1923. Already there is much difference of opinion regarding its usefulness.

Certain points in the history of hyperthyroidism give perspective to an evaluation of thiouracil. In 1913 Plummer<sup>2</sup> described the cyclic nature of exophthalmic goiter and noted its tendency to spontaneous remission and exacerbation. An excessive mortality resulted from surgical therapy until the introduction into general use of iodine solution as a preoperative measure. Good surgical treatment is now conceded to be so satisfactory that any innovation must bear the burden of proof.

Iodine followed by surgery is not however without several disadvantages. Surgery is attended with an unavoidable anesthetic and operative risk. Iodine does not reduce the basal metabolic rate to normal. When maximal response to iodine has occurred the disease may escape from its control and then be refractory to further benefit. In spite of careful management, postoperative crises are not unknown. After surgery either myxedema or recurrence of hyperthyroidism may result.

The recognition of the antithyroid properties of several drugs was the result of several independent investigations. Kennedy,<sup>3</sup> studying various constituents of Brassica seed, noted that thiourea depressed the metabolism of rats. He observed that this action was accompanied by enlargement of the thyroid gland. MacKenzie et al.,<sup>4</sup> while investigating sulfaguanidine, noted a depression of the metabolism of rats fed this substance. Because of the thyroid hypertrophy and hyperplasia resulting from these compounds, they were termed goitrogenic. A great number of aniline derivatives, including the sulfonamides, have a potential goitrogenic action, as have thiourea derivatives such as thiouracil. Astwood<sup>5</sup> has studied many of them and concluded that thiouracil is the most potent and least toxic of these depressants of thyroid secretion.

These investigations have added to our practical knowledge of hyperthyroidism. They have shown that an intact pituitary is essential for the thyroid hypertrophy accompanying the use of goitrogenic drugs. The action of desiccated thyroid is not inhibited by the simultaneous administration of a goitrogenic compound. The desiccated thyroid does prevent the hypertrophy of the animals' thyroid gland, probably by inhibiting the formation by the pituitary of thyrotropic hormone. This pituitary activity may be an important factor in the develop-

ment of exophthalmos and glandular hypertrophy in human exophthalmic goiter. It seems established that thiouracil reduces metabolism by interference with the formation by the thyroid of its secretion.

After oral administration thiouracil is rapidly absorbed. It is slowly eliminated in the urine. It is also eliminated in the milk. Some may be destroyed in the body. It is to be found in all tissues of the body, but the blood cells contain more than the plasma; the leucocytes contain more of the drug than the erythrocytes.<sup>6</sup>

Since the first reported use of thiouracil in human hyperthyroidism,<sup>7</sup> there has been but one absolute indication—hyperthyroidism occurring in individuals for whom a surgical operation is absolutely contraindicated.

In the human, thiouracil is capable of reducing the basal metabolic rate to normal. Objective evidence of improvement usually precedes the fall in the basal metabolic rate. As long as it is continued in sufficient amount, there is no escape from its action. The response of the patient may be delayed if iodine has previously been administered. It is slower in action when given to cases of toxic nodular goiter than when used for the control of exophthalmic goiter.

After a brief period of hospitalization, our patients returned to their homes and to their work. They have returned to the out-patient department at weekly intervals for examination, basal metabolic rate determination, and white blood count. We have found that the basal metabolic rate, when determined on out-patients, is only a general indication of the patient's progress.<sup>8</sup>

The abnormal chemistry of hyperthyroidism is corrected by thiouracil.<sup>9</sup> The nitrogen, calcium and phosphorus balance become positive. With the reduction of the metabolic rate there is a lessening of the emotional instability, a gain in strength and weight, and a return to normal of the pulse rate.

Thiouracil is used in amounts of 0.4 to 0.6 grams per day in divided doses until the hyperthyroidism is controlled. At present, the lesser amount is preferred. A maintenance dose, determined by trial and error, of 0.05 to 0.2 grams per day is continued until surgery or until a spontaneous remission of the disease occurs.

Thiouracil usually does not diminish the exophthalmos associated with most cases of exophthalmic goiter. Our experience with the use of desiccated thyroid to control exophthalmos has not been favorable. Palmer,<sup>10</sup> with a larger experience, has, however, found it of value.

As a preoperative measure, thiouracil has now become well established. Lahey<sup>11</sup> has written to the effect that thiouracil is an essential for the correct preoperative preparation of the patient with severe thyrotoxicosis. Its success was at one time threatened by reports of dangerous vascularity of the thyroid gland at the time of surgery. This is obviated if iodine is administered after the hyperthyroidism is controlled and before surgery is attempted.

An abridgement of a paper presented at a meeting of the Yankton District Medical Society at Vermillion, South Dakota, April 23, 1946.

\*From the Department of Medicine, The Creighton University School of Medicine, Omaha, Nebraska.



As a substitute for surgery, thiouracil is as yet too new for complete evaluation. We continue to advise surgery, after preparation with thiouracil, in cases of toxic nodular goiter because of the possibility of malignancy. Our only exception has been in case other disease makes surgery exceptionally hazardous. We also advise surgery if circumstances preclude adequate and prolonged observation of the patient receiving thiouracil.

We do not know how long the diffuse toxic goiter must be controlled with thiouracil before a prolonged remission may be expected. One of our patients, against our advice, discontinued treatment after two months of thiouracil therapy. Her symptoms returned after remaining well for about two months. The available literature<sup>12,13</sup> indicates that relapse after discontinuing thiouracil is the rule if treatment is of only a few months' duration. If treatment is of a longer duration, there is an increase in the number of prolonged remissions. These series are as yet too small to permit the statement of an ideal regime. We continue the drug for at least one year.

As a substitute for surgery, the dangers of thiouracil must be evaluated against the hazard of operation. Information regarding the dangers encountered in nearly 7,000 cases receiving thiouracil is available.<sup>14,15</sup> The most serious reaction is agranulocytosis which may be expected to occur once in 50 cases, and prove fatal once in 200 cases. It is most prone to occur during the first eight weeks of treatment. Frequent leucocyte determinations and the instruction of the patient to promptly report any indisposition is the best means to prevent its occurrence. Inability to secure this degree of patient cooperation, we believe, contraindicates the use of thiouracil. Other less serious reactions may necessitate the stopping of thiouracil therapy in as many as one out of ten patients.

In conclusion, thiouracil is capable of reducing to normal the metabolic rate of the patient with hyperthyroid-

ism. As a preoperative measure it brings the safety of a normal metabolism. As a substitute for surgery, it is an effective palliation but as yet an unproven cure. With either application the dangers of the drug, chiefly agranulocytosis, must be judged against the dangers of conventional therapy.

## BIBLIOGRAPHY

1. Plummer, H. S.: Results of Administering Iodin to Patients Having Exophthalmic Goiter. *J.A.M.A.*, 80: 1955, 1923.
2. Plummer, H. S.: The Clinical and Pathological Relationship of Simple and Exophthalmic Goiter. *Am. J. M. Sc.*, 146: 790-795, 1913.
3. Kennedy, T. H.: Thioureas as Goitrogenic Substances. *Nature (London)*, 150: 233, 1942, cited by Astwood, E. B.: Treatment of Hyperthyroidism with Thiourea and Thiouracil, *J.A.M.A.*, 122: 78-81, 1943.
4. MacKenzie, J. B., MacKenzie, C. G., and McCollum, E. V.: Effect of Sulfanilylguanidine on the Thyroid of the Rat. *Science*, 94: 518-519, 1941.
5. Astwood, E. B.: The Chemical Nature of Compounds Which Inhibit the Function of the Thyroid Gland. *J. Pharmacol. & Exper. Therap.*, 78: 79-89, 1943.
6. Williams, R. H., Kay, G. A., and Jandorf, B. J.: Thiouracil, Its Absorption, Distribution and Excretion. *J. Clin. Invest.* 23: 613-627, 1944.
7. Astwood, E. B.: Treatment of Hyperthyroidism with Thiourea and Thiouracil. *J.A.M.A.*, 122: 78-81, 1943.
8. Sachs, A., and Egan, R. L.: Thiouracil in the Treatment of Hyperthyroidism. *Nebraska M. J.*, 30: 431-434, 1945.
9. Sloan, M. H., and Shorr, E.: Metabolic Effects of Thiouracil in Graves' Disease. *Science*, 99: 305-307, 1944.
10. Palmer, M. V.: Hyperthyroidism and Thiouracil, *Ann. Int. Med.*, 22: 335-364, 1945.
11. Lahey, F. H., Bartels, E. C., Warren, S., and Meissner, W. A.: Thiouracil—Its Use in the Preoperative Treatment of Severe Hyperthyroidism. *Surg., Gynec. & Obstet.*, 81: 425-439, 1945.
12. Astwood, E. B.: Thiouracil Treatment in Hyperthyroidism. *J. Clin. Endocrinol.*, 4: 229-248, 1944.
13. Barr, D. P., and Schorr, E.: Observations on the Treatment of Graves' Disease with Thiouracil. *Ann. Int. Med.*, 23: 754-778, 1945.
14. Moore, Francis D.: Toxic Manifestations of Thiouracil Therapy, *J.A.M.A.*, 130: 315-319, 1946.
15. VanWinkle, W., Jr., et al.: The Clinical Toxicity of Thiouracil. *J.A.M.A.*, 130: 343-347, 1946.

## EFFECT OF ALTITUDE ON CASES OF PNEUMOTHORAX

Travel by air has become so commonplace that it is easy to overlook the fact that the altitude to which commercial planes ascend constitutes a risk to individuals whose pulmonary tuberculosis is under treatment by means of pneumothorax. The recent report of the death, during flight, of a patient under treatment by pneumothorax, sharply emphasizes this hazard.—*Tuberculosis Abstracts*, October 1946.

## HEALTH ASSURANCE

Health is not an inalienable right. It is a privilege. Privileges invariably entail equivalent responsibilities. It is so easy to accept privileges that before long mankind takes them for granted and claims them for inherent rights. Nature grants few rights, preferring to demand that privileges be earned. Health, like freedom and peace, continues only as we exert ourselves wisely to maintain it.—EDWARD J. STIEGLITZ, M.D., *A Future for Preventive Medicine*.

# The Immunology of Poliomyelitis

Charles A. Evans, M.D.\*

Seattle, Washington

OF the many voids in our knowledge of poliomyelitis, those having to do with the immunology of this infection are among the least clearly recognized by the medical profession. It is not generally recognized, for example, that there is real doubt as to the degree of immunity that follows an attack of this disease. It is true that second attacks of poliomyelitis are rare, but whether this is the result of acquired immunity or of the chance distribution of a disease which strikes only a small proportion of the population, is not clear. Fischer and Stillerman<sup>1</sup> in 1938 and Harmon and Harkins<sup>2</sup> in 1936 presented evidence that the attack rate for poliomyelitis among persons who have had one attack of the disease is as great as in those of the same age who have not had a previous infection.

The tendency of poliomyelitis to attack persons in the younger age groups is ordinarily ascribed to previous immunizing but unrecognized infections which most persons are presumed to undergo before reaching maturity. Evidence for this concept is the well known fact that the serum of most normal adults will neutralize the poliomyelitis virus. The inference is that persons whose serum has the capacity to neutralize virus, are immune.

Yet, when specimens of serum of patients just coming down with poliomyelitis have been tested, many were found to possess the capacity to neutralize virus. Burnet and Jackson<sup>3</sup> found such antibodies in one-third of a series of fifteen cases. These data do not support the concept that the neutralizing antibodies found in some persons' serum are necessarily protective.

In fact, the possibility that physiologic changes associated with growth and maturation are the basis for the age distribution in poliomyelitis cannot be entirely discounted. There is evidence that the physiologic status alters susceptibility.<sup>4</sup> The attack rate among pregnant women is significantly greater than that among non-pregnant women of the same age. Castrated female monkeys are reported to be more susceptible to intranasally administered poliomyelitis virus than normal monkeys. Whether physiologic factors determine which persons develop paralysis and which do not, has not been determined.

An unusual feature of poliomyelitis is the frequent absence of neutralizing antibodies in persons who have recovered from the disease. It is known that an occasional person who has had typhoid fever or brucellosis may fail to develop significant amounts of agglutinins to causative bacteria but in poliomyelitis this failure of antibody response appears to be much more frequent than in other infectious diseases. From reports in the literature Harmon and Harkins<sup>2</sup> calculated that nearly 40 per cent of some 183 convalescent sera tested, were without neutralizing antibody. It would seem that convalescent serum might be a poorer source of antibodies

without neutralizing antibody. It would seem that convalescent serum might be a poorer source of antibodies to the poliomyelitis virus than pooled normal adult serum.

The possibility of developing a vaccine for poliomyelitis virus has been investigated for many years and it has been shown that an appreciable degree of immunity may be conferred upon monkeys by injecting certain killed virus preparations. Killed virus vaccines, in general, are effective only if a rich source of virus is available. Thus, vaccines for equine encephalomyelitis were not satisfactory when made from the brains of horses. Only a low degree of immunity could be achieved with preparations from this source because the amount of virus in any reasonable dose of vaccine was insufficient to induce a strong antibody response. When it was discovered that virus grew thousands of times more abundantly in chick embryos than in horse brains, an active vaccine for equine encephalomyelitis was readily prepared by treating infected chick embryo tissues with formalin to kill the virus.

In poliomyelitis, a rich source of virus has not been readily available. Methods of purifying virus from ordinary sources (monkey spinal cord, feces) may be employed but at present are too cumbersome to be of much value. If an adequate source of virus is found, there will still be the question of whether the virus is like the typhoid bacillus in that it actively stimulates protective antibodies, or like the brucellosis organisms with which good protection has not been obtained by the injection of killed organism.

It has been shown with plant viruses, with bacteriophage, and finally with mammalian viruses that in some instances the presence of a relatively benign virus in a cell will prevent infection with a highly virulent virus that is more or less related to the first. This phenomenon is spoken of as cell-blockade or virus interference. It is interesting to speculate on the possibility of protecting humans from virulent poliomyelitis virus by administering a nonvirulent virus to produce a blockade of this sort.

In view of the widespread occurrence of harmless poliomyelitis-like viruses in the intestinal tracts of mice,<sup>5</sup> one wonders whether such a virus may be found in the human intestinal tract. If so, it might be feasible to seed the human alimentary canal or other portals of entry with an innocuous virus of this sort and block invasion of more virulent viruses by this portal.

Such developments are far in the realm of speculation at this time. However, the fact that Green<sup>6</sup> has demonstrated a thoroughly practical method of utilizing cell-blockade in protecting foxes and dogs from virulent distemper virus, lends encouragement to the exploration of possible fields of usefulness of this phenomenon in the control of human diseases, such as poliomyelitis.

#### REFERENCES

1. Fischer, A. E., and Stillerman, M. *J.A.M.A.*, 1938, 110, 569.
2. Harmon, P. H., and Harkins, H. N. *J.A.M.A.*, 1936, 107, 552.
3. Burnet, F. M., and Jackson, A. V. *Aust. J. Exp. Biol. and Med. Sci.*, 1939, 17, 261.
4. Data principally from papers of Draper and Aycock. Summarized by Rivers, T. M., in *Infantile Paralysis*, a symposium delivered at Vanderbilt University, April 1941. Published by the National Foundation for Infantile Paralysis, Inc. P. 63.
5. Theiler, M., *Medicine*, 1941, 20, 443.
6. Green, R. G., and Stulberg, C. S. *Proc. Soc. Exp. Biol. and Med.*, 1946, 61, 117.

\*Department of Microbiology, University of Washington.



# American Student Health Association News-Letter and Digest of Medical News

## Health in Colleges, a Third National Conference

Fifteen years ago the first Conference on College Hygiene convened at Syracuse University. The printed Proceedings of this Conference have since served as a guide for the organization of college health programs. In 1935 a Second Conference was held in Washington. The attendance of several hundred represented leading ideas in college health problems from diverse groups. The revised Proceedings added to the relatively meager library of specific information about the organization and functions of college health services.

Now plans are well under way for a Third Conference. The need is greater than before. Existing health services want guiding in the expansion of programs no longer adequate for new health responsibilities; many schools formerly having no organized programs are interested in setting up new departments.

This Third National Conference on Health in Colleges is scheduled for the Hotel New Yorker, New York City, May 7-10, 1947.

In the few months now remaining prior to the Conference, preliminary work will be done by nineteen committees composed of five to ten members each, and grouped into six sections covering the major aspects of Health in Colleges. The Planning Committee is trying diligently to build these committees from representative geographic areas and from representative leaders in various fields interested in health of young people.

Sponsorship of the Conference, soon to be announced, is by organizations likewise deeply interested in Health in Colleges. A leader in education, Alexander Ruthven, President of the University of Michigan, has accepted the presidency of the Conference.

This is your Conference. Mark the dates on your calendar and plan on attending. If you are not working on a committee, you will have opportunities to voice your opinions. The best thinking and ideas of the entire groups will constitute the Proceedings of the Third National Conference on Health in Colleges.

RALPH I. CANUTESON, M.D.,  
President, A.S.H.A.

### Physicians are Needed in the Following Colleges:

Stephens College, Columbia, Missouri.

Temple University, Philadelphia, Pennsylvania, William L. Hughes, M.D., Director.

Florida State College for Women, Tallahassee, Florida, President Doak S. Campbell.

Alabama Polytechnic Institute, Auburn, Alabama, President L. N. Duncan.

University of Oregon, Eugene, Oregon. Fred N. Miller, M.D., Director.

### Applications for Membership in A.S.H.A.

1. Muhlenberg College, Allentown, Pennsylvania.
2. State Teachers College, LaCrosse, Wisconsin.

### Personnel Changes

Robert Young, M.D., is leaving the Health Service at Northwestern University on September 15th, to become Dean of the Medical School at the University of Utah.

Leonard Folkers, M.D., has left Stephens College to enter private practice.

Eva Strohan, M.D., has resigned from the Health Service at Texas State Teachers College to go into private practice. She has been succeeded by Bobby Short, M.D.

Louis E. Hutto, formerly at Central Michigan College, is in Salem, Massachusetts.

Almina Cameron, M.D., is succeeding Eleanor Nelson, M.D., at Mills College.

Steven E. Staryk, M.D., has joined the staff of the Health Service at Wayne University. He graduated from Wayne University Medical School in 1943.

Dr. R. C. Bull, who recently resigned from Lehigh University because of ill health, is living at Delta, Colorado. He can't keep quiet. The Rotary, Boy Scouts and lodge activities use some of his energies.

---

A total of approximately \$50,000 in grants-in-aid to several American Universities for cancer research has been approved by the U. S. Public Health Service, Federal Security Agency, upon the recommendation of the National Advisory Council.

Included is \$2,100 to the University of Minnesota to support a study of gastritis in relation to carcinoma of the stomach, under the direction of Dr. Robert Hibbel.

The committee on Gastric Cancer of the National Advisory Cancer Council is continuing plans for an intensified study and program of attack on cancer of the gastro-intestinal tract, which claimed the lives of about 80,000 Americans during 1945.

The National Advisory Cancer Council has recommended that Surgeon General Thomas Parran call a conference on gastric cancer at the University of Chicago in the late fall of 1946. Gastric cancer has been receiving special attention from the Cancer Council since 1940 when it sponsored a conference on gastric cancer at the National Cancer Institute, attended by leading scientists from universities and institutions throughout the country.

## MEET OUR CONTRIBUTORS . . .

DR. HARRY O. DREW was a contributor to the October 1945 issue of JOURNAL-LANCET. Since then he has been elected president of the Yellowstone Valley Medical Society.

DR. RALPH T. KNIGHT contributed to the May 1946 issue of JOURNAL-LANCET. He is at present diplomate of the American Board of Anesthesiology.

DR. RICHARD L. EGAN is instructor in Medicine, Creighton University School of Medicine, Omaha, Nebraska, and member of the attending staff of Creighton Memorial St. Joseph's Hospital. He is also a member of the Omaha-Douglas County Medical Society, the Nebraska State Medical Association, and the A.M.A.

DR. CHARLES EVANS was one of the five University of Minnesota professors who were awarded grants by the John and Mary Markle Foundation, New York City. Dr. Evans was given three grants totaling \$6,000 to aid his study of virus infections of intraocular tissues and lymph nodes. He is now with the Department of Microbiology, University of Washington, Seattle.

### Book Reviews

**Corky the Killer, A Story of Syphilis**, by HARRY A. WILMER, M.D. New York: American Social Hygiene Association, 1945. Pp. 67, illustrated. \$1.00.

Dr. Wilmer's first contribution to medical literature was *Huber the Tuber*, a blend of fantasy and fact about tuberculosis designed for the lay public. In his new book he writes in the same style about syphilis, the disease which Surgeon General Parran has called our most urgent public health problem today.

The book puts forward the elementary facts about syphilis by describing the adventures of Corky the Killer, who personifies the *Spirochaeta pallida*. Corky and his fellow spirochetes stealthily enter the body by submarine in the still of the night, intent upon sabotage. Corky zips around the blood stream in a corpuscle-motorboat, supervising the spirochetes as they set about their deadly work. Operations are proceeding according to schedule when the spirochetes are attacked by chemical bloodhounds injected into the blood. After a fierce battle the bloodhounds are victorious and Corky dies in the agonies of the Soap and Water Treatment.

The author has reinforced his story with graphic and clever full-page drawings of the spirochetes in action inside the body. A more scientific discussion of the course and treatment of syphilis accompanies the story about Corky.

The author emphasizes the seriousness of syphilis and the importance of early treatment. Given wide circulation, the informal and entertaining presentation can do much toward creating a healthy and intelligent public attitude about the disease.

A. A.

**Oral Medicine**, by LESTER W. BURKET, M.D., D.D.S. Philadelphia: J. B. Lippincott, 1946. Pp. 674, illustrated. \$12.00.

This is a comprehensive, well organized, authoritative, and practical book, dealing thoroughly and clearly with the many relationships between oral and systemic diseases.

The special colored atlas of sixty plates illustrating oral lesions most often encountered in a daily practice by the dentist and physician is most valuable. The subject matter should prove to be an asset to medical and dental students, and very helpful as a reference book for the general practitioner. J. C.

**Manual of Tuberculosis, Clinical and Administrative**, by E. ASHWORTH UNDERWOOD, M.D. 3d edition, revised and enlarged. Baltimore: Williams and Wilkins Co., 1945. Pp. 513, illustrated. \$4.50.

The author, an Englishman, presents in a simple and systematic way all the varied forms of tuberculosis.

In this new edition, chapters have been added on the evolution of pulmonary tuberculosis; allergy and immunity as related to tuberculosis; X-rays and radiography as applied to tuberculosis work; mental aspects of the disease; methods employed as a routine in the clinical laboratory; social medicine and tuberculosis; and tuberculosis and war.

The social and administrative functions relevant to this disease are stressed in this manual inasmuch as they are a particular problem in England at present. The author states that a quarter of a million people in that country are suffering from tuberculosis in its active form.

This book will prove of value to all physicians in the field of tuberculosis because it is thorough, comprehensive, and up-to-date.

**A Blind Hog's Acorns**, by CAREY P. McCORD, M. D. Chicago and New York: Cloud, Inc., 1945. Pp. 311, illustrated. \$2.75.

Dr. McCord's "acorns" are vignettes about workers and their diseases. The author has spent twenty-five years working as an industrial hygienist and medical consultant to industry, investigating occupational diseases and their causes. He has written numerous technical brochures, but this is his first book in popular style.

Here he has recorded a number of his experiences in the hazardous trades, writing in anecdotal style about various individuals and diseases he has run across. The author skips merrily about through time and space as he relates his stories; in a summary chapter he admits to a "shameless disregard for the niceties of chronology" and organization. He tells about the unusual and eccentric human beings he has encountered and of how he has ferreted out the causes of mysterious maladies that afflicted office and industrial workers. The book is a sort of medical sideshow, a by-product of the career of a pioneer in the field of industrial hygiene. A. A.

**Women in Industry: Their Health and Efficiency**, by ANNA M. BAETJER, Sc.D. Philadelphia: W. B. Saunders Co., 1946.

This worth-while book was issued under the auspices of the Division of Medical Sciences and the Division of Engineering and Industrial Research of the National Research Council. The data is graphic and scientific and represents an extensive survey on every phase of health and efficiency of women in relation to their employment. The author also stresses various phases in this complex problem which need further investigation and thus offer a fruitful approach to preventive medicine and public health. The manual is further enriched by the listing of a substantial bibliography of both foreign and local source, and a summary of state labor laws for women. The physician and health worker will find in these pages the maximum of information to date on the subject.

**Curare-Intocostrin: History, Pharmacology and Chemistry of Curare; Clinical Uses of Intocostrin**. Prepared and edited by E. R. Squibb & Sons from more than 120 articles in JOURNAL-LANCET and other recent medical literature up to and including the early months of 1946. 292 pp. For copies write H. Sidney Newcomer, M.D., Squibb Bldg., 745 5th Ave., New York 22.

A compendium of the literature of Intocostrin (the first available physiologically assayed preparation made from a native curare plant—*chondodendron tomentosum*) and its ever broadening therapeutic role. Reports of 148 investigators and clinicians, arranged chronologically in chapters according to subject matter. Clinical reports on the use of Intocostrin are to be found under the classifications Anesthesia; Shock Therapy; Spasticity, Rigidity and Tremor; Poliomyelitis; Endoscopy; Tetanus Convulsions; and the Diagnosis of Myasthenia Gravis. In addition, a detailed subject index and author index has been provided.



# Transactions of the Montana State Medical Association

Sixty-Eighth Annual Session  
Great Falls, Montana, July 18-20, 1946

## OFFICERS, 1946-1947

|                              |                              |
|------------------------------|------------------------------|
| M. A. SHILLINGTON, Glendive  | President                    |
| L. W. ALLARD, Billings       | President-Elect              |
| C. H. FREDERICKSON, Missoula | Vice President               |
| H. T. CARAWAY, Billings      | Secretary-Treasurer          |
| R. F. PETERSON, Butte        | Delegate to A.M.A.           |
| T. L. HAWKINS, Helena        | Alternate Delegate to A.M.A. |

## EXECUTIVE COMMITTEE

|                   |          |
|-------------------|----------|
| J. C. SHIELDS     | Butte    |
| L. W. ALLARD      | Billings |
| H. T. CARAWAY     | Billings |
| S. A. COONEY      | Helena   |
| M. A. SHILLINGTON | Glendive |

## COUNCILORS

|                            |              |
|----------------------------|--------------|
| District 1—G. W. SETZER    | Malta        |
| District 2—C. W. LAWSON    | Havre        |
| District 3—J. H. GARBERSON | Miles City   |
| District 4—T. R. VYE       | Laurel       |
| District 5—R. G. SCHERER   | Bozeman      |
| District 6—R. G. JOHNSON   | Harlowton    |
| District 7—T. B. MOORE     | Kalispell    |
| District 8—J. H. IRWIN     | Great Falls  |
| District 9—H. W. GREGG     | Butte        |
| District 10—A. C. KNIGHT   | Phillipsburg |
| District 11—D. T. BERG     | Helena       |
| District 12—A. R. FOSS     | Missoula     |

## APPOINTED COMMITTEES

(Committee appointments are all for one year unless otherwise designated)

### MEDICAL INSURANCE AND LEGAL AFFAIRS COMMITTEE

|                             |          |
|-----------------------------|----------|
| J. H. BRIDENBAUGH, Chairman | Billings |
| W. F. CASHMORE              | Helena   |
| W. E. LONG                  | Anaconda |
| R. E. RYDE                  | Glasgow  |
| R. TONEIL                   | Roundup  |

### MEDICAL PUBLICATIONS COMMITTEE

|                         |            |
|-------------------------|------------|
| R. G. SCHERER, Chairman | Bozeman    |
| ELOISE M. LARSON        | Livingston |

### U. S. MEDICAL RESERVE COMMITTEE

|                        |          |
|------------------------|----------|
| E. S. MURPHY, Chairman | Missoula |
|------------------------|----------|

### REVISION OF CONSTITUTION COMMITTEE

|                         |          |
|-------------------------|----------|
| M. G. DANSKIN, Chairman | Glendive |
|-------------------------|----------|

### RURAL HEALTH COMMITTEE

|                      |            |
|----------------------|------------|
| W. E. LONG, Chairman | Anaconda   |
| R. M. STEWART        | Whitefish  |
| L. W. BREWER         | Missoula   |
| M. D. WINTER         | Miles City |
| J. W. CRAIG          | Circle     |

### LEGISLATIVE COMMITTEE

|                       |        |
|-----------------------|--------|
| J. M. FLINN, Chairman | Helena |
| W. F. CASHMORE        | Helena |
| R. W. MORRIS          | Helena |
| T. R. VYE             | Laurel |
| R. C. MONAHAN         | Butte  |

### HOSPITAL COMMITTEE

|                       |           |
|-----------------------|-----------|
| F. F. ATTIX, Chairman | Lewistown |
| R. L. TOWNE           | Kalispell |
| B. C. FARRAND         | Jordan    |

### MEDICAL ECONOMICS COMMITTEE

|                           |             |
|---------------------------|-------------|
| J. H. GARBERSON, Chairman | Miles City  |
| J. C. SHIELDS             | Butte       |
| R. B. DURGIN              | Great Falls |
| I. J. BRIDENSTINE         | Missoula    |

### PROGRAM COMMITTEE

|                        |             |
|------------------------|-------------|
| T. F. WALKER, Chairman | Great Falls |
| HAROLD GREGG           | Butte       |
| C. H. FREDRICKSON      | Missoula    |
| H. T. CARAWAY          | Billings    |

## PUBLIC INSTRUCTION AND HEALTH COMMITTEE

### PUBLIC RELATIONS COMMITTEE

|                         |             |
|-------------------------|-------------|
| J. C. SHIELDS, Chairman | Butte       |
| E. S. MURPHY            | Missoula    |
| J. C. MacGREGOR         | Great Falls |
| R. D. KNAPP             | Wolf Point  |
| R. L. TOWNE             | Kalispell   |
| J. M. FLINN             | Helena      |
| J. H. BRIDENBAUGH       | Billings    |

### CANCER COMMITTEE

|                             |             |
|-----------------------------|-------------|
| EUGENE HILDEBRAND, Chairman | Great Falls |
| R. F. PETERSON              | Butte       |
| C. H. FREDRICKSON           | Missoula    |
| WILLIAM ROBINSON            | Shelby      |
| W. F. CASHMORE              | Helena      |
| E. L. HALL                  | Great Falls |
| H. V. GIBSON                | Great Falls |

### HISTORY OF MEDICINE, BIOGRAPHY AND

### NECROLOGY COMMITTEE

|                           |             |
|---------------------------|-------------|
| E. D. HITCHCOCK, Chairman | Great Falls |
| J. H. IRWIN               | Great Falls |
| CHAS. S. SMITH            | Bozeman     |

### ORTHOPEDIC COMMITTEE

|                        |             |
|------------------------|-------------|
| J. K. COLMAN, Chairman | Butte       |
| L. W. ALLARD           | Billings    |
| THOS. L. HAWKINS       | Helena      |
| ARCHIE L. GLEASON      | Great Falls |
| JOHN WOLGAMOT          | Great Falls |

### DENTISTS, PHARMACISTS AND NURSES COMMITTEE

|                           |         |
|---------------------------|---------|
| B. K. KILBOURNE, Chairman | Helena  |
| B. C. FARRAND             | Jordan  |
| A. D. BREWER              | Bozeman |

### MATERNAL AND CHILD HEALTH COMMITTEE

|                         |             |
|-------------------------|-------------|
| F. L. McPHAIL, Chairman | Great Falls |
| L. W. BREWER            | Missoula    |
| P. L. ENEBOE            | Bozeman     |
| D. L. GILLESPIE         | Butte       |
| A. L. GLEASON           | Great Falls |
| E. L. HALL              | Great Falls |
| T. L. HAWKINS           | Helena      |
| MAUDE GERDES            | Billings    |
| B. C. FARRAND           | Jordan      |
| C. W. PEMBERTON         | Butte       |
| S. N. PRESTON           | Missoula    |
| R. C. TOWNE             | Kalispell   |
| G. A. CARMICHAEL        | Missoula    |

### NOMINATING COMMITTEE

|                       |             |
|-----------------------|-------------|
| J. H. IRWIN, Chairman | Great Falls |
| A. R. FOSS            | Missoula    |
| F. F. ATTIX           | Lewistown   |

### NATIONAL LEGISLATION COMMITTEE

|                      |               |
|----------------------|---------------|
| S. A. COONEY, Helena | ) Co-chairmen |
| A. R. FOSS, Missoula |               |

### MEDICAL PREPAREDNESS AND DEFENSE COMMITTEE

|                        |           |
|------------------------|-----------|
| E. S. MURPHY, Chairman | Missoula  |
| R. D. HARPER           | Sidney    |
| JOHN HAMMEREL          | Billings  |
| PAUL GANS              | Lewistown |

### CONSTITUTION COMMITTEE

|                         |             |
|-------------------------|-------------|
| M. G. DANSKIN, Chairman | Glendive    |
| F. D. HURD              | Great Falls |
| R. M. MORGAN            | Helena      |

### TUBERCULOSIS COMMITTEE

|                         |             |
|-------------------------|-------------|
| F. I. TERRILL, Chairman | Deer Lodge  |
| A. R. FOSS              | Missoula    |
| P. L. ENEBOE            | Bozeman     |
| E. M. LARSON            | Great Falls |
| C. W. LAWSON            | Havre       |

INTER-RELATIONS AND SCIENTIFIC PAPERS COMMITTEE

|                        |             |
|------------------------|-------------|
| WAYNE GORDON, Chairman | Billings    |
| F. R. SCHEMM           | Great Falls |
| R. F. PETERSON         | Butte       |

FRACTURE COMMITTEE

|                       |          |
|-----------------------|----------|
| S. A. OLSON, Chairman | Glendive |
| L. W. ALLARD          | Billings |
| E. K. GEORGE          | Missoula |
| D. S. MACKENZIE, JR.  | Havre    |

REHABILITATION COMMITTEE

|                      |             |
|----------------------|-------------|
| E. M. GANS, Chairman | Harlowton   |
| D. A. GORDON         | Hamilton    |
| A. C. KNIGHT         | Philipsburg |

ANNUAL MEETING OF THE COUNCIL OF THE MONTANA STATE MEDICAL ASSOCIATION

July 18, 1946, 1 P.M.

The meeting of the council came to order with Dr. S. A. Cooney presiding and Dr. R. F. Peterson acting as secretary. Present at the meeting were Drs. C. S. Houtz, E. D. Hitchcock, T. R. Vye, H. W. Gregg, A. R. Foss, D. T. Berg, J. H. Irwin, E. M. Gans, S. A. Cooney, R. F. Peterson.

Dr. J. H. Irwin made a motion that a recommendation be given to the House of Delegates to have an executive secretary if possible. Dr. E. M. Gans seconded the motion and it passed unanimously.

Dr. D. T. Berg made a motion that Mr. Toomey be re-employed as the Association's lawyer at a salary of \$500 per year. Dr. J. H. Irwin seconded the motion and it passed unanimously.

FINANCIAL REPORT

July 1, 1945, to June 30, 1946

June 30, 1945, Balance of cash on deposit in Metals Bank & Trust Co., Butte, Mont. \$ 5,017.95

RECEIPTS

|                                            |           |
|--------------------------------------------|-----------|
| Membership (Dues from District Societies): |           |
| Lewis & Clark County                       | \$ 140.00 |
| Western Montana                            | 720.00    |
| Silver Bow County                          | 920.00    |
| Southeastern Montana                       | 695.00    |
| Yellowstone Valley                         | 985.00    |
| Flathead County                            | 480.00    |
| Fergus County                              | 330.00    |
| Musselshell County                         | 140.00    |
| Mount Powell County                        | 525.00    |
| Hill County                                | 310.00    |
| Cascade County                             | 972.00    |
| Northcentral Montana                       | 175.00    |
| Park-Sweetgrass                            | 150.00    |
| Choteau County                             | 25.00     |
| Madison County                             | 100.00    |
| Northeastern Montana                       | 200.00    |

\$6,867.00

Treasury Bond Coupons 125.00

Commercial Exhibits:

|                               |          |
|-------------------------------|----------|
| Sego Milk Products            | \$ 10.00 |
| Eli Lilly & Co.               | 35.00    |
| Mead Johnson & Co.            | 35.00    |
| Philip Morris & Co.           | 50.00    |
| E. R. Squibb & Sons           | 35.00    |
| Borden's                      | 35.00    |
| Nestle's Milk Products        | 50.00    |
| Physicians & Hospitals Supply | 135.00   |
| Ames Company, Inc.            | 50.00    |
| General Electric X-ray Corp.  | 35.00    |
| Lanteen Medical Laboratories  | 50.00    |
| Carnation Company             | 50.00    |
| Lederle Laboratories          | 50.00    |

620.00

Total Receipts 7,612.00

Total to be accounted for \$12,629.95

DISBURSEMENTS

|                                         |           |
|-----------------------------------------|-----------|
| Telephone and Telegraph Expense         | \$ 133.04 |
| Supplies                                | 11.05     |
| Printing and Stationery                 | 288.86    |
| Salaries                                | 1,170.85  |
| JOURNAL LANCET Subscriptions            | 484.37    |
| Legal (Attorney's Retainer)             | 300.00    |
| Public Health League (1945 and 1946)    | 200.00    |
| Annual Meeting                          | 35.20     |
| Officers' Expense                       | 199.60    |
| Montana Medical History                 | 100.00    |
| United Public Health League             | 33.02     |
| Dr. Cogswell's Testimonial Dinner       | 176.00    |
| Executive Committee                     | 104.59    |
| Program Committee                       | 5.55      |
| Collector of Internal Revenue           | 44.00     |
| Montana Physicians' Service             | 520.17    |
| Miscellaneous:                          |           |
| Stamps                                  | 15.00     |
| Flowers                                 | 40.30     |
| Refund dues:                            |           |
| Dr. H. W. Bateman                       | 2.00      |
| Dr. L. T. Krogstad                      | 25.00     |
| Dr. R. W. Polk                          | 25.00     |
| Safety Deposit Box Rent                 | 6.00      |
| Surety Bond on Secretary                | 25.00     |
| Public Health League members at banquet | 15.00     |
| Audit books (1945)                      | 125.00    |
| Copies of Articles of Incorporation     | 10.20     |

Total Disbursements \$4,094.80

\$ 4,094.80

Balance of cash on deposit in Metals Bank & Trust Co., Butte, Mont., June 30, 1946

8,535.15

Total to be accounted for \$12,629.95

INVESTMENT ACCOUNT

Negotiable Promissory Note:

Hospital Service Association of Montana, date July 24, 1941, due on demand with interest at 6%—\$1,000.00.

|                                |            |                  |
|--------------------------------|------------|------------------|
| 2½% Treasury Bonds of 1964-69: | Par Value  | Accrued Interest |
| No. 16641 A                    | \$1,000.00 | \$ 25.00         |
| 16642 B                        | 1,000.00   | 25.00            |
| 16643 C                        | 1,000.00   | 25.00            |
| 16644 D                        | 1,000.00   | 25.00            |
| 16645 E                        | 1,000.00   | 25.00            |
|                                | \$5,000.00 | \$125.00         |

Secretary-Treasurer's Fidelity Bond:

Dr. R. F. Peterson, Butte—\$10,000.00.

R. F. PETERSON, M.D., Secretary-Treasurer

Dr. J. H. Irwin made a motion that the audit of the treasurer be accepted. Dr. Berg seconded the motion and it passed unanimously.

The meeting of the Council was then adjourned.

CANCER CAMPAIGN IN MONTANA

The 1946 campaign of the American Cancer society field army in Montana was the most successful to date with subscriptions exceeding \$63,000, or \$23,000 more than the quota assigned. Mrs. H. W. Peterson of Billings, state and regional commander of the field army, said that 60 per cent of the total will remain in Montana for education and service to the cancer patient. Research will receive 25 per cent, and the remainder will be used for service and education on a national level.



**PROCEEDINGS**  
of the  
**HOUSE OF DELEGATES**  
**SIXTY-EIGHTH ANNUAL MEETING**  
of the  
**MONTANA STATE MEDICAL ASSOCIATION**  
The Civic Center, Great Falls, Montana  
July 18, 19, 20

The session was called to order by the president, Dr. S. A. Cooney. The following delegates presented credentials for the first meeting, July 18 at 9 A.M.: Cascade County—F. D. Hurd, L. L. Maillet, R. B. Richardson, T. F. Walker, C. F. Little; Chouteau—None; Fergus—F. F. Attix, E. M. Gans; Flathead—T. B. Moore; Gallatin—None; Hill—Charles Houtz; Lewis & Clark—James J. McCabe, T. L. Hawkins; Madison—None; Mt. Powell—J. J. Malee, A. C. Knight; Musselshell—G. A. Lewis; Northcentral—N. A. Olson; Northeastern—None; Park-Sweetgrass—None; Silver Bow—H. W. Gregg; J. K. Colman, Alfred Karstedt; S. V. Wilking, D. L. Gillespie; Southeastern—M. A. Shillington, M. G. Danskin, J. H. Garberson; Western—J. P. Ohlmacher, C. H. Fredrickson, L. W. Brewer, A. R. Foss; Yellowstone—H. O. Drew, D. E. Hodges, H. E. McIntyre, John Hynes, T. R. Vye, H. T. Caraway.

Dr. H. T. Caraway made a motion and Dr. H. W. Gregg seconded it that the minutes of the last annual meeting held in Helena July 14, 1945, be accepted as published in the *JOURNAL LANCET*. This motion was passed unanimously. Dr. H. T. Caraway made a motion that the minutes of the special meeting held in Helena March 10, 1946, be accepted as sent to each doctor. This was seconded by Dr. H. W. Gregg and passed unanimously. Dr. H. W. Gregg made a motion that the minutes of this last special meeting be filed but not published. This motion was seconded by Dr. H. T. Caraway and passed unanimously.

Dr. Cooney appointed the following to serve on the necrology committee: Dr. F. F. Attix, chairman; Dr. M. G. Danskin, Dr. J. J. Malee, Dr. J. J. McCabe, Dr. F. L. McPhail and Dr. T. B. Moore. The following were appointed to serve on the resolutions committee: Dr. T. L. Hawkins, Dr. H. W. Gregg, and Dr. J. C. McGregor.

**Secretary's Report to the House of Delegates**

The Association membership is as follows:

|                         | 1946 | 1945 | 1944 | 1940 |
|-------------------------|------|------|------|------|
| Total .....             | 404  | 430  | 444  | 408  |
| Life and Honorary ..... | 8    | 8    | 7    |      |
| Military .....          | *39  | 114  | 107  |      |
| Dues-paying .....       | 357  | 308  | 330  | 408  |

[\*Revised since the meeting. 9 service men have since been released and are practicing either in Montana (4) or elsewhere (5).]

You will note that the number of members of our Association in the military services has dropped from 114 to 39. Sixty-eight doctors have been released from the military services and have started practice in Montana. Not all of these, however, were members of our Association previously, but most of them were. Therefore, approximately 39 members of Montana are still in the services, though of course some of these will not return to this state.

In 1944 the Montana voters defeated Initiative 48, and socialized medicine was defeated in the National Congress. It was thought that the duties of the secretary's office would diminish in 1945 and 1946, but they have continued to increase, with the Montana Physicians' Service and other agencies in the state, and with increased national pressure on socialized medicine. Due to the increase in dues, your treasury is in the best position it has ever been, to my knowledge. The Association can and should now do some more definite constructive planning.

Your secretary attended the secretaries' meeting in Chicago on February 8 to 11, 1946, and the United Public Health League meeting in Salt Lake City on March 16, 1946. The report of the secretaries' meeting was published in the *Journal* of the American Medical Association and contained a large amount of material very pertinent to medicine. The meeting of the United Public Health League in Salt Lake City emphasized the excellent work that our representatives are doing in Washington from that office. There is no question but that

this group in Washington has been the spur that started the A.M.A. office there. It is hoped that they will work closer and closer together. Last year the Montana State Medical Association voted to join the group, and this year we must also vote a means to support them financially. The other states of the group have done all of the financing previously.

From the observation of this office for two years, the following recommendations appear to be warranted:

1. We should have an executive secretary who would then be able to keep the members of the Association more closely informed of the activities in the state and also nationally, and to keep in closer touch with the old and new agencies of the American Medical Association and numerous national organizations, as well as other state medical societies.

2. The smaller societies of the state should consolidate with closer, larger organizations in order to form groups that can profitably hold regular monthly scientific sessions. One of the qualifications for the chartering of a local society should be the holding of regular meetings.

3. Effort should be stepped up for cooperation with the Montana Physicians' Service and the Blue Cross.

I wish to thank the officers and members of the Association who have been so helpful in assisting the work of the secretary. I wish also to thank every member for being so considerate for the things that should have been done and were not, even though bigger changes and more activities took place in organized medicine, locally and nationally than ever before in so short a period of time. Due to the pressure of other duties, it will not be possible for me to continue as secretary after this year.

R. F. PETERSON, M.D., Secretary

It was moved by Dr. Walker and seconded by Dr. Malee that the secretary's report be accepted and made a part of the minutes. The motion passed unanimously.

Dr. J. H. Irwin, the delegate to the A.M.A. convention in San Francisco, made the following report:

The House of Delegates of the A.M.A. convened at 10:00 A.M. July 1st with the usual formalities; after the report of the credentials committee showing a quorum present, the first order of business was the selection of the recipient of the Distinguished Service Award—Dr. Anton Carlson, physiologist at the University of Chicago was selected. Interesting addresses were made by the speaker of the House of Delegates, R. W. Fouts of Omaha, President of A.M.A. Roger I. Lee of Boston and by President-elect H. H. Shoulders of Nashville, Tennessee. Much time and work had been spent in preparation of these addresses and all are well worth your careful attention. They contain much information regarding operations of the A.M.A.; activities and suggestions for the future. These addresses will be published in early issues of the *A.M.A. Journal* and should receive your careful consideration. Especially stressed was the necessity for state and local societies to formulate and put in execution plans for prepayment medical care in order that we may successfully combat federal control. Another point stressed, one that has been brought to your attention before, was the fact that the best and most successful lobbying can be done by the individual doctor contacting the home public and their state representatives and senators in Congress. Also, the medical profession was urged to take a greater interest in civic and state affairs, both political and social.

Dr. Wilber, ex-president of Stanford University, retiring from chairmanship of Committees on Medical Education, stressed the urgent necessity of state, county and individual doctors to take more interest in mental diseases, mental hospitals to the end that mental patients may receive adequate treatment and good care in institutions, over-crowding of mental hospitals with woeful under-staffing both of physicians and nurses had led to nation-wide criticism which falls, largely, on the shoulders of the medical profession. Interest in enactment of laws with the object of securing ample hospital rooms, adequate equipment and staffed with well trained doctors and nurses is the responsibility of the state medical associations. One of the most important actions taken was the establishment of a Council on Public Relations headed by the most competent man available on a full-time basis thus relieving the editor of the *Journal* of much of his public relations work and making this Council more or less a spokesman for the A.M.A. Also cooperating with and aiding the Washington office. (The

present set-up in Washington is more of an information center and does not undertake to do the lobbying.)

Resolutions in support of and commending Senator Taft of Ohio for his bill on medical care were presented by the Ohio delegation and after careful consideration by the reference committee and the discussion indicated quite general approval of same, yet it was thought unwise to make any endorsements at the present time as many changes, amendments, etc., would undoubtedly be made before any action would be taken by Congress.

The report of the Secretary of the A.M.A. showed 125,471 members, the largest ever. However, of this number only 67,567 are Fellows. The distinction is that any member of a county or state association automatically becomes a member of A.M.A., but application to A.M.A. for Fellowship is necessary together with payment of \$8.00 which entitles the Fellow to the *Journal*. One of the reference committees recommended that state and county societies be asked to urge all their members to apply for Fellowship in the A.M.A.

General regret was expressed by all the delegates and by resolution at the retirement of Dr. Olin West as secretary and general manager on account of ill health, to take effect April 1 of this year. Dr. George F. Lull, Major General of U.S.A., was appointed by the Board of Trustees, January 1, 1946, as associate secretary and manager to relieve Dr. West of some of his arduous duties and, on April 1st, as secretary and manager until the meeting of the House of Delegates in July. From all reports I hear, Dr. Lull is very ably fulfilling the duties of said office.

Two meetings of the House of Delegates were decided upon—one at the annual session and one early in December of each year.

Dr. Olin West was elected president-elect and was given the greatest ovation I have heard anyone get in the House of Delegates.

The next meeting will be in Atlantic City.

J. H. IRWIN, M.D., Montana Delegate

The second session of the House of Delegates came to order at 2 o'clock, Thursday, July 18, with Dr. S. A. Cooney presiding.

The first order of business at this session was a talk by Mr. Peterson of the National Physicians Committee. He discussed medical publicity and public relations in general. He said that the people are interested in legislation that brings them better medical care. He explained that the reason National Physicians Committee came into being was because the government wanted to control the medical profession through legislation. In 1939 a bill was introduced to bring about this control but it died in committee. He said that Washington pressure groups are more or less frowned upon, but the voice of the physician from home is most important. At the National Physicians Committee meeting in St. Louis recently, the committee read and studied all the legislation that affected medicine. This committee wanted groups from every state to go to Washington to impress on every Senator and Congressman what medicine thought. The groups that did go to Washington worked so well that they changed the opinions of 18 senators and strengthened the opinion of many more senators. He explained that all social legislation lately has come from one group of social planners. The Murray-Wagner-Dingell Bill died in committee, and the Hill-Burton Bill is reported to be postponed until the present housing shortage is met. Senator Pepper reports that much more research must be done on his Child-Maternal Welfare Bill. There will be a lull now in socialized medicine legislation, but these things will crop up again when Congress reconvenes. The effort will again be made to control the medical profession. The government would like to control the doctors, and the fight will be harder next time.

The following resolution was then passed by the House of Delegates:

"Whereas, the Montana Medical Society and its individual members recognize the effective aggressive efforts of the National Physicians Committee to inform the public about the benefits of the private practice system for medicine and:

"Whereas, we believe that the well-planned program of the National Physicians Committee has been a vital part in defending of professions against legislative proposals detrimental to the best interests and welfare of the public and the professions and:

"Whereas, we believe that the continued expanded efforts of the National Physicians Committee are vital to the maintenance of medicine's maximum opportunity to serve the American People:

"Therefore, be it resolved: That the Montana Medical Society commend and endorse the program and activities of the National Physicians Committee and recommends the financial and moral support of that organization by the physicians of the state of Montana."

## REPORTS OF STANDING COMMITTEES

### History of Medicine Committee

Compiling of material to go with the first historical volume of "Physicians of Montana up to 1900" is complete with the exception of a small amount of material from Butte. The entire material should be ready by October of this year for revising and indexing, which the American Medical Association staff has agreed to do. The American Medical Association has agreed to enter also into the publication of the volume but the time of publication will depend upon material available, and labor conditions. Pre-publication subscriptions should be taken to help finance the output of this volume once it has been placed in the hands of the printers. We would also recommend that the committee gather material of the history of medicine in Montana dating from 1900 up to the present time. No further funds are required to complete the work aside from what was appropriated last year.

Your committee would also recommend that a new historical committee be appointed composed of men who can spend more time on this work and follow up the revision and indexing and publication of the volume.

E. D. HITCHCOCK, M.D., Chairman

J. H. IRWIN, M.D.

FRED ATTIX, M.D.

### Program Committee

The program for the state meeting included the following speakers:

John A. Anderson, M.D., Professor of Pediatrics and Head of the Department of Pediatrics, University of Utah, Salt Lake City, Utah. Subjects: "Herpetic Infections in Infants and Children"; "Quantitative Aspects of Fluid Therapy in Infants and Children." Roger O. Egeberg, M.D., Consultant for the Ninth Service Command, Salt Lake City, Banquet Speaker. Charles E. McLennan, M.D., Professor and Head of the Department of Obstetrics and Gynecology, University of Utah School of Medicine, Salt Lake City, Utah. Subjects: "Gynecologic Bleeding," "Pregnancy in Diabetics." O. Theron Clagett, M.D., M.S., F.A.C.S., Assistant Professor of Surgery, Mayo Foundation, Graduate School, University of Minnesota. Head of Section, Division of Surgery, Mayo Clinic, Rochester, Minnesota. Subjects: "Surgery of the Stomach," "Surgery of the Aged." Emil Goetsch, M.D., Professor of Surgery, Long Island College of Medicine, New York City. Subject: "Surgery of the Thyroid." Byron E. Hall, M.D., Assistant Professor of Medicine, University of Minnesota, Department of Medicine, Mayo Clinic, Rochester, Minnesota. Subjects: "The Effect of Folic Acid on Macrocytic Anemias," "Radioactive Phosphorus Therapy." Kenneth Swan, M.D., Professor and Head of the Department of Ophthalmology, University of Oregon Medical School, Portland, Oregon. Subject: "Eye Emergencies." Walter S. Priest, M.D., Associate in Medicine, Northwestern University, School of Medicine, Chicago, Illinois. Subject: "Antibiotic Therapy of Sub-acute Bacterial Endocarditis with Autopsy Findings in Ten Cases." Eugene Hildebrand, M.D., Great Falls. Formerly: Pathologist, Passavant Memorial Hospital, Chicago, Illinois. Subject: "Antibiotic Therapy of Sub-acute Bacterial Endocarditis with Autopsy Findings in Ten Cases."

M. A. SHILLINGTON, M.D., Chairman

T. F. WALKER, M.D.

R. F. PETERSON, M.D.



### Cancer Committee

Your chairman attended the meeting of the American Cancer Society in Chicago, November of 1945, and there obtained many ideas and thoughts regarding effective cancer control. It was then thought that an immediate effort would be made with the cooperation of the Field Army to establish a program of refresher courses for the doctors of Montana and also to submit a plan for the establishment of detection clinics in Montana.

After investigation it was found that the postgraduate facilities of the adjacent medical schools are so overtaxed that it will probably be a little time before any effective program of refresher courses can be worked out and put in effect.

The question of detection clinics in a sparsely settled population such as Montana has is a difficult one to work out and must be handled with great care or harm will be done and local physicians will be antagonized. It is, however, probably possible to work out a plan which would at least mark the beginning of such a program in Montana.

A word must again be said about the work of the Field Army, who have again organized the state to a remarkable degree.

During the recent campaign for funds, Montana with a \$40,000 goal reached over \$63,000.

The American Cancer Society of Montana has many projects which will be of great interest. A library project, a loan library, and exhibits for fairs are among these projects. Also a series of slides and films for use by physicians for their own instruction at society meetings will be available.

Now that the war is over and our medical profession will be replenished and stabilized, it is our earnest recommendation that both these matters be given earnest study and consideration.

J. H. GARBERSON, M.D., Chairman  
H. H. JAMES, M.D.  
J. H. BRIDENBAUGH, M.D.  
J. M. NELSON, M.D.  
C. F. LITTLE, M.D.

### Medical Insurance and Legal Affairs

P. E. KANE, M.D., Chairman

### Medical Publications

A. R. FOSS, M.D., Chairman

### Medical Economics

Your Economics Committee has functioned very little during the year. The special committee which was appointed has carried on in the organization of the Montana Physicians' Service Association which was eventually adopted by your Association and is now beginning to function essentially along the lines recommended by this committee at the meeting one year ago.

The matter of personal insurance both health and accident, for the doctors of Montana has been called to the attention of this committee. Mr. R. C. Abbott of Great Falls representing the Loyalty Group Insurance Plan, has called upon the various members of the committee. His plan is in effect in a great many states among professional groups and is already operative in Montana in the Yellowstone County Society and in the Cascade Society. It is our understanding that it can be offered to the members of the State Association without regard to age or physical examination. It is the recommendation of this committee that this plan be approved by the House of Delegates that the opportunity be submitted to the members of the state association to join with the understanding that if 50 per cent or more will join they can be handled as a group of the State Medical Association.

J. H. GARBERSON, M.D., Chairman

A report was then given by Dr. Schultz of the Veterans Service Bureau. Dr. Schultz pointed out that in April of this year Washington and Oregon joined the Veterans Service Bureau for veteran care, and this service has proved very successful. He said that last month Idaho joined through its medical association. This service can be made effective in Montana through the Veterans Service Bureau or through the State Association. The contract is no more than an agreement on a fee basis. The fees are made up on the basis of a cross section

of the state. Dr. Schultz feels that the best model contract and fee schedule is now operating in the state of Ohio. He said that the Washington fee schedule was drawn up hurriedly and is not sufficient to cover the needs. The Ohio plan, unlike most other plans, covers psychoneurotic cases with fees provided accordingly. A veterans plan to be successful must be uniform throughout. This veteran service plan may only provide for out-patient, service-connected disabilities and also service for a veteran connected with the G. I. education bill, whether out-patient or hospital cases. It provides for examination and counsel. Non-service illnesses or accidents may be hospitalized in Veterans Hospitals only if rooms are available. The first examination and care until examination shows the injury or illness is not service connected, can be considered as claimable medical care. For example, organic heart disease, arthritis and almost any general chronic illness, within one year of discharge, is considered service connected. Doctors may treat malaria cases at home. These service connected cases should be reported within seven days to the Bureau. Under this plan, the doctor would keep track of all the service given to veterans each month and submit a bill to the Veterans Service Bureau for that month. The Bureau would in turn send the doctor a check for the amount. It was pointed out that dentists and pharmacists are now negotiating to provide care for veterans on the same type of plan. Dr. Schultz suggested that the president enter into negotiations to enter into an agreement that would be satisfactory to the Veterans Administration and to the Medical Association, either in connection with Montana Physicians' Service or the Association itself.

Dr. H. T. Caraway made a motion that the above matter be referred to the Medical Economics Committee for consideration and that they report to the House of Delegates. Dr. H. W. Gregg seconded the motion and it passed unanimously. After due consideration, the Medical Economics Committee made the following report:

"Inasmuch as the Montana Medical Association has an organization already set up, namely the Montana Physicians' Service Association, as its own organization for the purpose of handling such matters, and since, according to the information available to this committee, failure to belong to the said Montana Physicians' Service will not disbar a physician from participating in the Veterans Administration Program, it is the recommendation of your committee that any contract with the Veterans Administration be with the Montana Physicians' Service Association."

J. H. GARBERSON, M.D., Chairman  
F. F. ATTIX, M.D.  
H. T. CARAWAY, M.D.  
M. A. SHILLINGTON, M.D.

It was moved by Dr. Garberson that the above recommendation be accepted. This motion was seconded by Dr. Walker, and the recommendation was unanimously accepted.

### Postgraduate Committee

F. R. SCHEMM, M.D., Chairman

### Fractures Committee

S. L. ODGERS, M.D., Chairman

### Tuberculosis Committee

F. I. TERRILL, M.D., Chairman

### Advisory Board of Woman's Auxiliary

The affairs of the Woman's Auxiliary to the State Medical Association were in good order. No meeting of the Advisory Board was held. Individual members of the board were consulted by local auxiliaries as to programs, policy, and strategy.

It is believed that two of the proper chief objectives of the Auxiliary are: (1) to promote friendly relations among the Auxiliary members and among the physicians themselves; (2) to urge individual members to use their influence thoughtfully and purposefully within the various organizations to which they belong, to the end that the Auxiliary group on the one hand, and lay groups on the other, may increasingly come to have a sympathetic understanding of each other's points of view and problems.

J. P. RITCHEY, M.D., Chairman

### Orthopedic Committee

During the fiscal year ending with the state meeting, your Orthopedic Committee has not found it necessary to hold any formal meetings. Dr. Colman and myself have had several informal discussions regarding orthopedic problems, none of which were of such a nature that they required further consideration by committee members or the Medical Association.

Our relationship with the Crippled Children's Division of the State Board of Health has been pleasant and satisfactory, and clinics were held biannually, at appropriate centers throughout the state where crippled children are gathered by orthopedic and public health nurses for examination. The results of these examinations are dictated at the time of examination with recommendations as to further treatment. Cases in need of surgical care are investigated by the Welfare Service, and if they are found eligible for financial assistance they are assigned to an orthopedic surgeon for this care at state expense. If they are not state cases they are advised as to what should be done and are allowed to select the surgeon of their choice. Cases eligible for state financial aid are treated according to a fixed schedule that has previously been arranged by the Orthopedic Committee and the Crippled Children's Division. The fee on the whole is satisfactory. In some instances the work required is out of proportion to the fee paid, but we realize that the Crippled Children's Division must accommodate the cost of crippled children care according to their budget.

During the past year we have had an unusually large number of infantile paralysis cases. The expense of caring for these cases has been assumed by the National Foundation for Infantile Paralysis. The National Foundation, through its local chapter, has arranged a program independent of the Crippled Children's Division. It seems to some of us, who are directly connected with this work, that it might be better to combine in some manner that is satisfactory to all concerned, the National Organization work and the Crippled Children's Division program. In this way the bills would all be paid by the Crippled Children's Division, who in turn would transmit these particular bills to the National Foundation for reimbursement. The Crippled Children's Division is following certain definite standards for hospital and surgical qualifications that would automatically be made available to the National Foundation, who are not in a position to attempt to qualify or direct cases through certain men who are known to have the necessary qualifications for handling these cases.

L. W. ALLARD, M.D., Chairman  
J. K. COLMAN, M.D.  
B. K. KILBOURNE, M.D.

### Industrial Hygiene Committee

A. T. HAAS, M.D., Chairman

### Rocky Mountain Conference Committee

This committee reports that the Rocky Mountain Conference in Las Vegas, New Mexico, has been postponed until next year. The reason for this is that the war has so recently ended and there are too few men back in practice. The New Mexico group has been in contact with the committee and they have reported that all plans for that conference have been postponed.

H. W. GREGG, M.D., Chairman

### Maternal and Child Welfare Committee

Dr. F. L. McPhail suggested approval by the Montana State Medical Association of Academy of Pediatrics survey of maternal and child health needs.

Dr. L. W. Brewer made a motion that this body favor promulgation of a law modeled after adjacent states requiring premarital Wassermann and examination. Dr. B. K. Kilbourne explained that the model law does not prohibit a 4 plus Wassermann case from marrying but only informs prospective marrying couples of the fact and how it will affect their future. Dr. D. T. Berg suggested that the law be read and interpreted by Mr. Toomey, the attorney. Mr. Toomey explained that the model only informs both contracting parties and they may get married anyhow. In this model law, no responsibility is placed upon the doctor as in previous laws.

The motion as made by Dr. Brewer was seconded by Dr. Gregg and it passed unanimously.

F. L. MCPHAIL, M.D., Chairman

### Necrology Committee

During the past year the deaths of the following named physicians and surgeons in Montana are reported:

Dr. P. L. Greene, Livingston, (January 5, 1946).  
Dr. J. H. Hunt, Glendive, (March 22, 1946).  
Dr. G. J. McHefsey, Butte and Billings, (March, 1946).  
Dr. S. E. Schwartz, Butte, (March, 1946).  
Dr. C. E. Blankenhorn, Great Falls, (March 6, 1946).  
Dr. J. W. Fennell, Missoula, (February 23, 1946).  
Dr. H. L. Koehler, Missoula, (June 8, 1946).  
Dr. W. W. Johnson, Savage, (November 15, 1945).  
Dr. Jacob Thorkelson, Butte, (November 20, 1945).  
Dr. L. W. Smith, Butte and Polson, (November 18, 1945).  
Dr. C. F. Jump, Helena, (October 22, 1945).  
Dr. B. V. McCabe, Helena, (August 24, 1945).  
Dr. W. N. King, Missoula, (July 16, 1946).

Whereas, Divine Providence has removed by death from our midst these respected and honored members of the medical profession of Montana and called them to their eternal rest from the arduous duties well performed in the service of their patients. Therefore, we recommend that this report be spread on the minutes of the Medical Association of Montana in respect to the memory of our departed colleagues, who have served so faithfully in upholding the high ideals of the medical profession.

F. F. ATTIX, M.D., Chairman  
M. G. DANSKIN, M.D.  
J. J. MALEE, M.D.  
J. J. McCABE, M.D.  
F. L. MCPHAIL, M.D.  
T. B. MOORE, M.D.

### Dentists' Pharmacists' and Nurses' Committee

#### NURSES

During the past year, the Montana State Nurses Association has established a new full-time position whose office is with the secretary of the State Nurses Association. This position is a professional counseling and placement service. The State Association, at the present time, shows a membership of 760. There are registered with the placement service 50 vacant positions. Eight nurses have listed credentials and are looking for positions other than the ones in which they are working at present. The State Board of Nurse Examiners shows that there are 3200 nurses currently registered in the State of Montana but those giving Montana addresses at the present time are 1900. There are 950 students in training in the nursing schools in Montana at the present time and an approximate additional enrollment of 200 before the end of 1946.

#### DENTISTS

The Secretary of the State Board of Dental Examiners reports that two of Montana's dentists lost their lives while serving in the Armed Forces during the war. Approximately 70 per cent of those who were in the service have returned to practice within the state. The State Board of Dental Examiners has issued twenty new licenses for the practice of dentistry in Montana during the present year. There is still a great need for additional dentists within the state.

#### PHARMACISTS

The State Board of Pharmacy has nothing to report.

B. K. KILBOURNE, M.D., Chairman  
B. R. TARBOX, M.D.  
W. H. STEPHAN, M.D.

### Nominating Committee

The Nominating Committee met and have the following nominations to make:

For President-Elect: Dr. L. W. Allard, Billings; Dr. F. E. Keenan, Great Falls.

For Vice President: Dr. D. T. Berg, Helena; Dr. C. H. Fredrickson, Missoula.

For Secretary: Dr. H. T. Caraway, Billings; Dr. Alfred Karsted, Butte.

For Delegate to A.M.A.: Dr. R. F. Peterson, Butte; Dr. J. J. Malee, Anaconda.

For Alternate Delegate to A.M.A.: Dr. T. L. Hawkins, Helena; Dr. T. R. Vye, Laurel.

For Councilors: District No. 1: Dr. G. W. Setzer, Malta; Dr. R. E. Ryde, Glasgow. District No. 2: Dr. C. W. Law-



son, Havre; Dr. D. S. McKenzie, Havre. District No. 7: Dr. T. B. Moore, Kalispell; Dr. H. D. Huggins, Kalispell. District No. 10: Dr. A. C. Knight, Philipsburg; Dr. L. G. Dunlap, Anaconda.

For five names recommended to the governor of Montana for Board of Health appointment: Dr. L. W. Brewer, Missoula; Dr. C. S. Houtz, Havre; Dr. J. C. Shields, Butte; Dr. W. H. Stephan, Dillon; Dr. M. D. Winter, Miles City.

For Executive Committee: Dr. J. C. MacGregor, Great Falls; Dr. F. F. Attix, Lewistown.

Dr. Malee requested that his name be withdrawn from the ballot.

Dr. Karsted requested that his name be withdrawn as a candidate for secretary.

Dr. Wilking was nominated from the floor for secretary, but he requested that his name be withdrawn and that a unanimous vote be given Dr. Caraway.

Dr. Shillington moved that Dr. Cooney's name be put on the ballot for the Executive Committee. Dr. Attix seconded the nomination and it passed unanimously.

Dr. Colman moved that the Board of Health nominations be accepted. Dr. Gregg seconded the motion and it passed unanimously.

Dr. Malee made a motion that the delegates vote on one ballot. Dr. Gregg seconded the motion and it passed unanimously.

Dr. Shillington made a motion that the nominations be closed. Dr. Brewer seconded the motion and it passed unanimously.

A. R. FOSS, M.D., Chairman  
E. M. GANS, M.D.  
L. G. DUNLAP, M.D.

#### Report on National Conference on Rural Health

Dr. E. M. Gans, who attended the first annual meeting, National Conference on Rural Health, March 30, 1946, in Chicago, Illinois, made the following report:

The meeting was called to order by F. S. Crockett, M.D., chairman, Committee on Rural Medical Service, American Medical Association, who outlined the purpose of the meeting.

1st: To ascertain where medical service is needed, and suggested this to be ascertained by the local medical societies and they to take steps to plan to take care of their own communities.

2nd: The people in the rural community to pay what they can and the balance to be supplemented by local taxation.

3rd: To have a committee of the physicians and a committee of the F.S.A. meet and work out a satisfactory solution of the Rural Health problems, but not to be done by federal aid.

Dr. West, secretary, American Medical Association, gave a short talk along the same lines as Dr. Crockett, and concurred in Dr. Crockett's statements.

Ransom E. Aldrich, Mississippi, chairman, Medical Care Committee, American Farm Bureau Federation, then spoke of the need of medical care in rural areas. He stated, "We have not adequate medical care for rural communities." He elaborated at some length on the lack of medical care in rural areas. However, he also stated that medical care of rural communities should be controlled by the community, and if this is not done, it will be done for them and the local community will lose control. That that chief problem in rural communities is cost, and suggested that some prepayment plan for hospital, ambulance and medical care should be worked out.

Leonard W. Larson, M.D., North Dakota, member, Committee Rural Medical Service, American Medical Association. His talk was on the subject of making living conditions in rural areas and the medical practice more attractive, so that physicians would locate in these areas and be assured of good living conditions, schools and hospitals. But he stated that no hospital was good unless adequately equipped and staffed. Good roads would bring the patients to the doctor and so would lower the cost. Good prepaid medical service is the solution, if the farmer will and can pay for it. He also stated that community health centers is one solution and thinks it would encourage young physicians to locate in rural areas. Close cooperation between farmers and physicians would provide adequate medical service with reasonable cost.

Fred R. Mott, M.D., U. S. Public Health Service, Chief Medical Officer, Farm Security Administration. He stressed the need of preventative medicine in rural areas, by having more

nurses and health officers. He claims an outlay of one dollar per person by local community to be matched by an equal amount by the Public Health Service would solve this problem. Because of the low income of the American farmer, the farmer could not afford to pay the fee of a dollar a mile, and thought that maybe the physician could not do it any cheaper. That the average income of the farmer was \$760.00 a year, and even lower than that in Nebraska and some other states. He also favored the Truman Health Bill.

Victor Johnson, M.D., secretary, Council on Medical Education and Hospitals, American Medical Association, stated that scholarships might be provided for young men from rural areas, if possible, entering the medical profession, provided they agreed to practice in rural areas for a period of years, but this proved to be a failure. He also stated that medical care in the rural areas must be of high quality by physicians and hospitals. That some plan must be found for the care of rural areas, but that so far no feasible plan was offered by him.

Howard Strong, Secretary, Health Advisory Council, Chamber of Commerce of the United States, Washington, D. C. He stated that there were three plans available: (1) Service by private physicians, (2) Service through hospitals, (3) Service through Public Health. That cities have larger number of physicians than country areas. That 60 per cent of the counties have full time health officers, so that the nation is becoming health conscious, and that a study was being made of hospital needs. One suggestion was to have a base hospital, centrally located, with teaching and laboratory facilities. Then to have district emergency hospitals, without teaching or laboratory, where emergency care can be given, and then transport the patient to the base hospital. The rural medical care should be a local problem and handled by the local community. He also advocated a nation-wide plan for better health.

Leland B. Tate, Ph.D., Rural Health Service, The Farm Foundation. He stressed research for health education in rural areas and improving rural living conditions, and the need to know the characteristics of farm people; settle the conditions and difficulties arising in farm communities; find out how the farmer thinks and reasons. Try to make subject matter clear to farm people by understanding their educational status and learn how to approach them and get their economic reactions. That health education may find the answer to medical service for farm communities.

Mrs. Charles W. Sewell, administrative director of American Women of American Farm Bureau Federation. Mrs. Sewell was not in favor of federal aid, nor the Murray-Dingell bill. She did favor the Hill-Burton bill. She also stressed educating farmers in health problems and advised working out a suitable program to equalize medical cost to farm income. She advised meetings of farm groups and physicians in the local communities.

The following is the program for action of state rural health committees:

*What should the state committee on rural medical service undertake?* Meet with interested farm groups—Farm Bureau, Grange, Farmers Union, and agree on objective for common effort. Three general types of activity may be considered:

1. Hill-Burton bill. See that sound judgment is exercised in placing of facilities and other details applying to rural areas. (a) Insistence on and devising methods for maintenance of high professional standards in all facilities constructed so that more service will not mean service of lower quality. (b) Deciding what constitutes the unit to be served by various types of facilities, number of people, distance the sick can be transported, desirability of a public ambulance service. The present available professional personnel and possibility of attracting more. (c) Deciding what is meant by diagnostic center and health center and their relation to the hospital as they should apply in each state. (d) Close affiliation with agencies of state government created to administer the Hill-Burton bill or like legislation.

2. Extending to country people the benefit of prepayment plans for catastrophic illness and hospitalization. Special plans for marginal farmers who may be in part medically indigent, but should be encouraged to pull their pound.

3. Promotion of health education among farm people. Initiative here must reside in organized farm groups: Parent-Teacher, 4H Clubs, Home Economics Clubs, Boys' Camps, extension

departments of state agricultural schools, accident prevention and first aid, sponsoring proper kind of publicity in farm press, local papers and local radio.

4. Conference of rural and health leaders, sponsored by state colleges of agriculture. Ohio University is a good example.

E. M. GANS, M.D., Chairman

Dr. Danskin made a motion and Dr. Gregg seconded it that tentative drafts of the revised constitution shall be sent to each member for consideration within 90 days. Then a printed copy shall be sent to each member earlier than two months before the next annual meeting for consideration and adoption. This motion was unanimously passed.

Dr. Victor H. Vogel, chief medical officer of the office of Vocational Rehabilitation of the U.S.C.H.S., gave a history of the Vocational Rehabilitation program and stated that their program is to purchase medical advice and care from practitioners of Montana for cases having the following qualifications: (1) The patient must have reasonable chances of employability. (2) The condition must be either static or slowly progressive. (3) Care cannot be given for purely humanitarian reasons only. (4) Care cannot be given for acute illnesses. He outlined the state program, and further details should be obtained from the office in Helena, Montana.

Dr. Garberson made a motion that the House of Delegates consider the matter of health and accident insurance for the doctors. Dr. Gregg seconded the motion and it passed unanimously.

Dr. R. F. Peterson recommended to the House of Delegates that an executive secretary be employed by the Montana State Medical Association. In the following discussion, Dr. McCabe was opposed to electing an executive secretary and suggested that the regular secretary be reimbursed. Dr. Shillington pointed out that it was difficult for a full-time doctor to take care of the job properly. After a lengthy discussion it was felt that a doctor is more qualified to take care of the job than a layman. Dr. Shillington made a motion which was seconded by Dr. J. T. McGregor that the society approve up to \$250 per month for the secretary's help if necessary for next year. This was passed unanimously.

#### Maternal and Child Health Committee

On July 16, 1946, Dr. Edythe Hershey left Montana to take up her new duties as a Regional Consultant for the Children's Bureau in five southern states. In recent years there has been considerably more interest on the part of the doctors in maternal and child health problems. Hand in hand with this interest has come a marked reduction in the maternal and infant mortality rates in this state.

The progress since the establishment of the Division in 1917 is noteworthy. The maternal mortality rate has decreased from 118 per 10,000 live births in 1917, to 14 in 1945; and the infant mortality rate has decreased from 79 per 1,000 live births in 1917, to 34 in 1945. Many factors are responsible for this remarkable improvement. These reductions in mortality rates could not have been accomplished without the very fine cooperation of the medical profession. It is believed, however, that the educational program carried to the people of the state has played a very important part in the saving of mothers and babies.

It is important to recognize that the Montana Medical Association, through its Maternal and Child Health Committee, has served as liaison with the medical profession and has made possible the accomplishment of much that would have been impossible without this participation.

It is only through understanding, support and participation of the medical profession with public health authorities in the development of an educational program through lay groups such as the Montana Tuberculosis Association, the Montana Federation of Women's Clubs, and Parent-Teacher's Associations, as well as the Department of Public Instruction which has worked closely in integrating the school health program, that a competent health education program can be carried out consistently and wholeheartedly. Your Maternal and Child Health Committee desires to express its appreciation for the work accomplished by Dr. Hershey during her eight years in Montana as Director of the Division of Maternal and Child Health.

During the war years, over 6,000 mothers and babies have been authorized for care under E.M.I.C., with obligations for

payment of over a half million dollars since May, 1943. The Director of the Division for Maternal and Child Health has been responsible for all authorizations and approval of medical and hospital claims. Administrative costs have been kept at a minimum. At the present time a study of the E.M.I.C. case records is being made. This study will include not only quality of care, but will give some indication of morbidity, as well as full mortality for the cases under the program. The cost of administration, and the case costs will be revealed. There is a rather complete data of hospital costs for all of the larger hospitals in Montana, showing cost statements for three consecutive years. Material from these statements should be helpful for those with allied interests, such as The Blue Cross, and our hospital administrators, and should prove helpful in studying hospital costs in this state.

*Post-Graduate Courses.* The sub-committee composed of Dr. Gillespie, Dr. Brewer, and Dr. Eneboe, is working on a post-graduate program for next fall. These courses will follow, according to the present plan, the system followed prior to the war.

A sub-committee composed of Dr. Gerdes, Dr. Farrand, and Dr. Preston is reviewing all literature relating to Maternal and Child Health, sent out by this Division of the State Board of Health.

*Premature Program.* A sufficient number of Gordon-Armstrong incubators may be purchased to be utilized in hospitals which agree to participate in the premature program and accept consultation and advisory services. If we are to reduce our infant mortality rate still further, a program of improved care for the premature babies must be carried out. Plans are being studied for facilities which will make it possible for a premature infant to receive adequate premature care in any part of the state.

*Pre-marital Legislation.* This legislation was previously proposed by the state medical association on the recommendation of this committee, but the executive committee of the state medical society did not take any active part in promoting this legislation. It is our belief that this bill should be introduced at the coming legislature and that it should be supported by the medical profession. This decision is in line with the activity of 33 states in insisting upon pre-marital examination and Wassermann tests. Each neighboring state has passed similar legislation.

*Maternal Mortality Studies.* Dr. Mattison, director of the Maternal and Child Health division of the State Board of Health, succeeding Dr. Hershey, is making a study of material collected over the last five-year period. As this data is reviewed and completed, the results will be written for a published report for the medical profession.

*Infant Mortality Studies.* The records and questionnaires as filled out by the attending physicians are available for tabulation for the five-year period. These will be tabulated and studied when more help is available for this study.

Montana is cooperating with a nation-wide child health study which has been initiated by the American Academy of Pediatrics with Dr. Gleason as state chairman. This study has been supported by this committee and Dr. Mattison has been appointed to serve as executive secretary. It is hoped that the house of delegates will approve this study and enlist the interest of all physicians.

Once again an effort is being made to organize those interested in obstetrics and gynecology into a small society for the advancement of obstetrics and gynecology in this state.

Legislation was passed in 1945 which was to provide for a hygienic laboratory to operate a blood plasma bank and prepare plasma. It has been impossible to obtain a building to carry out this program, although the equipment has been purchased. In the meantime plasma was made available by the American Red Cross through the State Board of Health, and is adequate to meet the needs for this next year. In the meantime, this gives an opportunity for reconsideration of the services that should be rendered through the hygienic laboratory in accordance with the law, and probably some changes might be made in the near future in regard to this plan. The question has been raised as to services which might be offered for Rh typing facilities in the small hospitals and outlying areas.

Licensing of maternity homes and hospitals, according to law, has been delayed due to lack of personnel during the war.



Reinspection of the hospitals and maternity homes has already begun. Licensing will be completed when this information is available.

It is recommended that each hospital staff appoint an obstetric committee to assure conformity with the provisions of this law and to set up obstetric regulations and procedures.

F. L. McPHAIL, M.D., Chairman

#### Election

The following were elected to serve as the officers for the coming year:

- Dr. L. W. Allard, Billings, President-Elect.
- Dr. C. H. Fredrickson, Missoula, Vice President.
- Dr. H. T. Caraway, Billings, Secretary-Treasurer.
- Dr. R. F. Peterson, Butte, Delegate to A.M.A.
- Dr. T. L. Hawkins, Helena, Alternate Delegate to A.M.A.
- Dr. G. W. Setzer, Malta, Councilor from District No. 1.
- Dr. C. W. Lawson, Havre, Councilor from District No. 2.
- Dr. T. B. Moore, Kalispell, Councilor from District No. 7.
- Dr. A. C. Knight, Philipsburg, Councilor from District No. 10.

Dr. M. A. Shillington will serve as President for the coming year.

Dr. S. A. Cooney was elected unanimously to service on the Executive Committee for a two-year period.

Dr. Hurd made a motion that a vote of thanks be given Dr. J. H. Irwin for his long and faithful service as a delegate to the A.M.A. from the Montana State Medical Association. A rising vote of thanks was accorded Dr. Irwin.

Dr. C. H. Fredrickson invited the 1947 session to Missoula, Montana. Dr. Walker made a motion that the delegates accept. This was seconded by Dr. Hurd and carried unanimously.

Dr. Hurd made a motion that \$1 per paid-up member be paid to the United Public Health League for this year's support of their program and that the check be accompanied by a letter suggesting an arrangement be made with the Executive Committee of this association for the matter of solicitation and support for the next year, and also that a process of unification of the various Washington offices be undertaken. This was seconded by Dr. Shillington and passed unanimously.

A long discussion was held regarding the advisability of the State Association supporting financially speakers for the various more specialized groups of the Association. No final action was taken after a number of motions that had been made were withdrawn.

Dr. Shillington moved that the House of Delegates recess until 8 A.M. the next day and this was seconded by Dr. Gregg and passed unanimously.

Dr. Attix suggested that the N.P.C. be contacted to have information available for use by the Montana Public Health League for public use.

Dr. Shields made a motion that the Committee on Public Relations act as advisory committee to the medical advisor to the Montana Public Health League. This was seconded by Dr. Richardson and passed unanimously.

Dr. Hawkins made a motion that Dr. McPhail of Great Falls edit his report for publication in the Montana Health and the public press. This was seconded by Dr. Malee and passed unanimously.

Dr. Caraway made a motion that the House of Delegates extend a vote of confidence to the State Board of Health. This was seconded by Dr. Gregg and passed on voice vote.

Dr. Shields made a motion that the House of Delegates adjourn and immediately reconvene as the administrative body of the Montana Physicians' Service. Dr. Hurd seconded the motion and it was passed unanimously.

(All committee reports were duly accepted. Some committees had no reports and are therefore not listed.)

#### Medical Service and Public Relations Committee

In the past year a number of medical issues have clarified themselves. It is appropriate to consider these under two headings.

The first concerns the legal status of medical practice. It derives from the continuing legislative attempts now in progress. These, with the aid of increasing pressure from propaganda groups, aim at a revolution in control of the theory and practice of medicine.

This move is important not only because of its direct attack on medical practice, but because it also aims to split away from

their position as partners of the physician the ancillary groups, such as the hospital and nursing professions. Let no one assume that once universal compulsory health insurance becomes a fact, we shall not find our guidance and counsel of these professions displaced downward in the scale by their need to cultivate political favor.

This legislative problem, by its momentum, has developed into our number one headache. In the long run, it cannot be divorced from the wider issues of public relations which constitute the second topic of our report. However, its urgency requires us to consider it separately and primarily and in terms of action.

It must be apparent from the testimony currently being quoted in the *Journal* of the A.M.A. from the hearings of the Senate committee on education and labor, that the essence of our immediate defense is now clear. It consists in the promotion, operation, and perfection of voluntary plans for prepayment of medical expense, and extension of membership in these plans to the low-income portion of the population. Arguments of theory and references to the record of the profession in improving the health of our nation, fall on ears which, if not deaf, are at least attuned to only the language of the vote. Gone with monarchies, Van Dyke beards, and laudable pus, are the days when the deepest convictions of professional men might be expected to weigh favorably in the scale against enthusiasms of "social scientists" or the political aspirations of labor bosses.

Therefore our defense has come to consist of substituting voluntary plans on as wide a base as may be necessary to satisfy those who may otherwise be attracted to the bait so persuasively displayed by pressure groups. The A.M.A. council on Medical Service and Public Relations estimated a few weeks ago that by the end of 1946, there will be in operation voluntary plans in 42 states.

Our constructive program in defense may be surveyed in future years and thought to have been proper and good, or it may be assayed and condemned. But no thoughtful person, reading the current testimony, can doubt that the fate of "compulsory health insurance" legislation, and at the same time, the immediate future of the practice of medicine, depends in large measure on the success of voluntary plans. Therefore, your committee recommends that each member of the state association make it his business to support the Montana Physicians Service in principle and practice to the utmost of his fairness and ability. By insuring the successful operation of our own plan, we can establish a favorable reaction towards the profession in the economic zone of public relations, where it will be particularly helpful.

The second portion of this report proposes a course of action for the profession, through the A.M.A. and its Council on Medical Service and Public Relations. No claim is made for originality in any of the suggestions which follow, and in fact, acknowledgment is made directly to Dr. Bradford Murphey of Colorado and Dr. Alfred Adson of Minnesota, whose comments along these lines recently attracted the attention of your committee.

Four correlated programs are hereby recommended. These can be effective only through positive action by the A.M.A. If this report is adopted, it is expressly directed that the Montana delegate to the A.M.A. meeting submit a resolution calling for the establishment of these four national programs. It is further expressly directed that this resolution be submitted immediately, in writing, to the A.M.A., and again submitted from the floor at the next meeting of the house of delegates of the A.M.A.

The first program is the establishment of a statistical research into the complete preventive and therapeutic services offered and used by states and areas. This should be of thoroughness and detail at least equal to that now displayed by the A.M.A. in evaluating medical education and hospital service. The results of this study should be published both in condensed versions to readers of the *Journal* of the A.M.A., and elsewhere in complete detail, to be available to agencies and persons interested.

The results of such a truly comprehensive study should do one of two things, or both, in part. First: go far to dispel the flood of biased statistics being loosed at the congressional hearings and elsewhere by governmental and private agencies, con-

cerning the state of health of this nation. Or, second: confirm real gaps in the supply and use of medical service. In the latter case, the remedies will become apparent, and we will be able to police our own territory.

The second program will eventually be the direct corollary and outgrowth of the first,—but in some respects must precede it, and consists in the establishment of a national program of health education. Abandoning the defensive and passive attitude which has characterized the profession traditionally, we propose that the A.M.A. take an aggressive position in health education. Through available means of public instruction such as school texts and films, periodicals, radio and press, the profession should freely and authoritatively reiterate the gospel of preventive medicine in its widest sense (including personal hygiene, both mental and physical).

The aspect of prevention should be the main theme of health education, with the curative phases handled in such general terms as will help build patient cooperation for the practitioner. Too long the chief written interpretation of modern medicine to the layman has been the syndicated medical column, which usually makes the patient critical of anything except the latest medical fad. And too long the most vivid national presentation of medical progress by radio has been a "plug" for one or another brand of cigarettes.

No one assumes that such a program of health education will be easy to formulate, or that mistakes will not be made. But the excellent beginnings made by the A.M.A., and by certain state societies such as that of New York, have shown how it may be approached successfully.

Besides the scientific presentations suggested above, there is another large field to be covered by this program. That lies in presenting the public authoritatively with the facts of political medicine abroad as compared with medicine in the U.S.A. This can establish in the consciousness of both our political friends and foes, the background of our stand against political medicine. For instance, in the high schools throughout the land this year, one of the chief topics which will be debated is compulsory health insurance. We may be confident that there will be a wealth of material supplied through the schools by our opposition. In like manner we need to supply facts to those who will try to carry our side of the argument. Even now the parent A.M.A. council is developing such a brochure for school distribution. The same facts need wider circulation, and the two programs just proposed, namely statistical research and health education, should act for us. This is an important job.

The third proposal we make, is that the Washington, D. C., office of the A.M.A. be considerably expanded. This office was not even established by the A.M.A. until at least two other medical organizations had seen the need and begun to meet it. A month ago the A.M.A. was still served in Washington by only one man who was doing his best to cover congressional hearings, maintain contact with the important committees, follow the progress of proposed medical legislation, and serve as A.M.A. information bureau, all from a one-room office, with one stenographer. When we are talking about the importance of consolidating health agencies of the federal government in one department with a chief who is of cabinet rank, it is obvious that we must have the profession itself represented adequately to the legislative branch.

This office should provide a service to the inquiring legis-

lator by letting him know where the profession stands in health matters. It should also provide a service to the profession by letting us know the same about our individual legislators.

This sort of activity may change the tax status of the A.M.A. If so, let us increase our dues (by whatever amount is needed) and do the job. It has been argued that the A.M.A. should retain its tax exempt status by avoiding any semblance of lobbying. Your committee feels that no other organization can do these jobs so well as the A.M.A., if we wish them done. We also feel that such organizations as the N.P.C., which has done much good work, should be free to continue, and should be supported individually, but this N.P.C. draws part of its contributions from drug and manufacturing houses, and we believe the actual legislative and educational programs of the profession should be kept clear of any entangling alliances.

The fourth program we propose is that there be an A.M.A. training program for state officers and committeemen. Your officers could serve your interests much better in these times of stress if they had the benefit of conference with their fellows in adjacent states and with the personnel of the A.M.A. This program might best be carried out by national assemblies of state presidents, vice presidents and secretaries as an extension of the customary annual conference of state secretaries. In the case of committeemen, regional meetings of the various councils would probably be more practical. We believe that such a system of training and mutual consultation would lend continuity to the administration of our society, perspective and conviction to our officers, strength to our actions, and unity and prestige to our profession. I move adoption of this portion of the report.

One further immediate problem requires discussion. The shortage of nurses exists nationally. Two facts are apparent as primary causes. The first is the diversion from actual practice of registered nurses who are either tired out by the pressure of duty in civilian life, or fascinated by their experiences with executive types of practice in public health or other specialized work. That is bad enough.

But the second fact is that nursing as a career is appealing to fewer girls, and our training schools are not being filled. And that is worse.

It is time to wonder if the nurses aide type of service being used by hospitals quite generally now is really operating to keep many of the desirable candidates unavailable for regular nurses training. This perhaps we cannot answer easily; but one thing we can do—each can make a personal effort to interest the families of his acquaintance who have girls finishing high school to send them into training. Our influence can help in the right direction and is sorely needed.

Your committee wishes to call for discussion on the matter of the future policy and relationship of the state society to two organizations, the Public Health League of Montana, and the United Public Health League, representing most of the western states. We have no recommendations to make in these matters, but believe they are of fundamental importance and that they should be discussed thoroughly and a positive action taken with respect to each.

Respectfully submitted,

LEONARD W. BREWER, M.D., Chairman  
M. A. SHILLINGTON

### NORTHWEST HOSPITAL ALLOTMENTS

Allotment figures to the states for the five year hospital construction program authorized in the Hospital Survey and Construction Act have been released by Surgeon General Thomas Parran of the United States Public Health Service. The Act authorizes the appropriation of \$3,000,000 for statewide hospital surveys and for planning of construction programs, and \$75,000,000 annually for the actual construction of hospitals and related facilities.

The share to which each state is entitled from the

\$3,000,000 authorization for survey and planning expenses is based solely on state population. For determination of the distribution of the \$75,000,000 authorized for construction, a formula is used which takes into consideration both the population and the per capita income.

Preliminary estimates for survey and planning for the following Northwest states are: Minnesota, \$56,876, Montana, \$10,355, North Dakota, \$11,889, South Dakota, \$12,066; for construction: Minnesota, \$1,655,700, Montana, \$231,825, North Dakota, \$308,475, South Dakota, \$359,625.—Federal Security Agency Release.



## ADDRESS OF THE PRESIDENT

S. A. COONEY, M.D.

Helena, Montana

It is with real appreciation of the confidence reposed in me as your president, that I make the president's report of my discharge of that stewardship during the year 1945-1946 of the Montana State Medical association.

The association year which has just closed, has witnessed events of the first magnitude in human affairs, the cessation of hostilities on the battle fronts of the world, the return of millions of fighting men and their supporting services to civilian life, and the myriad of problems consequent upon the tremendous dislocations and confusions caused by a war which engulfed all of humanity, a war which bears the ominous title World War II, as if others were to follow in numerical progression. The state of Montana may well be proud of its war efforts. I am informed by state headquarters of the selective service, that Montana furnished, in round figures, not less than 68,000 men and women to the armed services, divided, approximately, into 65,000 men and 3,000 women. This figure is inclusive of all under-aged males who served in special training programs. Show me any other state with such a record. Of the men and women who went to *the Army* from the Treasure State, 1552 were never to return. In World War I, Montana's war deaths were, in proportion to population, 2% greater than those of any other state, regardless of population, considering the number of troops engaged. In World War II, Montana's *army death rate* was exceeded only by that of one state, New Mexico. With .42% of the nation's population in 1940, Montana contributed .48% of the army. More than one in twenty-five will not return. They represent .59% of the army's total dead and missing, compared with .42% for the entire United States population, and .48% of army strength. Every county in Montana suffered. Silver Bow's 120 was the heaviest toll, with Cascade's 119 second. Liberty and Petroleum each gave three lives. I regret that figures for the navy have not been finally checked and released, but that service must comb every sea before it can finally report respecting our boys who "went down from the mountains to the sea."

Our profession was strongly represented in the armed forces of the nation. Of the doctors of medicine who were practicing in Montana under licenses issued by the state board of medical examiners of Montana, 114 went forward into the armed services. In every theatre of war and on the seven seas they contributed the best they had for the protection of the American man-at-arms stricken in battle, laid low by disease, or overcome by fatigue or the nerve shattering experiences of war. *In honor of all of whom I have spoken, including our own brothers of the profession, I ask you now to stand, with bared heads, for a moment of silence.*

I believe it can be truthfully said that we of the profession who remained at home, were fully mindful of the sacrifices made by those who went into the armed services, and that we have done within our state everything that could be done to provide equality of opportunity upon their return to their private practices in their former locations, or their re-establishment of private practices in new locations in our state.

Notwithstanding the multiplied burdens on members of the profession growing from war and its aftermath—burdens that would make any year full to overflowing, the profession in Montana has been faced with consideration of problems of the first magnitude, and it has resolutely grappled with them. The more important of these problems remain for our earnest attention and consideration:

(1) *Socialized medicine.* The proponents of socialized medicine seized every opportunity during the war to advance their cause, notwithstanding the engagements of members of our profession overseas and in their arguments they pointed to war conditions as justifying their efforts, regardless of the fact that fair-minded men recognize that no sane legislation could be based on such transient conditions. Agreeable to the directions of your association, your president, accompanied by Dr. A. H. Foss of Missoula, appeared before the Senate committee on education and Labor, in the Senate of the United States, in the week of May 28, 1946, in opposition to the Murray-Wagner-Dingell bill, sometimes referred to as the National

Health Insurance plan. At the conclusion of our testimony and representations on behalf of the Montana State Medical association, Senator James E. Murray delivered to me the original transcript covering our appearance, and I have brought that to the convention where it is open to inspection by any of you.\* I hope that most of you will take the opportunity, either now or later, to examine this transcript, for I believe that you will find therein irrefutable evidence that, notwithstanding Senator Murray's being one of the authors of the bill, he accorded the Montana State Medical association, through its representatives, every possible courtesy in connection with the presentation of Montana's case. And I think you will agree with the conclusion that, in your behalf, we made a case for the preservation of the personal relation of physician and client against government-ordered and government-administered medicine. At least the testimony will indicate the ready agreement with our views, of those who were against the bill, and, as regards those who were for the bill, agreement in principle that this personal relation must be maintained at all hazards. Of course, the great division of opinion arises over the fact that the mechanism of the bill, in our judgment, does much to destroy that relationship. While in Washington, I had the good fortune to make the acquaintance of some six senators who are members of the committee, and thereby I was afforded opportunity for that direct, personal presentation, which is not possible in the formal atmosphere of committee rooms. I am confident that the results therefrom will be entirely in keeping with your views.

(2) I am in receipt of a communication from the National Physicians' committee, confidential in character, proposing that all of those who have worked against the Murray-Wagner-Dingell bill, and who testified against it, attend a meeting in St. Louis, Mo., in September of this year (this will be after the formal hearings are closed) for the purpose of making a final survey of the situation as it appears upon the record, and, in the presence of conditions that have developed since the bill was offered, to agree upon proposals for the further campaign in opposition. You will recall that in January, 1946, I attended National Physicians' committee sessions in St. Louis at their request, preparatory to our appearance in Washington before the Senate committee on Education and Labor. There, I was impressed by the very thorough manner in which that committee is carrying on its work, its daily, intimate association with every possible development in the lobbies, committees and halls of Congress, its check of every opposition move, and the very evident unanimity of purpose of all members, a unanimity that agrees on details as well as on major principles, and therefore does not split itself open in internal strife. The National Physicians' committee is doing its best to make arrangements to add to the representation from each state, three or four additional members from each state association, and I earnestly hope these plans can be carried out, and that my successor in office will have the full cooperation of members of the profession in Montana attending.

(3) The so-called "veterans' problem" has come to the front with unmistakable emphasis. Everywhere, the planners and socializers are at work with grandiose schemes to take care of the veterans and, undoubtedly, the great volume of care necessary for them, to which they are rightfully entitled with the utmost consideration and affection, has produced some necessity for considering ways and means for treatment of their numbers. This very condition, however, is fraught with danger because it contains the notion that the so-called "unorganized profession of medicine" cannot handle the problem. In this connection, I am going to ask the secretary to read at the end of my report a letter which I have just received from the Veterans Administration Office of Branch Medical Direction, Branch No. 11, Exchange Building, Seattle, Washington, dated July 8, 1946, and signed "A. W. Schulz, M.D., Chief Out-Patient Division."

The fact that the plan has been agreed to by the state medical associations in Washington, Oregon and Idaho, as well as Ohio, is encouraging, for it would seem that our brothers in

the profession would not have joined therein to their detriment, or to the detriment of the physician-patient personal relationship. Their proposal emphasizes the retention, validity and operation of that personal relationship, and if that can be assured, I can see no objection to the adherence of our organization to the plan.

(4) The Montana Physicians' Service was organized and commenced its function within the past year—indeed, within the past six months, and while there has not been unanimity in our association with regard to it, it has proceeded slowly and carefully and is being better understood accordingly. Beyond doubt, the activities of that organization will receive special consideration at this meeting, particularly as respects the matter of amending our constitution and by-laws to increase the tenure of office of delegate and alternate members so that such members of our association as are elected administrative members of Montana Physicians' Service and become trustees of the latter, may serve for periods longer than one year.

(5) *Expiration of corporate life:* The official records of the secretary of state indicate that the corporate life of Montana State Medical association has expired and, in fact, expired in the year 1923, some twenty-three years ago, and that this corporate life has not been revived. If the Montana State Medical association desires to continue in corporate form, this matter must be given immediate and proper attention.

(6) During the year past, the mobile X-ray unit has been secured, placed in operation and is now frequently seen in the various localities of our state, where its staff carries on its essential work in the field of tuberculosis, primarily. The association may be gratified in the accomplishment of this project which it endorsed, and I bespeak the most active cooperation of all doctors, in their respective localities, whenever the unit shall visit such localities.

During the past year, Dr. W. F. Cogswell retired as secretary and, ex officio, executive officer of the state board of health. He has been succeeded by Dr. B. K. Kilbourne. Dr. Cogswell's resignation broke a tie with this association which had endured for more than 33 years and removed from active direction a Montana doctor who worked unceasingly for the interests of the profession and the public, and whose work never smacked of the bureaucrat or bureaucracy. Dr. Kilbourne seems to have the same attitude of mind, and we are happy to have him as a successor to Dr. Cogswell upon the voluntary resignation of the latter.

On Monday, January 6, 1947, there will convene in Helena for the regular sixty-day session, a new legislative assembly following the election of November, 1946. This assembly will be the thirtieth since the establishment of our state in 1889. Among other things, this body will have before it the revision of the codes of law of this state, and at such time the legislative atmosphere is generally productive of change. Our association, and its legislative committee, must bear this in mind, for such an atmosphere can operate not only to welcome new ideas, some of them bizarre, but it can also operate to recognize legislative changes that we deem desirable in the public interests.

(At this point the secretary read the letter referred to by President Cooney and which follows under "National Physicians' Committee.")

#### \*NATIONAL PHYSICIANS' COMMITTEE

##### Comments and Observations on Activities in Connection with Washington Hearing

(Nationwide professional conference at St. Louis, Missouri, Sept. 3, 4, 1946.)

(Statement of Dr. S. A. Cooney, President Montana State Medical Association, July, 1945 - July, 1946)

Gentlemen of the Committee:

Agreeable to the invitation from the committee, I am glad to make a brief report of my observations and activities in connection with my appearance before the Senate committee on Education and Labor on Senate Bill No. 1606, at Washington, D. C., on May 28, 1946.

Let me say first and directly, that I was amazed when, as president of the Montana State Medical association, my request in February, 1946, that that association be heard on the pending legislation, was answered by the committee on a mimeographed

form, with a flat denial, the excuse being that the calendar of hearings would not permit additional presentations. Immediately I telephoned Senator James E. Murray of Montana, co-author of the legislation, whom I have known personally and professionally for many years, and made some strong representations against what I considered an arbitrary stand, calculated to deny full and fair consideration of opponents' views. Senator Murray promised remedial action, and I am happy to say that the Montana State Medical association and the medical profession in Montana, received an invitation to send its representatives, and it had the privilege of being the first state to be so honored. I am convinced that no state association will be denied a proper hearing, and I strongly urge each state to speak for itself before the committee. I regard this as a necessity to impress the committee of our grassroots origin.

As to the hearing proper:

(1) The committee heard all of us from Montana, in full and with the utmost courtesy and consideration. I must stress that, notwithstanding the known differences of opinion among committee members, evident in many exchanges between them, the atmosphere of the hearing was thoroughly friendly. We were repeatedly questioned by committee members, particularly Senator Donnell of Missouri and Senator Morse of Oregon, both of whom had a clear appreciation of the measure. Not because I am in St. Louis, but because Senator Donnell's incisive intelligence and judicial poise, require this expression—I want to say Missouri is fortunate in having such a senator. I am glad he shares our views, for his endorsement is added evidence of their essential soundness.

(2) Following the hearing, I had opportunity to, and made use of the opportunity personally to meet members of the committee. Let me observe here that I feel that personal contacts of such character are absolutely invaluable—hence indispensable in presentation of our cause. I have for more than thirty years appeared before legislative committees (all that time a member of the legislative committee of the Montana association) and it is my conviction that more can be done to accomplish an understanding by a personal visit, absent third persons, personalities and interruptions, than days and months of trench warfare in formal committee hearings. Such contacts break down opposition. Formal hearings often solidify differences, but they are a necessity in the national legislature.

(3) Without in any manner criticising, or assuming to criticise the Washington representatives of N.P.C., or any who have appeared for the profession in Washington in opposition to S. 1606, and with deep appreciation for their labors, after interviewing members of the committee, I am satisfied that the busy doctors of this country have overlooked legitimate personal lobbying of members of House and Senate, starting at home and continuing in the capitol building. The floor team should be increased in members if a continuous, vigorous and intelligent representation in behalf of the private practice of medicine in these United States is to be accomplished, and the direct communication lines with "home" should be kept more active. Members of the Senate and House are still the John Stumblefoots of the home neighborhood.

(4) You know, of course, of the representations being currently made about N.P.C. by one Marjorie Shearon, Ph.D., so-called Research Analyst, Conference of the Minority, U. S. Senate Office Building, Room 8-B, Washington, D. C. I do not know her. I never saw her. But it is evident to me that she is recognized by our friends in the Congress and I think it is fairly inferable that she enjoys their patronage and support. In my judgment, we had better look at ourselves in the light of her remarks. When committee members listen to her, we had better test the basis of her criticisms, and hear what our own representatives have to say about them. *American medicine cannot afford a breach in its own ranks.*

(5) I have been a lifelong member of the American Medical association. It is a big organization, so big, that it sometimes overlooks details. Members of our association in Montana resent its failure to report the fact in the *Journal* that I was its president and appeared for it in Washington. This is a small thing in one sense, but when an association has but one or two to voice its views, it wants the world to know that such persons speak for it, otherwise it is, in truth, voiceless, as far as the public record goes. I mention this here to emphasize



that we are but representatives, too, and the responsibility of representatives of the medical profession, or any substantial segment of it, is tremendous. It was evident to me, at least in Senator Donnell's questions, that he felt state organizations were much more representative of the profession than national organizations.

(6) It is my judgment that Senate 1606 is very much alive, that its proponents are well entrenched, and that somehow, somewhere, in some way, we have failed to bring the guns of public opinion to bear upon it in an effective way. I believe that opinion is against the measure. I want to hear what you have to say.

# Montana State Medical Association Roster-1946

## MEMBERSHIP BY DISTRICTS

### CASCADE COUNTY MEDICAL SOCIETY

|                                   |             |                          |             |                         |                 |
|-----------------------------------|-------------|--------------------------|-------------|-------------------------|-----------------|
| Dr. Robert Holzberger, Pres. .... | Great Falls | Greaves, J. P. ....      | Great Falls | McBurney, L. R. ....    | Great Falls     |
| Dr. Thomas Keenan, V. Pres. ....  | Great Falls | Hall, C. M. ....         | Great Falls | McGregor, H. J. ....    | Great Falls     |
| Dr. L. L. Mailet, Sec. ....       | Great Falls | Hall, E. L. ....         | Great Falls | McGregor, J. F. ....    | Great Falls     |
|                                   |             | Hildebrand, Eugene ..... | Great Falls | McGregor, R. J. ....    | Great Falls     |
|                                   |             | Hitchcock, E. D. ....    | Great Falls | McPhail, F. L. ....     | Great Falls     |
| Allred, I. A. ....                | Great Falls | Holzberger, R. J. ....   | Great Falls | McPhail, Malcolm .....  | Great Falls     |
| Adams, Ellis ....                 | Great Falls | Howard, L. L. ....       | Great Falls | Nagel, C. E. ....       | Great Falls     |
| Anderson, C. E. ....              | Great Falls | Hurd, F. D. ....         | Great Falls | ★Peterson, C. H. ....   | Great Falls     |
| Andrews, F. L. ....               | Great Falls | Irwin, J. H. ....        | Great Falls | Richardson, R. B. ....  | Great Falls     |
| Bateman, H. W. ....               | Choteau     | Johnson, A. C. ....      | Great Falls | Russell, Rosannah ..... | Fort Shaw       |
| Bresee, C. J. ....                | Great Falls | Keenan, F. E. ....       | Great Falls | Schemm, F. R. ....      | Great Falls     |
| Bulger, J. J. ....                | Great Falls | Keenan, T. M. ....       | Great Falls | Setzer, G. W. ....      | Malta           |
| Crago, F. H. ....                 | Great Falls | Larson, E. M. ....       | Great Falls | Shephard, H. C. ....    | Flat River, Mo. |
| Crary, L. S. ....                 | Fairfield   | Layne, J. A. ....        | Great Falls | Strain, Earle ....      | Great Falls     |
| Davis, R. C. ....                 | Great Falls | Little, C. F. ....       | Great Falls | Templeton, C. V. ....   | Great Falls     |
| Durnin, R. B. ....                | Great Falls | Logan, P. E. ....        | Great Falls | Walker, Dora ....       | Great Falls     |
| Fuller, H. W. ....                | Great Falls | Lord, B. E. ....         | Great Falls | Walker, T. F. ....      | Great Falls     |
| Gibson, H. V. ....                | Great Falls | MacGregor, J. C. ....    | Great Falls | Waniata, F. K. ....     | Great Falls     |
| Gleason, A. L. ....               | Great Falls | Magner, Charles .....    | Great Falls | Weisgerber, A. L. ....  | Great Falls     |
|                                   |             | Mailet, L. L. ....       | Great Falls | Williams, W. T. ....    | Malta           |

### CHOUTEAU COUNTY MEDICAL SOCIETY

|                                |            |                                      |            |                      |            |
|--------------------------------|------------|--------------------------------------|------------|----------------------|------------|
| Dr. E. L. Anderson, Pres. .... | Ft. Benton | Dr. E. L. Anderson, Sec.-Treas. .... | Ft. Benton | Anderson, E. L. .... | Ft. Benton |
|                                |            |                                      |            | Cooper, D. J. ....   | Big Sandy  |

### FERGUSON COUNTY MEDICAL SOCIETY

|                                   |           |                     |           |                     |           |
|-----------------------------------|-----------|---------------------|-----------|---------------------|-----------|
| Dr. J. J. Elliott, Pres. ....     | Lewistown | Eck, R. L. ....     | Lewistown | Herring, J. H. .... | Lewistown |
| Dr. E. M. Gans, V. Pres. ....     | Harlowton | Elliott, J. J. .... | Lewistown | Johnson, R. G. .... | Harlowton |
| Dr. F. F. Attix, Sec.-Treas. .... | Lewistown | Freed, Hazel .....  | Stanford  | Mueller, J. A. .... | Lewistown |
| Alexander, J. L. ....             | Winnett   | Gans, E. M. ....    | Harlowton | Porter, E. S. ....  | Lewistown |
| Attix, F. F. ....                 | Lewistown | Gans, E. W. ....    | Harlowton | Shubert, J. W. .... | Lewistown |
| ★Dismore, A. B. ....              | Stanford  | Gans, P. J. ....    | Lewistown | Welden, E. A. ....  | Lewistown |

### FLATHEAD COUNTY MEDICAL SOCIETY

|                                     |           |                      |           |                        |           |
|-------------------------------------|-----------|----------------------|-----------|------------------------|-----------|
| Dr. L. G. Griffis, Pres. ....       | Kalispell | Cairns, J. M. ....   | Libby     | Leitch, Neil ....      | Kalispell |
| Dr. T. B. Moore, Jr., V. Pres. .... | Kalispell | Clark, C. A. ....    | Eureka    | Moore, T. B., Jr. .... | Kalispell |
| Dr. H. D. Huggins, Sec. ....        | Kalispell | Cockrell, E. P. .... | Kalispell | Paul, F. W. ....       | Kalispell |
| Dr. R. L. Towne, Treas. ....        | Kalispell | Conway, W. Q. ....   | Kalispell | Ross, F. B. ....       | Kalispell |
| ★Borkon, M. ....                    | Whitefish | ★Delaney, J. R. .... | Kalispell | Simons, J. B. ....     | Whitefish |
| Boyd, Edith ....                    | Whitefish | Dimon, John .....    | Polson    | Stewart, R. M. ....    | Whitefish |
| Brassett, A. J. ....                | Kalispell | Dodge, A. A. ....    | Kalispell | Taylor, W. W. ....     | Whitefish |
| ★Brown, J. W. ....                  | Whitefish | Griffis, L. G. ....  | Kalispell | Towne, R. L. ....      | Kalispell |
| Burns, M. O. ....                   | Kalispell | Huggins, H. D. ....  | Kalispell | Weede, V. A. ....      | Kalispell |
|                                     |           | Lees, A. T. ....     | Whitefish | Wright, G. B. ....     | Kalispell |

### GALLATIN COUNTY MEDICAL SOCIETY

|                                 |              |                       |         |                       |         |
|---------------------------------|--------------|-----------------------|---------|-----------------------|---------|
| Dr. W. S. Bole, Pres. ....      | Bozeman      | ★Craft, C. B. ....    | Bozeman | Scherer, R. G. ....   | Bozeman |
| Dr. P. L. Eneboe, V. Pres. .... | Bozeman      | Eneboe, Paul .....    | Bozeman | Seerley, C. C. ....   | Bozeman |
| Dr. R. A. Williams, Sec. ....   | Bozeman      | Grigg, E. R. ....     | Bozeman | Seitz, R. E. ....     | Bozeman |
|                                 |              | Heetderks, B. J. .... | Bozeman | Sigler, R. R. ....    | Bozeman |
| Bole, W. S. ....                | Bozeman      | ★Kearns, E. J. ....   | Bozeman | Smith, C. S. ....     | Bozeman |
| Bradbury, J. T. ....            | Willow Creek | Keaton, R. G. ....    | Bozeman | Whitehead, C. E. .... | Bozeman |
| Brewer, A. D. ....              | Bozeman      | Sabo, F. I. ....      | Bozeman | Williams, R. A. ....  | Bozeman |

### HILL COUNTY MEDICAL SOCIETY

|                                  |         |                      |           |                            |         |
|----------------------------------|---------|----------------------|-----------|----------------------------|---------|
| Dr. W. F. Hamilton, Pres. ....   | Havre   | Aubin, F. W. ....    | Havre     | Jestrab, G. A. ....        | Havre   |
| Dr. G. A. Jestrab, V. Pres. .... | Havre   | Benke, R. A. ....    | Kalispell | Lacey, W. A. ....          | Havre   |
| Dr. Chester Lawson, Sec. ....    | Havre   | Forester, W. L. .... | Havre     | Lawson, Chester .....      | Havre   |
|                                  |         | Hamilton, W. F. .... | Havre     | MacKenzie, D. S. ....      | Havre   |
| Almas, D. J. ....                | Chinook | Hoon, A. S. ....     | Chinook   | MacKenzie, D. S., Jr. .... | Havre   |
|                                  |         | Houtz, C. S. ....    | Havre     | McCannel, W. A. ....       | Chinook |

### LAKE COUNTY MEDICAL SOCIETY (Discontinued temporarily)

|                     |       |                     |        |                      |              |
|---------------------|-------|---------------------|--------|----------------------|--------------|
| ★Brooke, J. M. .... | Ronan | ★Lipow, E. G. ....  | Ronan  | Teel, H. M. ....     | Polson       |
| French, E. J. ....  | Ronan | Tanglin, W. G. .... | Polson | Venneman, F. W. .... | St. Ignatius |

LEWIS & CLARK COUNTY MEDICAL SOCIETY

|                               |          |                  |         |                   |                      |
|-------------------------------|----------|------------------|---------|-------------------|----------------------|
| Dr. E. L. Gallivan, Pres.     | Helena   | *Farner, L. M.   | Helena  | McElwee, W. R.    | White Sulph. Springs |
| Dr. E. H. Lindstrom, V. Pres. | Helena   | Flinn, J. M.     | Helena  | Mears, Claude     | Helena               |
| Dr. R. M. Campbell, Sec.      | Helena   | Gallivan, E. L.  | Helena  | Monserrate, D. N. | Helena               |
| Bayles, R. G.                 | Townsend | Hawkins, T. L.   | Helena  | Moore, O. M.      | Helena               |
| Berg, D. T.                   | Helena   | Kilbourne, B. K. | Helena  | Morgan, R. M.     | Helena               |
| Campbell, Robert              | Helena   | Klein, O. G.     | Helena  | Morris, R. W.     | Helena               |
| Cashmore, W. F.               | Helena   | Levitt, Louis    | Boulder | Nash, F. P.       | Townsend             |
| Cooney, S. A.                 | Helena   | Lindstrom, E. H. | Helena  | Shale, R. J.      | Helena               |
|                               |          | McCabe, J. J.    | Helena  | *Shearer, B. C.   | Helena               |

MADISON COUNTY MEDICAL SOCIETY

|                             |           |               |          |                   |               |
|-----------------------------|-----------|---------------|----------|-------------------|---------------|
| Dr. L. R. Packard, Pres.    | Whitehall | Burns, W. J.  | Sheridan | Dyer, R. H.       | Sheridan      |
| Dr. R. H. Dyer, Sec.-Treas. | Sheridan  | *Clancy, John | Ennis    | Farnsworth, R. B. | Virginia City |
|                             |           |               |          | Packard, L. R.    | Whitehall     |

MOUNT POWELL COUNTY MEDICAL SOCIETY

|                            |              |                   |              |                 |              |
|----------------------------|--------------|-------------------|--------------|-----------------|--------------|
| Dr. J. J. Malee, Pres.     | Anaconda     | Dunlap, L. G.     | Anaconda     | O'Rourke, J. L. | Anaconda     |
| Dr. B. L. Pampel, V. Pres. | Warm Springs | Holmes, Gladys V. | Warm Springs | Pampel, B. L.   | Warm Springs |
| Dr. G. M. Donich, Sec.     | Anaconda     | Kargacin, T. J.   | Anaconda     | Place, B. A.    | Warm Springs |
| Anderson, G. A.            | Deer Lodge   | Knight, A. C.     | Philipsburg  | Terrill, F. I.  | Galen        |
| Donich, G. M.              | Anaconda     | Long, W. E.       | Anaconda     | Trobough, G. E. | Anaconda     |
|                            |              | Malee, J. J.      | Anaconda     | Tyler, K. A.    | Galen        |
|                            |              | Moffett, G. J.    | Deer Lodge   | Unmack, F. L.   | Deer Lodge   |

MUSSELHELL COUNTY MEDICAL SOCIETY

|                             |         |                |         |                |         |
|-----------------------------|---------|----------------|---------|----------------|---------|
| Dr. S. A. Crouse, Pres.     | Roundup | Bennett, A. A. | Roundup | Lewis, G. A.   | Roundup |
| Dr. A. A. Bennett, V. Pres. | Roundup | Crouse, S. A.  | Roundup | O'Neill, R. T. | Roundup |
| Dr. G. A. Lewis, Sec.       | Roundup | Fouts, E. R.   | Ryegate |                |         |

NORTHCENTRAL MONTANA MEDICAL SOCIETY

|                               |                 |                |          |                  |          |
|-------------------------------|-----------------|----------------|----------|------------------|----------|
| Dr. S. D. Whetstone, Pres.    | Cut Bank        | Cannon, P. S.  | Conrad   | Olsen, N. A.     | Cut Bank |
| Dr. N. A. Olsen, V. Pres.     | Cut Bank        | Dubois, W. L.  | Conrad   | Paterson, W. F.  | Conrad   |
| Dr. W. L. Dubois, Sec.-Treas. | Conrad          | Elliott, L. L. | Cut Bank | Robinson, W. C.  | Shelby   |
| Bosshardt, O. A.              | Ontario, Calif. | Neraal, P. O.  | Cut Bank | Whetstone, S. D. | Cut Bank |

NORTHEASTERN MONTANA MEDICAL SOCIETY

|                             |            |                   |            |                   |                   |
|-----------------------------|------------|-------------------|------------|-------------------|-------------------|
| Dr. O. G. Benson, Pres.     | Plentywood | Knapp, R. D.      | Wolf Point | Morrow, T. M.     | Scobey            |
| Dr. R. E. Ryde, Sec.-Treas. | Glasgow    | Knierim, F. M.    | Glasgow    | *Peterson, W. M.  | Plentywood        |
| Agneberg, N. O.             | Glasgow    | Krogstad, L. T.   | Wolf Point | Pronin, Arthur    | Plentywood        |
| Benson, O. G.               | Plentywood | Larson, C. B.     | Glasgow    | Ryde, R. E.       | Glasgow           |
| Cockrell, T. L.             | Hinsdale   | *Mittleman, E. J. | Wolf Point | *Schweizer, H. W. | Ft. Worden, Wash. |
|                             |            |                   |            | Smith, A. N.      | Glasgow           |

PARK-SWEETGRASS MEDICAL SOCIETY

|                            |            |                   |            |                 |            |
|----------------------------|------------|-------------------|------------|-----------------|------------|
| Dr. J. A. Pearson, Pres.   | Livingston | Claiborn, D. R.   | Big Timber | March, J. A.    | Choteau    |
| Dr. W. E. Harris, V. Pres. | Livingston | Cogswell, W. F.   | Helena     | Pearson, J. A.  | Livingston |
| Dr. E. M. Larson, Sec.-Tr. | Livingston | Larson, Eloise M. | Livingston | Townsend, G. A. | Emigrant   |
| Baskett, L. W.             | Big Timber | Leard, S. E.      | Livingston | Walker, R. E.   | Livingston |
|                            |            | Lueck, A. M.      | Livingston | Windsor, G. A.  | Livingston |

SILVER BOW COUNTY MEDICAL SOCIETY

|                            |           |                   |       |                   |        |
|----------------------------|-----------|-------------------|-------|-------------------|--------|
| Dr. P. T. Spurck, Pres.    | Butte     | Horst, C. H.      | Butte | O'Keefe, N. J.    | Butte  |
| Dr. D. A. Atkins, V. Pres. | Butte     | James, H. H.      | Butte | Pemberton, C. W.  | Butte  |
| Dr. S. V. Wilking, Sec.    | Butte     | Kane, J. J.       | Butte | Peterson, R. F.   | Butte  |
| Dr. C. R. Canty, Treas.    | Butte     | Kane, P. E.       | Butte | Poindexter, F. M. | Dillon |
| Atkins, D. A.              | Butte     | Kane, R. C.       | Butte | Rodes, C. B.      | Butte  |
| Brancamp, J. H.            | Butte     | Karsted, A.       | Butte | Routledge, G. L.  | Dillon |
| Canty, C. R.               | Butte     | Kroeze, R. G.     | Butte | Saam, T. W.       | Butte  |
| Casebeer, H. L.            | Butte     | Lapierre, J. C.   | Butte | Schwartz, Harold  | Butte  |
| Casebeer, R. L.            | Butte     | Lhotka, J. F.     | Butte | Shields, J. C.    | Butte  |
| Colman, J. K.              | Butte     | MacPherson, G. T. | Butte | Sievers, A. R.    | Butte  |
| Frisbee, J. B.             | Butte     | Matthews, Vida J. | Butte | Sievers, J. R. E. | Butte  |
| Garvey, J. E.              | Butte     | McGill, Caroline  | Butte | Spurck, P. T.     | Butte  |
| Gillespie, D. L.           | Butte     | McMahon, E. S.    | Butte | Stanchfield, H.   | Dillon |
| Gregg, H. W.               | Butte     | Monahan, R. C.    | Butte | Stephan, W. H.    | Dillon |
| Hill, R. J.                | Whitehall | Mondloch, J. L.   | Butte | Ungerhni, V. O.   | Butte  |
|                            |           | Ogders, S. L.     | Butte | Wilking, S. V.    | Butte  |

SOUTHEASTERN MONTANA MEDICAL SOCIETY

|                            |            |                     |            |                    |            |
|----------------------------|------------|---------------------|------------|--------------------|------------|
| Dr. J. R. Thompson, Pres.  | Miles City | Harlowe, H. D.      | Miles City | Polk, R. W.        | Miles City |
| Dr. R. D. Harper, V. Pres. | Sidney     | Harper, R. D.       | Sidney     | Pratt, S. C.       | Miles City |
| Dr. Elna M. Howard, Sec.   | Miles City | Haywood, Guy        | Forsyth    | Randall, R. R.     | Miles City |
| Beagle, J. S.              | Sidney     | Hogebohm, C. F.     | Baker      | Robbins, B. L.     | Glendive   |
| Benson, R. D.              | Sidney     | Howard, Elna M.     | Miles City | Rowen, E. H.       | Miles City |
| Blakemore, W. H.           | Baker      | Huene, H. J.        | Forsyth    | Rundle, B. S.      | Circle     |
| Bridenstine, I. J.         | Miles City | *Lemon, R. G.       | Glendive   | Sandy, B. B.       | Ekalaka    |
| Craig, J. W.               | Circle     | Lindeberg, Sadie B. | Miles City | Shillington, M. A. | Glendive   |
| *Dale, E.                  | Wibaux     | Low, John E.        | Sidney     | Spicher, R. W.     | Terry      |
| Danskin, M. G.             | Glendive   | Morrill, R. A.      | Sidney     | Tarbox, B. R.      | Forsyth    |
| Dion, R. H.                | Glendive   | Noonan, E. F.       | Wibaux     | Thompson, J. R.    | Miles City |
| Farrand, B. C.             | Jordan     | Olson, S. A.        | Glendive   | Weeks, S. A.       | Baker      |
| Garberson, J. H.           | Miles City | Parsons, H. H.      | Sidney     | Winter, M. D.      | Miles City |



WESTERN MONTANA MEDICAL SOCIETY

|                                 |             |                         |          |                       |                |
|---------------------------------|-------------|-------------------------|----------|-----------------------|----------------|
| Dr. E. S. Murphy, Pres.....     | Missoula    | Fredrickson, C. H. .... | Missoula | Murphy, E. S. ....    | Missoula       |
| Dr. C. F. Honeycutt, V. Pres.   | Missoula    | George, E. K. ....      | Missoula | ★Murphy, J. E. ....   | Missoula       |
| Dr. F. H. Lowe, Sec-Treas. .... | Missoula    | ★Gordon, D. A. ....     | Hamilton | Nelson, J. M. ....    | Missoula       |
|                                 |             | Haas, A. T. ....        | Missoula | Ohlmacher, J. P. .... | Missoula       |
| Alderson, L. R. ....            | Missoula    | Hall, H. J. ....        | Missoula | Pease, F. D. ....     | Missoula       |
| Blegen, H. M. ....              | Missoula    | Harris, W. E. ....      | Missoula | Peterson, R. L. ....  | Hamilton       |
| Bourdeau, C. L. ....            | Missoula    | Hayward, Herbert ....   | Hamilton | Preston, S. N. ....   | Missoula       |
| ★Bourdeau, E. J. ....           | Missoula    | ★Hesdorffer, M. B. .... | Missoula | Rew, A. W. ....       | Thompson Falls |
| Boyer, Esther L. ....           | Missoula    | Holmes, J. T. ....      | Missoula | Ritchev, J. P. ....   | Missoula       |
| Brewer, L. W. ....              | Missoula    | Honeycutt, C. F. ....   | Missoula | Sale, G. G. ....      | Missoula       |
| Doyle, W. ....                  | Superior    | Keys, R. W. ....        | Missoula | ★Svove, C. R. ....    | Somers         |
| ★Duffalo, J. A. ....            | Missoula    | Kintner, A. R. ....     | Missoula | Tefft, C. C. ....     | Hamilton       |
| Farabaugh, C. L. ....           | Missoula    | ★Koessler, H. H. ....   | Missoula | Thornton, C. R. ....  | Missoula       |
| ★Fattic, G. F. ....             | Hot Springs | Lowe, F. H. ....        | Missoula | Trenough, S. M. ....  | Missoula       |
| ★Ferret, A. ....                | Missoula    | Marshall, W. J. ....    | Missoula | Weber, R. D. ....     | Missoula       |
| Foss, A. R. ....                | Missoula    | McPhail, W. N. ....     | Missoula | Wirth, R. E. ....     | Missoula       |
|                                 |             | Morrison, W. F. ....    | Missoula | Yuhas, J. L. ....     | Missoula       |

YELLOWSTONE VALLEY MEDICAL SOCIETY

|                                 |                |                        |                                          |                         |           |
|---------------------------------|----------------|------------------------|------------------------------------------|-------------------------|-----------|
| Dr. H. O. Drew, Pres. ....      | Billings       | Feree, V. D. ....      | Bridger                                  | Morledge, R. V. ....    | Billings  |
| Dr. J. C. Powers, V. Pres. .... | Billings       | Fisher, M. L. ....     | Hardin                                   | Morrison, J. D. ....    | Billings  |
| Dr. H. E. McIntyre, Sec. ....   | Billings       | Gerdes, Maude M. ....  | Billings                                 | Morrison, W. R. ....    | Billings  |
| Dr. J. J. Hammerel, Treas. .... | Billings       | Gordon, Wayne ....     | Billings                                 | Movius, A. J. ....      | Billings  |
| Adams, E. M. ....               | Red Lodge      | Graham, J. H. ....     | Billings                                 | Movius, A. J., Jr. .... | Billings  |
| Allard, L. W. ....              | Billings       | Griffin, P. E. ....    | Billings                                 | Movius, W. R. ....      | Billings  |
| Anderson, M. O. ....            | Hardin         | Hagmann, E. A. ....    | Billings                                 | Nelson, C. H. ....      | Billings  |
| Beltzer, C. E. ....             | Washoe         | Hall, E. C. ....       | Laurel                                   | Neville, J. V. ....     | Columbus  |
| Benson, R. E. ....              | Billings       | Hammerel, A. L. ....   | Billings                                 | Oleinik, J. M. ....     | Red Lodge |
| Benson, T. J. ....              | Fromberg       | Hammerel, J. J. ....   | Billings                                 | Powers, J. C. ....      | Billings  |
| Biehn, R. H. ....               | Billings       | ★Hayes, J. D. ....     | Mammoth Hot Springs,<br>Yellowstone Park | Rathman, O. C. ....     | Billings  |
| Blackstone, A. V. ....          | Absarokee      |                        |                                          | Richards, W. G. ....    | Billings  |
| Bridenbaugh, J. H. ....         | Billings       | Hodges, D. E. ....     | Billings                                 | Russell, L. G. ....     | Billings  |
| Brogan, R. E. ....              | Billings       | Hynes, J. E. ....      | Billings                                 | Shaw, J. A. ....        | Billings  |
| Caraway, H. T. ....             | Billings       | Irwin, C. E. ....      | Billings                                 | Soltero, J. R. ....     | Billings  |
| Carey, W. R. ....               | Rosebud, S. D. | ★Knese, L. A. ....     | Yellowstone Co.                          | Stripp, A. E. ....      | Billings  |
| Chapple, R. R. ....             | Billings       | Kronmiller, L. H. .... | Billings                                 | Unsell, D. H. ....      | Billings  |
| DeMers, J. J. ....              | Huntley        | Labbitt, L. H. ....    | Hardin                                   | Vye, T. R. ....         | Laurel    |
| Drew, H. O. ....                | Billings       | MacDonald, D. J. ....  | Billings                                 | Weedman, W. F. ....     | Billings  |
| Dunkle, Frank ....              | Billings       | McIntyre, H. E. ....   | Billings                                 | Werner, S. L. ....      | Billings  |
| Farr, E. M. ....                | Billings       | Morgan, H. G. ....     | Red Lodge                                | Wernham, J. I. ....     | Billings  |

★Member in the Armed Forces of the United States.

# Alphabetical Roster

## Montana State Medical Association--1946

|                       |             |                         |                 |                       |                |
|-----------------------|-------------|-------------------------|-----------------|-----------------------|----------------|
| Adams, E. M. ....     | Red Lodge   | Benson, T. J. ....      | Fromberg        | Cairns, J. M. ....    | Libby          |
| Adams, Ellis W. ....  | Great Falls | Berg, D. T. ....        | Helena          | Campbell, Robert .... | Helena         |
| Agneberg, N. O. ....  | Glasgow     | Biehn, R. H. ....       | Billings        | Cannon, P. S. ....    | Conrad         |
| Alderson, L. R. ....  | Missoula    | Blackstone, A. V. ....  | Absarokee       | Canty, C. R. ....     | Butte          |
| Alexander, J. L. .... | Winnett     | Blakemore, W. H. ....   | Baker           | Caraway, H. T. ....   | Billings       |
| (Life member)         |             | Blegen, H. M. ....      | Missoula        | Carey, W. R. ....     | Rosebud, S. D. |
| Allard, L. W. ....    | Billings    | Bole, W. S. ....        | Bozeman         | Casebeer, H. L. ....  | Butte          |
| Allred, I. A. ....    | Great Falls | ★Borkon, M. ....        | Whitefish       | Casebeer, R. L. ....  | Butte          |
| Almas, D. J. ....     | Chinook     | Bourdeau, C. L. ....    | Missoula        | Cashmore, W. F. ....  | Helena         |
| Anderson, C. E. ....  | Great Falls | ★Bourdeau, E. J. ....   | Missoula        | Chapple, R. R. ....   | Billings       |
| Anderson, E. L. ....  | Ft. Benton  | Boyer, Esther L. ....   | Missoula        | Claiborn, D. R. ....  | Billings       |
| Anderson, G. A. ....  | Deer Lodge  | Bradbury, J. T. ....    | Willow Creek    | ★Clancy, John ....    | Ennis          |
| Anderson, M. O. ....  | Hardin      | (Honorary member)       |                 | Clark, C. A. ....     | Eureka         |
| Andrews, F. L. ....   | Great Falls | Brancamp, J. H. ....    | Butte           | Cockrell, E. P. ....  | Kalispell      |
| Atkins, D. A. ....    | Butte       | Brassett, A. J. ....    | Kalispell       | Cockrell, T. L. ....  | Hinsdale       |
| Attix, F. F. ....     | Lewistown   | Bresee, C. J. ....      | Great Falls     | Cogswell, W. F. ....  | Helena         |
| Aubin, F. W. ....     | Havre       | Brewer, A. D. ....      | Bozeman         | (Life member)         |                |
| Baskett, L. W. ....   | Big Timber  | Brewer, L. W. ....      | Missoula        | Colman, J. K. ....    | Butte          |
| Bateman, H. W. ....   | Choteau     | Bridenbaugh, J. H. .... | Billings        | Conway, W. Q. ....    | Kalispell      |
| Bayles, R. G. ....    | Townsend    | Bridenstine, I. J. .... | Miles City      | Cooney, S. A. ....    | Helena         |
| Beagle, J. S. ....    | Sidney      | Brogan, R. E. ....      | Billings        | Cooper, D. J. ....    | Big Sandy      |
| Beltzer, C. E. ....   | Washoe      | ★Brooke, J. M. ....     | Ronan           | ★Craft, C. B. ....    | Bozeman        |
| Benke, R. A. ....     | Chester     | ★Brown, J. W. ....      | Whitefish       | Craig, J. W. ....     | Circle         |
| Bennett, A. A. ....   | Roundup     | Bulger, James J. ....   | Great Falls     | Crago, F. H. ....     | Great Falls    |
| Benson, O. G. ....    | Plentywood  | Burns, M. O. ....       | Kalispell       | Crary, L. S. ....     | Fairfield      |
| Benson, R. D. ....    | Sidney      | Burns, W. J. ....       | Sheridan        | Crouse, S. A. ....    | Roundup        |
| Benson, R. E. ....    | Billings    | Bosshardt, O. A. ....   | Ontario, Calif. | ★Dale, E. ....        | Wibaux         |

|                    |                                          |                       |                    |                    |                       |
|--------------------|------------------------------------------|-----------------------|--------------------|--------------------|-----------------------|
| Danskin, M. G.     | Glendive                                 | Hildebrand, E.        | Great Falls        | Malee, J. J.       | Anaconda              |
| Davis, R. C.       | Great Falls                              | Hill, R. J.           | Whitehall          | March, J. A.       | Choteau               |
| *Delaney, J. R.    | Kalispell                                | Hitchcock, E. D.      | Great Falls        | Marshall, W. J.    | Missoula              |
| DeMers, J. J.      | Huntley                                  | Hodges, D. E.         | Billings           | Matthews, Vida     | Butte                 |
| Dimon, J.          | Polson                                   | Hogebohm, C. F.       | Baker              | McBurney, L. R.    | Great Falls           |
| Dion, R. H.        | Glendive                                 | Holmes, Gladys V.     | Warm Springs       | McCabe, J. J.      | Helena                |
| *Dismore, A. B.    | Stanford                                 | Holmes, J. T.         | Missoula           | McCannel, W. A.    | Harlem                |
| Dodge, A. A.       | Kalispell                                | Holzberger, R. J.     | Great Falls        | McElwee, W. R.     | White Sulphur Springs |
| Donich, G. M.      | Anaconda                                 | Honeycutt, C. F.      | Missoula           | McGill, Caroline   | Butte                 |
| Doyle, W. J.       | Superior                                 | Hoon, A. S.           | Chinook            | McGregor, H. J.    | Great Falls           |
| Drew, H. O.        | Billings                                 | Horst, C. H.          | Butte              | McGregor, J. F.    | Great Falls           |
| DuBois, W. L.      | Conrad                                   | Houtz, C. S.          | Havre              | McGregor, R. J.    | Great Falls           |
| *Duffalo, J. A.    | Missoula                                 | Howard, Elna M.       | Miles City         | McMahon, E. S.     | Butte                 |
| Dunkle, F.         | Billings                                 | Howard, L. L.         | Great Falls        | McPhail, F. L.     | Great Falls           |
| Dunlap, L. G.      | Anaconda                                 | Huene, H. J.          | Forsyth            | McPhail, Malcolm   | Great Falls           |
| Durnin, R. B.      | Great Falls                              | Huggins, H. D.        | Kalispell          | McPhail, W. N.     | Missoula              |
| Dyer, R. H.        | Sheridan                                 | Hurd, F. D.           | Great Falls        | Mears, Claude      | Helena                |
| Eck, Raymond       | Lewistown                                | Hynes, J. E.          | Billings           | *Mittleman, E. J.  | Wolf Point            |
| Elliott, J. J.     | Lewistown                                | Irwin, C. E.          | Billings           | Monahan, R. C.     | Butte                 |
| Elliott, L. L.     | Cut Bank                                 | Irwin, J. H.          | Great Falls        | Mondloch, J. L.    | Butte                 |
| Eneboe, P. L.      | Bozeman                                  | James, H. H.          | Butte              | Monserate, D. N.   | Helena                |
| Farabaugh, C. L.   | Missoula                                 | Jestrab, G. A.        | Havre              | Moore, O. M.       | Helena                |
| *Farner, L. M.     | Helena                                   | Johnson, A. C.        | Great Falls        | Moore, T. B., Jr.  | Kalispell             |
| Farnsworth, R. B.  | Virginia City                            | Johnson, R. G.        | Harlowton          | Morgan, R. M.      | Helena                |
| Farr, E. M.        | Billings                                 | Kane, Joseph J.       | Butte              | Morgan, H. G.      | Red Lodge             |
| Farrand, B. C.     | Jordan                                   | Kane, P. E.           | Butte              | Morledge, R. V.    | Billings              |
| *Fattic, G. F.     | Hot Springs                              | Kane, R. C.           | Butte              | Morrill, R. A.     | Sidney                |
| Ferree, V. D.      | Kalispell                                | Kargacin, T. J.       | Anaconda           | Morris, R. W.      | Helena                |
| *Ferret, A.        | Missoula                                 | Karsted, A. J.        | Butte              | Morrison, J. D.    | Billings              |
| Fisher, M. L.      | Hardin                                   | *Kearns, E. J.        | Bozeman            | Morrison, W. F.    | Missoula              |
| Flinn, J. M.       | Helena                                   | Keenan, F. E.         | Great Falls        | Morrison, W. R.    | Billings              |
| Forster, W. L.     | Havre                                    | Keenan, Thomas M.     | Great Falls        | Morrow, Thomas M.  | Scobey                |
| Foss, A. R.        | Missoula                                 | Keaton, R. G.         | Bozeman            | Movius, A. J.      | Billings              |
| Fouts, E. R.       | Ryegate                                  | Keys, R. W.           | Missoula           | Movius, A. J., Jr. | Billings              |
| Fredrickson, C. H. | Missoula                                 | Kilbourne, B. K.      | Helena             | Movius, Wm. R.     | Billings              |
| Freed, Hazel       | Stanford                                 | Kintner, A. R.        | Missoula           | Mueller, James A.  | Lewistown             |
| French, E. J.      | Ronan                                    | Klein, O. G.          | Helena             | Murphy, E. S.      | Missoula              |
| (Life member)      |                                          | Knapp, R. D.          | Wolf Point         | *Murphy, J. E.     | Flathead County       |
| Frisbee, J. B.     | Butte                                    | *Kneese, L. A.        | Yellowstone Valley | Nagel, C. E.       | Great Falls           |
| Fuller, H. W.      | Great Falls                              | Knierim, F. M.        | Glasgow            | Nelson, C. H.      | Billings              |
| Gallivan, E. L.    | Helena                                   | Knight, A. C.         | Philipsburg        | Nelson, J. M.      | Missoula              |
| Gans, E. M.        | Harlowton                                | *Koessler, H. H.      | Missoula           | Neraal, P. O.      | Cut Bank              |
| *Gans, E. W.       | Harlowton                                | Kroeze, R.            | Butte              | Neville, J. V.     | Columbus              |
| Gans, Paul J.      | Lewistown                                | Krogstad, L. T.       | Wolf Point         | Noonan, E. F.      | Wibaux                |
| Garberson, J. H.   | Miles City                               | Kronmiller, L. H.     | Billings           | Odgers, S. L.      | Butte                 |
| Garvey, J. E.      | Butte                                    | Labbitt, L. H.        | Hardin             | Ohlmacher, J. P.   | Missoula              |
| George, E. K.      | Missoula                                 | Lacey, W. A.          | Havre              | O'Keefe, N. J.     | Butte                 |
| Gerdes, Maude M.   | Billings                                 | Lapierre, J. C.       | Butte              | Oleinek, John M.   | Red Lodge             |
| Gibson, H. V.      | Great Falls                              | Larson, Eloise M.     | Livingston         | Olsen, N. A.       | Cut Bank              |
| Gillespie, D. L.   | Butte                                    | Larson, C. B.         | Glasgow            | Olson, S. A.       | Glendive              |
| Gleason, A. L.     | Great Falls                              | Larson, E. M.         | Great Falls        | O'Neill, R. T.     | Roundup               |
| *Gordon, D. A.     | Hamilton                                 | Lawson, C. W.         | Havre              | O'Rourke, J. L.    | Anaconda              |
| Gordon, Wayne      | Billings                                 | Layne, J. A.          | Great Falls        | Packard, L. R.     | Whitehall             |
| Graham, J. H.      | Billings                                 | Leard, S. E.          | Livingston         | Pampel, B. L.      | Warm Springs          |
| Greaves, J. P.     | Great Falls                              | (Life member)         |                    | Parsons, H. H.     | Sidney                |
| Gregg, H. W.       | Butte                                    | Lees, A. T.           | Whitefish          | Paterson, W. F.    | Conrad                |
| Griffin, P. E.     | Billings                                 | Leitch, Neil          | Kalispell          | Paul, F. W.        | Kalispell             |
| Griffis, L. G.     | Kalispell                                | *Lemon, R. G.         | Glendive           | Pearson, J. A.     | Livingston            |
| Grigg, E. R.       | Bozeman                                  | Levitt, L.            | Boulder            | Pease, F. D.       | Missoula              |
| Haas, A. T.        | Missoula                                 | Lewis, G. A.          | Roundup            | Pemberton, C. W.   | Butte                 |
| Hagmann, E. A.     | Billings                                 | Lhotka, J. F.         | Butte              | *Peterson, C. H.   | Great Falls           |
| Hall, C. M.        | Great Falls                              | Lindeberg, Sadie B.   | Miles City         | Peterson, R. F.    | Butte                 |
| Hall, E. C.        | Laurel                                   | Lindstrom, E. H.      | Helena             | Peterson, R. L.    | Hamilton              |
| Hall, E. L.        | Great Falls                              | *Lipow, E. G.         | Ronan              | *Peterson, W. M.   | Plentywood            |
| Hall, H. J.        | Missoula                                 | Little, C. F.         | Great Falls        | Place, B. A.       | Warm Springs          |
| Hamilton, W. F.    | Havre                                    | Logan, P. E.          | Great Falls        | Poindexter, F. M.  | Dillon                |
| Hammerel, A. L.    | Billings                                 | Long, W. E.           | Anaconda           | Polk, R. W.        | Miles City            |
| Hammerel, J. J.    | Billings                                 | Lord, B. E.           | Great Falls        | Porter, E. S.      | Lewistown             |
| Harlowe, H. D.     | Miles City                               | Low, J. E.            | Sidney             | (Life member)      |                       |
| Harper, R. D.      | Sidney                                   | Lowe, F. H.           | Missoula           | Powers, J. C.      | Billings              |
| Harris, W. E.      | Missoula                                 | Lueck, A. M.          | Livingston         | Pratt, S. C.       | Miles City            |
| Hawkins, T. L.     | Helena                                   | MacDonald, D. J.      | Billings           | Preston, S. N.     | Missoula              |
| *Hayes, J. D.      | Mammoth Hot Springs,<br>Yellowstone Park | MacGregor, J. C.      | Great Falls        | Pronin, Arthur     | Plentywood            |
| Hayward, H. C.     | Hamilton                                 | MacIntyre, H. E.      | Billings           | Randall, R. R.     | Miles City            |
| Haywood, Guy T.    | Forsyth                                  | MacKenzie, D. S.      | Havre              | Rathman, O. C.     | Billings              |
| Heetderks, B. J.   | Bozeman                                  | MacKenzie, D. S., Jr. | Havre              | Raw, A. W.         | Thompson Falls        |
| Herring, J. H.     | Lewistown                                | MacPherson, G. T.     | Butte              | (Life member)      |                       |
| *Hesdorffer, M. B. | Missoula                                 | Magner, Charles       | Great Falls        | Richards, W. G.    | Billings              |
|                    |                                          | Maillet, L. L.        | Great Falls        |                    |                       |



|                                        |                 |                         |             |                         |              |
|----------------------------------------|-----------------|-------------------------|-------------|-------------------------|--------------|
| Richardson, R. B. ....                 | Great Falls     | Shields, J. C. ....     | Butte       | Trobough, G. E. ....    | Anaconda     |
| Ritchey, J. P. ....                    | Missoula        | Shillington, M. A. .... | Glendive    | Tyler, K. A. ....       | Galen        |
| Robbins, B. L. ....                    | Glendive        | Sievers, A. R. ....     | Butte       | Ungherini, V. O. ....   | Butte        |
| Robinson, W. C. ....                   | Shelby          | Sievers, J. R. E. ....  | Butte       | Unmack, F. L. ....      | Deer Lodge   |
| Rodes, C. B. ....                      | Butte           | Sigler, R. R. ....      | Bozeman     | Unsell, David H. ....   | Billings     |
| Ross, F. B. ....                       | Kalispell       | Simons, J. B. ....      | Whitefish   | ★Vasco, J. R. ....      | Great Falls  |
| Routledge, G. L. ....                  | Dillon          | Smith, A. N. ....       | Glasgow     | Vennemann, F. W. ....   | St. Ignatius |
| Rowen, E. H. ....                      | Miles City      | Smith, C. S. ....       | Bozeman     | Vye, T. R. ....         | Laurel       |
| Rundle, B. S. ....                     | Circle          | Soltero, J. R. ....     | Billings    | Walker, Dora V. H. .... | Great Falls  |
| Russell, L. G. ....                    | Billings        | Spicher, R. W. ....     | Terry       | Walker, R. E. ....      | Livingston   |
| Russell, Rosannah<br>(Honorary member) | Ft. Shaw        | Spurck, P. T. ....      | Butte       | Walker, Thomas F. ....  | Great Falls  |
| Ryde, R. E. ....                       | Glasgow         | Stanchfield, H. ....    | Dillon      | Waniata, F. K. ....     | Great Falls  |
| Saam, T. W. ....                       | Butte           | Stephan, W. H. ....     | Dillon      | Weber, R. D. ....       | Missoula     |
| Sabo, F. I. ....                       | Bozeman         | Stewart, R. M. ....     | Whitefish   | Weed, V. A. ....        | Kalispell    |
| Sale, G. G. ....                       | Missoula        | Strain, Earle ....      | Great Falls | Weedman, W. F. ....     | Billings     |
| Sandy, B. B. ....                      | Ekalaka         | Stripp, A. E. ....      | Billings    | Weeks, S. A. ....       | Baker        |
| Schemm, F. R. ....                     | Great Falls     | ★Svove, C. R. ....      | Somers      | Weisgerber, A. L. ....  | Great Falls  |
| Scherer, R. G. ....                    | Bozeman         | Tanglin, W. G. ....     | Polson      | Welden, E. A. ....      | Lewistown    |
| Schubert, J. W. ....                   | Hardin          | Tarbox, B. R. ....      | Forsyth     | Werner, S. L. ....      | Billings     |
| Schwartz, Harold                       | Butte           | Taylor, W. W. ....      | Whitefish   | Wernham, J. I. ....     | Billings     |
| ★Schweizer, H. W. ....                 | Poplar          | Teel, H. M. ....        | Polson      | Whetstone, S. D. ....   | Cut Bank     |
| Seerley, C. C. ....                    | Bozeman         | Tefft, C. C. ....       | Hamilton    | Whitehead, C. E. ....   | Bozeman      |
| Seitz, R. E. ....                      | Bozeman         | Templeton, C. V. ....   | Great Falls | Willing, S. V. ....     | Butte        |
| Setzer, G. W. ....                     | Malta           | Terrill, F. I. ....     | Galen       | Williams, R. A. ....    | Bozeman      |
| Shale, R. J. ....                      | Helena          | Thompson, J. R. ....    | Miles City  | Williams, W. T. ....    | Malta        |
| Shaw, J. A. ....                       | Billings        | Thornton, C. R. ....    | Missoula    | Windsor, G. A. ....     | Livingston   |
| ★Shearer, B. C. ....                   | Helena          | Towne, R. L. ....       | Kalispell   | Winter, M. D. ....      | Miles City   |
| Shephard, H. C. ....                   | Flat River, Mo. | Townsend, G. A. ....    | Livingston  | Wirth, R. E. ....       | Missoula     |
|                                        |                 | Trenough, S. M. ....    | Missoula    | Wright, G. B. ....      | Kalispell    |
|                                        |                 |                         |             | Yuhus, J. L. ....       | Missoula     |

★Member in the Armed Forces of the United States.

### REPORT OF THE FIFTH ANNUAL MEETING OF THE WOMAN'S AUXILIARY TO THE MONTANA STATE MEDICAL ASSOCIATION

#### Officers

|                          |                                 |
|--------------------------|---------------------------------|
| President .....          | Mrs. Roy V. Morledge, Billings  |
| President-elect .....    | Mrs. Harold Schwartz, Butte     |
| 1st Vice President ..... | Mrs. A. C. Knight, Philipsburg  |
| 2nd Vice President ..... | Mrs. J. P. Greaves, Great Falls |
| Treasurer .....          | Mrs. A. A. Dodge, Kalispell     |
| Secretary .....          | Mrs. H. T. Caraway, Billings    |

#### Directors

|                   |                                    |
|-------------------|------------------------------------|
| 2 Year Term ..... | Mrs. Clyde Frederickson, Missoula  |
| 2 Year Term ..... | Mrs. R. J. Holzberger, Great Falls |
| 1 Year Term ..... | Mrs. F. F. Attix, Lewistown        |

The fifth annual meeting of the Woman's Auxiliary to the Montana State Medical Association was called to order by the president, Mrs. I. J. Bridenstine, in Great Falls, July 19, 1946. Mrs. H. V. Gibson, President of the Cascade Auxiliary, welcomed the members of the auxiliary to Great Falls. The report of the committee on approval of minutes of the last annual meeting held in Helena, July 15, 1945, was given, and the minutes were read. Annual reports of the state officers, committee chairmen, and county presidents were presented to the assembly. Guest speakers were Mrs. Mildred W. Schemm of Great Falls, Miss Elizabeth Baker of Glendive, Dr. S. A. Cooney of Helena, Dr. M. A. Shillington of Glendive, and Dr. J. P. Ritchey of Missoula.

# The JOURNAL LANCET

Serves the *Medical Profession of*  
MINNESOTA, NORTH DAKOTA, SOUTH DAKOTA AND MONTANA

Official Journal of the American Student Health Assn., Great Northern Railway Surgeons' Assn., Minneapolis Academy of Medicine, Montana State Medical Assn., North Dakota Society of Obstetrics and Gynecology, North Dakota State Medical Assn., Northwestern Pediatric Society, Sioux Valley Medical Assn., South Dakota Public Health Assn., South Dakota State Medical Assn.

## ADVISORY COUNCIL

### *North Dakota State Medical Assn.*

Dr. A. E. Spear, *Pres.*  
Dr. Philip G. Arzt, *Pres.-Elect*  
Dr. L. W. Larson, *Secy.*  
Dr. W. W. Wood, *Treas.*

### *North Dakota Society of Obstetrics and Gynecology*

Dr. Paul Freise, *Pres.*  
Dr. G. Wilson Hunter, *Vice Pres.*  
Dr. F. A. DeCesare, *Secy.-Treas.*

### *Minneapolis Academy of Medicine*

Dr. Russell W. Morse, *Pres.*  
Dr. Paul F. Dwan, *Vice Pres.*  
Dr. J. C. Miller, *Secy.*  
Dr. Ragnvald S. Ylvisaker, *Treas.*  
Dr. Henry E. Hoffert, *Recorder*

### *South Dakota State Medical Assn.*

Dr. F. S. Howe, *Pres.*  
Dr. H. R. Brown, *Pres.-Elect*  
Dr. J. L. Calene, *Vice Pres.*  
Dr. Roland G. Mayer, *Secy.-Treas.*

### *South Dakota Public Health Assn.*

Dr. J. M. Butler, *Pres.*  
Dr. C. E. Sherwood, *Vice Pres.*  
Dr. Gilbert Cottam, *Secy.-Treas.*

### *Sioux Valley Medical Assn.*

Dr. D. S. Baughman, *Pres.*  
Dr. Will Donahoe, *Vice Pres.*  
Dr. R. H. McBride, *Secy.*  
Dr. Frank Winkler, *Treas.*

### *Montana State Medical Assn.*

Dr. M. A. Shillington, *Pres.*  
Dr. L. W. Allard, *Pres.-Elect*  
Dr. H. T. Caraway, *Secy.-Treas.*

### *Northwestern Pediatric Society*

Dr. G. B. Logan, *Pres.*  
Dr. Geo. Kimmel, *Vice Pres.*  
Dr. Northrop Beach, *Secy.-Treas.*

### *Great Northern Railway Surgeons' Assn.*

Dr. W. W. Taylor, *Pres.*  
Dr. R. C. Webb, *Secy.-Treas.*

### *American Student Health Assn.*

Dr. Ralph I. Canuteson, *Pres.*  
Dr. Laurence Chenoweth, *Vice Pres.*  
Dr. G. T. Blydenburgh, *Secy.-Treas.*

## BOARD OF EDITORS

Dr. J. A. MYERS, *Chairman*

Dr. J. O. Arnson  
Dr. A. B. Baker  
Dr. D. S. Baughman  
Dr. Ruth E. Boynton  
Dr. Gilbert Cottam  
Dr. H. S. Diehl  
Dr. L. G. Dunlap  
Dr. Ralph V. Ellis  
Dr. W. A. Fansler

Dr. A. R. Foss  
Dr. James M. Hayes  
Dr. A. E. Hedback  
Dr. E. D. Hitchcock  
Dr. R. E. Jernstrom  
Dr. A. Karsted  
Dr. L. W. Larson  
Dr. W. H. Long  
Dr. O. J. Mabey

Dr. J. C. McKinley  
Dr. Irvine McQuarrie  
Dr. Henry E. Michelson  
Dr. C. H. Nelson  
Dr. N. J. Nessa  
Dr. Martin Nordland  
Dr. J. C. Ohlmacher  
Dr. K. A. Phelps  
Dr. C. E. Sherwood

Dr. M. A. Shillington  
Dr. J. C. Shirley  
Dr. E. Lee Shrader  
Dr. E. J. Simons  
Dr. J. H. Simons  
Dr. S. A. Slater  
Dr. W. P. Smith  
Dr. S. E. Sweitzer

Dr. W. H. Thompson  
Dr. E. L. Tuohy  
Dr. M. B. Visscher  
Dr. O. H. Wangensteen  
Dr. S. Marx White  
Dr. H. M. N. Wynne  
Dr. Thomas Ziskin,  
*Secretary*

LANCET PUBLISHING CO., *Publishers*, 84 South Tenth St., Minneapolis 2, Minnesota

MINNEAPOLIS, MINNESOTA, OCTOBER, 1946

## "FUNCTIONAL HEART MURMURS" UNSATISFACTORY TERM

When we speak of an *organic* disease, we usually think of one in which there is anatomical change in some of the tissues or organs of the body. Such change may not always be demonstrable during life but we are nevertheless justified in making the statement because experience has taught us that the post mortem examinations disclose explanatory findings. Because of painstaking studies, either before or after death, based upon the feeling that there should be some discernible tissue change to account for the manifestations of every patient's complaint, some afflictions, formerly classified as functional, have been transferred to the organic group. When no local change is present, we have learned to search more remote regions for a focal or reflex explanation.

It is even more difficult to make an unalterable diagnosis of a *functional* disease. This term is used as it is still necessary to distinguish between purely pathological physiology and disease due to anatomical lesions, but it

is not particularly popular. Even in regard to symptoms, there is a growing tendency to discard its use. We rarely hear anyone speak of a functional heart murmur. It is generally known that the most common murmur to be heard in the heart is the systolic in left second interspace which, when properly assessed, is innocent as it is usually a normal physiological phenomenon caused by the blood rushing into the distensory pulmonary artery close to the chest wall at the time of expiration. The cardio-respiratory murmur due to air rushing into the lungs is no longer afflicted with the name *functional* as this term has no diagnostic significance. Murmurs of this type are described by giving location, character, transmission, constancy or inconstancy, and position in the cycle as are the well recognized murmurs. If some additional name seems necessary, then physiological, cardio-respiratory, or even unexplained or unimportant, may be used. We speak of cardiac neurosis as a functional disorder of the heart although, strictly speaking, it is rather a disease of the nervous mechanism.

A. E. H.





■ In Pantopon, the physician has at his disposal all the alkaloids of opium in highly purified, water-soluble form, suitable for injection. Thousands of physicians have found Pantopon a dependable preparation in all cases requiring opiates. Pantopon 'Roche' is available in ampuls, hypodermic and oral tablets, and in powder form.

**HOFFMANN-LA ROCHE, INC., ROCHE PARK, NUTLEY 10, N. J.**

## THE PASSING OF THE FAMILY DOCTOR

Mountin showed that as early as 1938, not only were rural practitioners decreasing in numbers, but they were older than their urban confreres. His study indicated both that fewer graduates were locating in smaller towns, and that many of the younger physicians who originally located in rural areas were migrating to the larger cities.

In the June 1946 issue of the JOURNAL LANCET, it was shown that North Dakota with 641,935 population has 363 physicians; South Dakota with 642,961 population has 334 physicians; Montana with 559,456 population has 361 physicians; and Minnesota with 2,792,300 population has 2,565 physicians.

Smith, Executive Secretary of the Nebraska State Medical Association, in the July issue of the *Wisconsin Medical Journal* said, "As it looks from Nebraska, the medical profession has an unrecognized number one problem—the threatened extinction of the general practitioner. . . . The seriousness of this situation is more evident in the rural areas and smaller towns. Older men are retiring or are removed by death, and are not being replaced by younger men. This is a blow at the very foundation of medicine."

Contributing to the scarcity of physicians rurally and their concentration in the larger cities is the trend toward specialization. In 1941, it was found that of 175,382 physicians in the United States, 140,000 engage in private practice; and of this latter number 36,483 limit their practice to various specialties. In 1946, it was found that 30 per cent of practicing physicians are full specialists and 20 per cent are partial specialists, leaving only 50 per cent of practicing physicians in general practice.

The American system of medicine always has had the general practitioner as the very hub of its machinery. Family doctors are an essential part of the economy of American families. Transportation and communications systems have not been developed to a point where general practitioners should be allowed to decrease in number. Neither should the necessity of general practitioners be overlooked in solving the increasing costs of medical care. How much will medical care cost as the public is forced to seek its medical care from one specialist after another instead of from the family doctor?

This continuing decrease of general practitioners should be recognized as the greatest problem of organized medicine in this country at the present time. With its proper solution will come correction of maldistribution of physicians, decrease of the high cost of medical care, and higher quality of medical care uniformly over the whole country.

Unless the medical profession, itself, provides the answer in the not-too-distant future, some governmental agency will be given control of both medical education and medical practice in order to permit compulsory placement of physicians in rural areas. Would it not be far better to accept the challenge now, and to see that the profession provides the answer in a democratic manner rather than permit forced regimentation?

E. J. S.

## News Items

At the annual meeting of the American College of Chest Physicians, held at San Francisco, California, June 27-30, 1946, Dr. Karl H. Pfuete, Cannon Falls, was elected governor of the college for the state of Minnesota. Dr. Frank I. Terrill, Deer Lodge, was elected governor of the college for the state of Montana, and Dr. William L. Meyer, Sanator, was elected governor for South Dakota.

**CORRECTION:** The 1947 convention of the South Dakota State Medical Association will be held May 31 to June 3, inclusive, and the place is Rapid City and not Redfield, as was previously reported.

Among the fifteen University of Minnesota faculty members who received commendation for wartime medical research from the Office of Scientific Research and Development are Drs. Raymond N. Bieter, Owen H. Wangensteen, and Maurice B. Visscher.

Dr. Leo G. Rigler, Minneapolis, has been appointed a member of the Committee on Radiology in Industry and Public Health of the American College of Radiology.

Dr. Cecil J. Watson, Minneapolis, has been elected president of the American Society for Clinical Investigation.

Dr. Moses Barron, Minneapolis, appeared on the clinic program of the international diabetes clinic at the Indiana University Medical Center, Indianapolis, on September 23, which was sponsored by Eli Lilly and Company.

Joseph E. Dahl of Minneapolis, now sole owner of Dahl's exclusive prescription pharmacies and well known to the physicians of the area, was elected a fellow of the American College of Apothecaries at that organization's meeting August 26 at Pittsburgh, Pa. The only other member in Minnesota is Albert Malmo, Duluth. The society has some 100 members and is confined to ethical pharmacists.

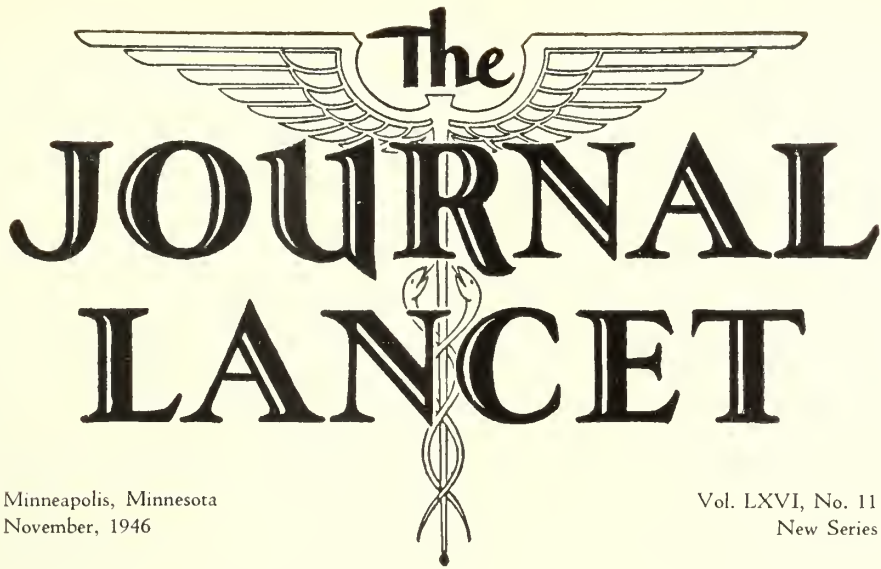
## Deaths

Dr. A. Howe, 69, former resident of Kalispell, Montana, died August 24 at Plentywood, where he had lived the past five years. He began his practice in Kalispell in 1902.

Dr. S. M. Soulders, 73, died August 29, at Billings, Montana, where he had practiced for 45 years. In 1917, Wittenberg college conferred upon him the degree of master of arts for original contribution in the treatment of pneumonia. In 1918 he built the Mount Maurice Hospital and Sanitarium which he operated until his death.

Dr. J. B. Baasen, 63, died August 11 at Grafton, North Dakota, where he had practiced for the last four years. He was formerly of Grand Forks.





The  
JOURNAL  
LANCET

Minneapolis, Minnesota  
November, 1946

Vol. LXVI, No. 11  
New Series

John Charnley McKinley, Teacher, Clinician,  
Contributor of Knowledge, Administrator  
and Benefactor of Mankind

*A Personal Appreciation*

by

J. Arthur Myers, M.D.

WHILE INSTRUCTING in neurology at the University of Minnesota School of Medicine in 1915, one of the students showed me some diagrams he had just prepared of the various nerve tracts. Evidently as he had struggled along in this subject it had been exceedingly difficult to visualize the source, course and distribution of these tracts within the central nervous system. Textbooks contained numerous illustrations of dissections of certain parts and cross-sections at various levels of the central nervous system, but nowhere was there to be found a diagrammatic presentation from which the student, or even the instructor, could clearly visualize and quickly understand the various tracts. This student had seen the need of such diagrammatic illustrations to elucidate the subject in his own mind, for obviously he had labored long and arduously to assemble all the facts available in numerous books and articles concerning each tract. The result was one of the finest contributions that had been made to the teaching of neurology. Since that time students and instructors everywhere have been able to readily visualize the subject. The student who made this contribution in 1915 was John Charnley McKinley, who became a highly respected and outstanding authority on this subject and, later, of all that pertains to the nervous system. Before the course in neurology was finished in 1915, Charnley and I became close personal friends, and this friendship has grown through the passing years.

He was born in Duluth, Minnesota, on November 8, 1891, and attended the grade schools of that city. After spending some time in the Duluth Central High School,

he transferred to the Horace Mann High School in New York City. When his family moved to Minneapolis he completed the course at the West High School. He then entered the University of Minnesota and received the Bachelor of Science degree in 1915. Minnesota's famous anatomist, C. M. Jackson, observed the unusual studiousness and ability of McKinley and offered him a student assistantship while he also studied in the Graduate School. In 1917 he submitted an excellent thesis entitled, "Myology of the Newborn Infant," and was granted the degree of Master of Arts. During the school year 1917-1918 he was Instructor in Pathology under the direction of H. E. Robertson and E. T. Bell.

Dr. Bell says: "Dr. J. C. McKinley had a year of training in Pathology before he began to specialize in Neurology. It was during this period that I became well acquainted with him. Rather early in his career he developed a keen interest in Neurology and he has pursued this interest with great enthusiasm ever since. This early work was concerned with Neuropathology, and he was a pioneer in this field at Minnesota.

"One of Dr. McKinley's outstanding attributes is his intellectual and scientific honesty. He never pushed his conclusions farther than his observations permitted, and he was ever careful that his fundamental data were correct.

"Dr. Mc Kinley's enforced retirement is a great loss to the science of Neurology and Neuropsychiatry, and his genial personality will be sadly missed by his many friends and colleagues."

Throughout the years J. C. McKinley's main interest was in the nervous system. He favorably impressed A. S. Hamilton, Chief of the Division of Nervous and Mental Diseases, who recommended appointment to a teaching fellowship. This began in 1918 and permitted the completion of the medical course with the degree of Doctor of Medicine in 1919. During the summer of that year he did graduate work in psychiatry at the New York City Psychiatric Institute. On completion of the fellowship with Dr. Hamilton in 1921, Dr. McKinley received the degree of Doctor of Philosophy in Nervous and Mental Diseases. His thesis, "The Intraneural Plexus and Fasciculi and Fibers in the Sciatic Nerve", was published in *Archives of Neurology and Psychiatry*. Throughout the period of graduate work in nervous and mental diseases Dr. Hamilton was fascinated by Dr. McKinley's teaching ability, investigative mind, accomplishments in research, and his vision on needed future developments in the entire field of nervous and mental diseases. Therefore, he recommended him for an assistant professorship in neuropathology. After holding this position until 1925 he was advanced to an associate professorship. The year 1928-1929 was spent on a fellowship of the John Simon Guggenheim Foundation, when he conducted studies at the Universities of Breslau and Munich, Germany. On returning to the United States in 1929, he was advanced to a full professorship in neuropsychiatry.

When Dr. Hilding Berglund resigned the headship of the Department of Medicine in 1932 Dr. McKinley was appointed Acting Head. Two years later he was promoted to the headship of the Department of Medicine. He retained and procured the best possible physicians for teaching, care of patients, and research. Neuropsychiatry was still one of the divisions of this department for which he had selected an excellent staff with a splendid teaching and research program in effect.

Dr. McKinley devoted a large amount of time and thought to the proper construction of a psychopathic unit at the University Hospital. In fact, he and Dr. Hamilton had frequently discussed the importance of such a unit to the school. For years Dr. McKinley had made observations on such units in this country and abroad and had assembled the best designs from many institutions. He also had numerous excellent original ideas and envisioned the best unit that could be produced. On numerous occasions he appeared before the state legislature presenting various reasons why funds should be appropriated for the construction of a psychopathic unit. He was rewarded for all effort when an adequate sum was appropriated and he was ready with the most detailed plans for construction. When the unit was completed in 1937 nothing had been omitted that would insure the safety of his mentally ill patients, as well as those who cared for them. Although this new unit accommodates only thirty-seven patients, it is adequate, ample and ideal in every respect.

Dr. McKinley had long desired to limit his activities to neuropsychiatry, and in 1943 such a department was established through his efforts. He recommended that Dr. C. J. Watson succeed him as Head of the Depart-



Dr. J. C. McKinley

ment of Medicine. Concerning him, Dr. Watson says: "It is a genuine pleasure and privilege to participate in an expression of appreciation of Dr. J. Charnley McKinley. His enforced retirement from medical teaching and research, and from any active participation in the daily affairs of the Medical School has removed a strong prop which many of us, and more particularly I, had leaned heavily upon for a number of years. It is one of Dr. McKinley's many fine traits that he is a sympathetic listener, always willing to turn over in his mind the problem which a friend brings to him, and after careful consideration to give helpful and kindly advice. I can well remember how often in the earlier days of my medical research, I would turn to Dr. McKinley for advice about methods and apparatus and even about fundamental questions to the project at hand even though he at that time was interested almost entirely in neuropathology and my interests related to diseases of the blood and spleen. It was easy to turn to him because he was so willing to be helpful. I have often felt guilty in later years about the amount of his time that I abstracted in those days.

"For more than ten years, Dr. McKinley was the Chairman of the Department of Medicine. As Director of the Division of Internal Medicine during a good deal of this period, I had the utmost satisfaction and help from his counsel. His contribution to a knotty administrative problem was characteristically clear and incisive, yet quiet and simple. The privilege of having served



under him is one that I shall never minimize."

When Dr. McKinley became head of the newly created Department of Neuropsychiatry in 1943, his entire personnel was carefully chosen and the various phases of neuropsychiatry were well represented by experts. The staff has worked most harmoniously in developing one of the best teaching units to be found anywhere, in arranging for and applying every worthwhile diagnostic and therapeutic procedure and in conducting research of the highest quality.

Dr. McKinley has always taken tremendous pride in his students, not only while they were in school, but after graduation. There was nothing he would not do to help the individual or the entire class. He devoted a great deal of time to the preparation and revision of outlines of courses for students, such as Syllabus and Clinical Guide, and Outline of Neuropsychiatry. These outlines were so effective in teaching that other departments adopted similar methods.

The numerous and notable contributions Dr. McKinley made to the literature were headed by a paper (with E. M. Hammes) on Lethargic Encephalitis, which was published in 1920. Following this, he contributed many articles of scientific and practical value. A few years ago, Paul B. Hoeber, medical book publisher, chose Dr. McKinley from among the American workers in neuropsychiatry to prepare a handbook on neurology and psychiatry. This was a signal honor. Inasmuch as there is no such publication in the English language, and of necessity it would be of considerable magnitude—at least three large volumes—Dr. McKinley carefully weighed the project before finally contracting to produce the manuscript. He proceeded to invite more than twenty experts in various phases of the subject to contribute chapters and sections. After the work was well under way it was interrupted by situations incident to World War II. However, it is now being resumed and is to be carried to completion by Doctors Donald Hastings and A. B. Baker.

For many years Dr. McKinley has been a member of the editorial board of the *Journal-Lancet*. In this capacity he has read and edited all manuscripts submitted for publication in neuropsychiatry. Moreover, he has edited special issues devoted entirely to subjects in his field. It is most fitting that his successor, Dr. Donald Hastings, as head of the Department of Neuropsychiatry, has edited this (November 1946) issue of the *Journal-Lancet*, which is dedicated to Dr. McKinley.

Having long been convinced that most disasters in politics, crime and the like are due to mental disorders which should be detected before catastrophies occur, Dr. McKinley aided in legislation concerning psychiatric problems and was influential in the enactment of the Minnesota Psychopathic Personality Law. No device was available for quickly screening such personalities from any group of individuals. However, in collaboration with Dr. S. R. Hathaway he developed the Minnesota Multiphasic Personality Inventory. This is a psychometric device for the more objective evaluation of per-

sonality especially in psychiatric terms. It consists of 550 items that have been found to have discriminatory value (ex. "I have very few headaches.") which are given to the patient for his response as "True" or "False." To derive meaning from these responses it was necessary to obtain such records from hundreds of normal people and carefully diagnosed patients of all types. Statistical treatment of the data yielded a number of scales that can be interpreted as an aid in psychiatric diagnosis and general evaluation of the severity of abnormal type personality reactions.

Dr. McKinley had the rare vision to foresee the value of such a device and the still rarer strength of purpose to carry through the years of developmental research before it was possible to assess the ultimate outcome. He contributed, among other factors, the absolutely essential staff organization, the psychiatric sophistication, and the complicated administrative detail behind the project. The magnitude of these contributions can only be grasped if one goes back to the time of initiation of the project and recognizes the reluctance of the scientific world to accept such an approach.

Through Dr. McKinley's steadfast backing, the project was completed and the present day attitudes are far different. The MMPI is widely used and accepted. First published in 1942 by the University Press, it quickly swamped the local facilities for manufacture and was released to The Psychological Corporation, New York, for manufacture and distribution. It is used routinely by hundreds of private clinics and individual doctors; it is a part of the personnel procedure in some of our largest corporations; it was used by individual medical and psychological personnel in all theatres of war; Adjutant General Ulio wrote to express personal appreciation of the contribution made to the war effort; it is used today in all veterans' administration medical clinics and is a part of the required curriculum for training clinical psychologists under the auspices of the Veterans Administration.

Dr. Hathaway, who has long worked with Dr. McKinley on this and other projects, says: "It is trite to say that an important measure of the greatness of a man is the breadth of his interests and abilities. Actual estimation of relative variety in the subject matter of publications of eminent men has established the truth of the common saying. Among Dr. McKinley's professional qualities, the varied directions of his competence is an outstanding evidence of his eminence. From his earlier contribution to our anatomical knowledge of the sciatic nerve through his work on muscle tonus and poliomyelitis to the psychological techniques of personality evaluation is a range few of us can competently attain.

"His teaching and publications are an inspiration toward the highest levels of scientific integrity. His efforts have always been in the broadest sense directed toward socially acceptable ends. His methods and recognition of the contributions of others are marked by honesty and the fair recognition of the mutual contribution of his colleagues and students. Few men with administrative responsibility requiring many arbitrary decisions have as

far as he merited the feeling that decisions and policies derived from honest and impersonal motives.

"When evaluating a man's contribution, we tend to ask ourselves what one thing he did that most clearly established him as deserving a high place in his profession. Aside from the local personal and professional position he achieved, I think we may select his indispensable contributions to development of the Minnesota Multiphasic Personality Inventory as his most outstanding work. The thousands of clinical workers routinely using the MMPI and the already extensive literature on this device are establishing an enduring monument to his memory.

"Finally, I wish that I might have the gift to commit to written words the more personal debt I feel for his friendship and guidance. The impact of these is not adequately expressed by professional eminence. Warm friendship and wise guidance are too restricted and individual. The debt must be paid in lives modified and consecrated toward ideals derived from the man's having lived. We who continue yet a while can never more effectively establish the worth of these personal contributions than when we too are judged and through our lives humbly reflect our recompense to Dr. McKinley who influenced us."

Dr. McKinley is such an excellent student of poliomyelitis in all of its aspects, including the pathology, that he has been in great demand as a consultant when the diagnosis or treatment of this disease is in question. He always has at his tongue's tip the latest figures concerning the efficacy of the various therapeutic procedures reported from all parts of the world. The fundamental knowledge concerning poliomyelitis, particularly its pathology, is so well established and Dr. McKinley has so mastered the subject that he is irked when anyone without true knowledge of the fundamentals of the disease advances so-called new concepts pertaining to etiology, location of lesions, diagnosis, treatment and prognosis.

Dr. A. B. Baker, who worked with him on many cases of poliomyelitis and other diseases of the central nervous system, says: "When one has worked closely with Dr. J. C. McKinley for many years, it is difficult to describe in words the many finer qualities which he possessed. There is a tendency to emphasize only certain outstanding characteristics and to overlook or minimize many other excellent ones which one accepts as natural or expected when actually they are unusual and admirable. To many, Dr. McKinley is best known as the courageous champion of his own convictions. It must be emphasized that every principle advocated and defended by him was first subjected to much careful thought and scrutiny. His judgment was not at fault in very many instances. As a teacher he was unparalleled; his entire academic program was based upon the firm foundation of good pedagogy. Research played an important role in his philosophy and he was always willing to help, to guide, and to support the investigative efforts of his staff. He made a point of protecting his staff from the many little nuisances and duties which would interfere with their work by taking

such duties upon himself at the sacrifice of his own time and his own pleasures.

"However, to me, Dr. McKinley's most outstanding quality was his total lack of personal selfishness. He was always willing and anxious to help and guide the academic and scientific development of his staff and colleagues and took great pride in their achievements. In fact, one of the greatest satisfaction one could obtain was the privilege and pleasure of being able to discuss problems with him and become infected with his enthusiasm and encouragement. Certainly those who worked with and under Dr. McKinley will, for a long time, feel his absence from the academic field and will miss greatly his guidance, advice and physical presence."

Dr. McKinley's attitude toward sound and fundamental principles in all medical work is well expressed by Dr. Maurice Visscher: "Dr. J. C. McKinley is one of a small group of scientifically trained physicians who were responsible over the past twenty years for establishing in the University of Minnesota Medical School a center of sound, creative work in medicine. He could always be counted upon to stand up for the highest standards, whether it might be in medical practice, teaching or research. He has been intolerant of pretense, sham, and slovenly work, but has never been too busy to give his time freely to help colleagues in need of assistance or advice. His incapacitating illness has deprived his institution and his friends of one of their firmest pillars of strength."

Dr. B. C. Schiele, who has been intimately associated with Dr. McKinley for many years, says: "I think of Dr. McKinley with deep personal affection. Honest, sincere, and fair, he has always been sensitive to the problems of those about him. As a teacher he is able, sound, and inspiring. A man of high scientific integrity, he believes strongly in objective methods, valid observation and honest reporting. He has fought tenaciously for those things in which he believes. His untimely illness and incapacitation have caused an irreplaceable loss to his field of work, to the University and to his friends and colleagues."

Dr. McKinley enjoys a fine reputation in neuropsychiatry. For many years he has been in demand as a consultant among physicians over a wide area. Large numbers of persons in every walk of life have requested his advice and assistance. He is exceedingly popular among the faculty members of the entire University of Minnesota and has helped many to solve difficulties that have arisen in their own families.

He is an excellent diagnostician outside his own special field. A number of years ago, while conducting experimental work on poliomyelitis some of his laboratory monkeys became tuberculous. A technician who assisted him was intimately exposed to one of these animals during the course of an experiment. Consequently, she developed mild but suspicious symptoms, and with uncanny accuracy he outlined a small lesion which other phases of the examination proved to be tuberculous. Following this experience he proceeded to eradicate tuberculosis from the animal colony.



He is not given to flattery; therefore, words of praise have a significant meaning, while criticism is always constructive. Never has he failed to manifest the courage of his convictions. He is trustworthy in every sense of the word. These and numerous other fine qualities inspire and warrant confidence. Thus, Dr. McKinley has been called upon to serve on the most important committees of the Medical School and the University as a whole. For example, he was chosen as a member of the all-faculty committees for the selection of the last two presidents of the University.

Dr. H. S. Diehl, Dean of Medical Sciences, says: "Educational institutions are made by men and in the case of the University of Minnesota Medical School few men have made as great a contribution to its character and development as Charnley McKinley. His first faculty appointment was as a graduate student and instructor in anatomy with a special interest in neuro-anatomy. Then came graduate work in neuropathology and neuropsychiatry, followed by a full time faculty appointment in the Division of Neuropsychiatry.

"After the death of the late Dr. Arthur Hamilton, Dr. McKinley was appointed Professor and Director of the Division of Neuropsychiatry. He served in this capacity until his retirement on account of illness approximately a year ago. For several years Dr. McKinley acted also as Administrative Head of the Department of Medicine.

"As a clinical neurologist and neuropathologist, Dr. McKinley's eminence has long been recognized. But he is not one to be content with the present status of our knowledge in these fields and was constantly active in research and the training of graduate students. He has been deeply interested also in undergraduate medical education, developing an excellent instructional program in neuropsychiatry for medical students, and serving as chairman of the committee which several years ago planned a complete revision of the teaching program of the junior and senior years.

"In administrative matters also Dr. McKinley's broad interest and sound judgment resulted in assignments of many special responsibilities and in frequent calls for advice and counsel. His interests touched every aspect of the Medical School's activities. His personal service and influence have made the University of Minnesota Medical School a better institution for all time."

The members of the Minnesota State Medical Association have high regard for Dr. McKinley as evidenced by his appointment as Secretary-Treasurer of the State Board of Examiners in the Basic Sciences in 1931. He discharged the duties of this position admirably until his retirement. In 1943 he was appointed Chairman of the State Association's Committee on Nervous and Mental Diseases. This committee made a careful study of the various problems throughout the state and has already offered valuable suggestions for their solution.

Memberships are held by Dr. McKinley in numerous organizations. Among them are the County, State and American Medical associations, as well as other state organizations, including the Society of Neurology and

Psychiatry, Academy of Medicine and the Pathological Society, of which he was president in 1936-37. He also belongs to many regional and national special organizations, such as the Central Clinical Research Club, Central Society for Clinical Research, Central Neuropsychiatric Association, of which he was president in 1938-1939, Society of Experimental Biology and Medicine, fellow of the American Association for the Advancement of Science and American Neurological Association. In 1941 he became a member of the Board of Directors of the American Board of Psychiatry and Neurology. He was most conscientious with regard to adequate examination and all other qualifications of applicants before recommending certification to the practice of these specialties. He was greatly appreciated by the other members of this Board because he always was present wherever the examinations and meetings were held, and contributed greatly to the success of the work.

He was elected to membership in the medical scholastic fraternity, Alpha Omega Alpha and his scientific attainment was such as to admit him to Sigma Xi. For many years his biographical sketch has appeared in American Men of Science and Who's Who in America.

For more than twenty years Dr. McKinley and I have officed just across the corridor from another in Millard Hall. At midforenoon we usually went across the street for coffee. This afforded us an opportunity to chat about subjects of mutual interest such as teaching, writing, the control of diseases and conditions in our respective fields on a national or worldwide basis. We also discussed vacations and a number of subjects only partially related to our regular work. One morning in the spring of 1926, Dr. McKinley came to my office and said he had learned of some available isolated, heavily wooded lake shore property in the vicinity of Milltown, Wisconsin. During childhood he had been exceedingly fond of the out-of-doors and had devoted much time to the woods and lakes over a wide area in the vicinity of Duluth and Superior. We went to Milltown and made careful observations of this particular site and the surrounding country. It strongly appealed to Dr. McKinley because of its resemblance to the areas farther north where he had spent so much time as a child. The land was purchased and Dr. McKinley located a young contractor who constructed cottages for us the following winter. From that time we regularly spent vacations and summer week ends together. A little later Dr. C. A. McKinley located adjacent to us. All being members of the staff of the Department of Medicine, we frequently discussed the various phases of this field. Dr. J. C. McKinley always had on hand complete first aid equipment and, therefore, was our group physician. On numerous occasions he treated wounds of the children and other illnesses of various members of the colony.

He had a wide variety of interests and succeeded in everything he attempted. From the Wisconsin Department of Forestry he procured hundreds of white pine seedlings which he carefully planted to establish a pine forest on his acreage. He excelled in gardening by growing the finest varieties of vegetables and small fruits. He

knew the trees, the flowers, the birds, the reptiles and other animals of the woods and lakes. He still holds the twenty year record for having caught the largest fish of any member of our group. He took much delight in swimming and boating. He was a crack marksman with the rifle and pistol, of which he owned several. He became the friend of the farmers of the community and the Chippewa Indians on a nearby settlement. The merchants and other citizens of the villages of Luck and Milltown soon became his close friends. He took pride in arranging for an inter-cottage telephone system, a pumping device for storage water tanks, and numerous other conveniences for this limited community. He surrounded his garden with an electric wire to protect it from the deer and smaller animals of the forest. These varied activities were only a part of his recreational interests.

The Sioux Falls, South Dakota, Medical Society, whose membership includes a considerable number of our former students, invited Dr. McKinley and me to present papers in our respective fields on May 8, 1945. We accepted and made reservations to leave on the same train. A little before departure time, however, Dr. McKinley cancelled the trip because of a rather sudden rise of blood pressure. For some years hypertension had caused him considerable disturbance. He feared disability from

cerebral hemorrhage much more than death. He had treated large numbers of such disabled persons and among them his predecessor, Dr. A. S. Hamilton. Only a few days after cancelling the Sioux Falls engagement, on May 11, while taking dinner at the home of a friend this most feared accident occurred.

The event came as a severe shock to Dr. McKinley's host of friends. Most of them have not since seen him. They have lamented being unable to express their feelings toward him. However, an opportunity came in October, 1946, when a small self-appointed committee announced that it would receive letters and have them bound in a volume, to be presented to Dr. McKinley on or before his fifty-fifth birthday on November 8. Promptly these letters began to pour in. What an array of messages—200 of them. What expressions of sympathy, kindness, affection, friendship, appreciation, esteem, and everything else to denote a life completely filled with service to humanity. After all, it is not the number of years that a man works but what he accomplishes that counts. Examples are found in the lives of such persons as Bichat, Chopin, Keats, Laennec, Rhodes, Schiller, and Thoreau. Like them, Dr. McKinley has kindled fires in the hearts and minds of men and women that can never be extinguished.

---

#### ARMY NEUROPSYCHIATRIC PROBLEM

During the first six months of 1945 when patients evacuated from overseas reached a war-time peak, there were actually more psychiatric and neurological patients than medical patients returned from the Pacific. The significance of this statement is highlighted when one realizes that the Pacific evacuated a larger percentage of patients for disease than any other theater. During this same period the number of patients evacuated for neuropsychiatric disorders from the European Theater almost equalled the number evacuated for disease.

The most startling figures are those now first becoming available with the publication of the medical histories of the field armies. The experiences of the First Army—which accounted for most of the American fighting strength during the first two months after D-Day in France—have just been published. During these two months, eight divisions can be considered to have been actively engaged. The records of these divisions reveal that there was one neuropsychiatric admission out of every two medical admissions. In certain divisions, the admissions for neuropsychiatric causes swamped all other medical admissions. This can be illustrated by pointing to one division which had a per annum rate of 944 neuropsychiatric admissions out of 1100 total medical admissions. In non-statistical terms, this means that the entire strength of the division would have been dissipated within a year as a result of psychiatric casualties if men had not been treated and returned to duty.

In these eight divisions, neuropsychiatric admissions amounted to 200 out of a total of 482 medical admissions per annum or approximately 40 per cent. If these psychiatric casualties had not been effectively treated, one-fifth of the entire divisional strength would have been lost during the course of a year.—From "Logistics of the Neuropsychiatric Problem of the Army," ELI GINZBERG, in *Amer. Jour. Psychiatry*, May, 1946.



# War Psychiatry and Its Influence Upon Postwar Psychiatry and Upon Civilization\*

Edward A. Strecker, M.D.†  
Philadelphia, Pennsylvania

The law of supply and demand is inexorable. The postwar patient psychiatric demand has been so great that it cannot be supplied within the strict confines of psychiatry, and general medical men want to acquire a certain amount of basic psychiatric understanding. This is particularly true of those physicians who in the war had general medical and surgical duties; were confronted frequently with situations in which there were important psychiatric complications and because of lack of psychiatric knowledge were nonplussed and ineffective. The effect of these several conditions will be to exert frontal psychiatric and lateral nonpsychiatric pressure upon medical education, increasing the importance of psychiatric teaching and broadening the scope so that the psychosomatic and other relationships between psychiatry and medicine and surgery, in all their subdivisions, will be adequately taught.

MANY generations to come will have to pay for the huge neuropsychiatric morbidity rate of this war, if not in blood, certainly in tears and sweat. Surely prevention will have important consideration in the military psychiatry of the future. Having failed twice within twenty-five years, and having paid a heavy penalty for our failures, it is inconceivable that we should again be remiss in filling the lamps of military psychiatry with the oil of organization and personnel. No matter how small the peacetime army may be, there must be maintained in the Office of the Surgeon General at least a skeleton of neuropsychiatric organization, capable of rapid expansion and in close touch with qualified psychiatric medical personnel, available for service should the need arise.

Neuropsychiatric induction has not been successful. Even the small amount of screening it accomplished is remarkable in view of the dearth of psychiatrists and the pressure of time permitting at best five minutes to discover disabilities which rarely have external markings, as do physical handicaps.

It must be emphasized that many, and indeed the majority of neuropsychiatric disabilities did not appear as a result of combat experiences but were detected by the hundreds of thousands at induction or in training areas in the continental limits. The bulk of these conditions was somewhat vaguely psychoneurotic with rather indefinite psychosomatic symptoms or personality disorders often indicative of grave psychopathic traits, sometimes suspiciously akin to malingering. It is to be emphasized, too, that they were merely focused in the regimental and disciplinary setting of military life. Usually they existed prior to service and the trail of inadequacy, selfish behavior, instability, and lack of social responsiveness

is plainly discernible. What is the significance of this serious situation? Some thoughtful observers believe it is indicative of softening, a deterioration of our youth. This is a broad assertion which should not be accepted without sufficient validation. In any event, here is a problem which needs thorough discussion and clarification. It is not too much to say that unsolved it will threaten the security of our democratic civilization.

The social portrait of a human being might picture him surrounded by a series of concentric circles. Those circles immediate to him might symbolize inalienable personal rights, a very few personal and sacred rights: the right to preserve one's life; the right to bar unwanted and unauthorized intruders from one's home; the right to worship God as one's conscience dictates; the right to think independently though not always to carry thoughts into action.

Beyond these limited circles of personal liberties there are more circles. The areas they enclose become progressively larger and more remote from the central figure of any individual. It is inevitable that soon these areas must impinge upon and overlap concentric regions which encircle other human beings, highly placed or lowly placed; no one has more than the merest fractional claim upon such mutually held territory. For instance, insistence that others must believe and act as we believe and act and resort to forceful measures to compel agreement is not the exercise of personal liberty.

The existence of true democracy is imperiled not only by aggressive commission but even more seriously by omission. There is no need of indicting those who insist only on the rights and privileges accorded by democracy and neither understand nor regard the duties and obligations incurred. Only in very small degree are they responsible for their undemocratic behaviour and the dangerous situation that is produced. Biological and constitutional factors cannot be blamed too much. For one thing, in the group under consideration as revealed in the huge laboratory of manpower seeking adequate service by induction and testing men by military service, generally speaking there was no evidence of intellectual inferiority but rather there was obvious evidence of emotional and social immaturity. Much more indictable are the defects in childhood training, particularly in the parent-child and parent-surrogate-child relationships, grievous failures in teaching concessions in the matter of so-called personal rights, a reasonable amount of responsiveness, and at least a minimum of habituation by practice of contribution to the social welfare of the family and community. Since such lessons can be impressed only faintly by precept and deeply only by example, one cannot escape the conclusion that far too many adults who are responsible for the emotional development of

\*Compendium of a paper which was delivered at the Postgraduate Assembly on Nervous and Mental Diseases, and War, November 2, 1944, and published in Proceedings of the Institute of Medicine of Chicago, January, 1945.

†Professor of Psychiatry, University of Pennsylvania School of Medicine; Consultant for the Secretary of War to the Surgeon General of the Army and the Army Air Forces; Consultant to the Surgeon General of the Navy.

children are themselves emotionally and socially immature and consequently basically undemocratic in their attitudes and behavior.

Human beings threatened with psychic disruption employ those psychological weapons and devices which experience has demonstrated as readily available and naturally usable by their particular personalities. In a general way, the extrovert who is not deeply sensitive to the judgment of others, tends unconsciously to employ simple stratagems which meet his needs, like the conversion of an emotional conflict into a physically disabling symptom, or perhaps, as in mania, by tremendous activity, verbal and motor, which serves to distract his attention from the emotional conflict; the more reflective introvert is more likely to use his power of thought, often accomplishing by intricate mechanisms significant repressions symbolically camouflaged in conscious thought and behavior.

In neuropsychiatry modern war has not devised totally new treatment formulae, but there have been skillful and useful adaptations of known treatments. Narcosis therapy usually given for a week or ten days or more has been shortened to one to three days, sometimes followed by two weeks of subshock doses of insulin resulting in an average weight gain of about twelve pounds. Grinker advocates narcosynthesis by the use of sodium pentothal intravenously, and the soldier, in a twilight zone of consciousness, through suggestion was made to relieve his battle experiences. Perhaps the most important development in psychological treatment has been the application of group psycho-therapy. It treats patients in groups, and undoubtedly the exchange of experiences and opinions between patients shortens the time required to bring patients face to face with the underlying motivations of their reactions. Furthermore, the group is familiarized with the operations of the usual mechanisms unconsciously employed as technics to produce the psychoneurotic escape. Fortunately, the improvement of group therapy has not been hampered by crystallizations of theory or practice. Many innovations have been tried. Particularly important is the determination of the relatively greater integrity of recoveries on the basis of intellectual understanding and insight as contrasted to those in which there was an emo-

tional "breaking out" in the shape of emotional expression and portrayal of the harrowing combat experiences.

For many years we have been talking about the shortage of psychiatrists. One effect of the war upon civilian psychiatry will be that we will be compelled to do something about it. The Army and Navy have given many medical officers indoctrination courses in psychiatry. It has been ascertained that at least one-half of these men want to continue their psychiatric education and practice psychiatry.

#### CONCLUSION

Military psychiatric experiences, particularly as related to combat, will produce a leavening of therapy. There will be an eclectic therapeutic viewpoint based on the necessity of accomplishing restitution in the shortest possible time without too close adherence to any particular school of thought or technic. We will witness a three-pronged attack upon therapeutic technics that are highly individualistic and very time-consuming. One prong of attack will come from the great number of patients needing treatment, a second from the shortage of psychiatrists and the need of their having as wide a patient coverage as possible, the third from the relative success obtained in war from energetic and brief therapies. Psychoanalysis, the citadel of individualized treatment which of necessity requires much time, will respond with certain modifications. It is likely that these modifications will consist of short-cuts in reaching certain phases of the analysis, perhaps by utilizing pharmacological technics or hypnosis or even group therapy.

There will be a tendency to deal therapeutically more emphatically and intensively with those emotional experiences that are directly related to the symptomatology of the psychoneuroses. Naturally, the past of the patient, personally and even phylogenetically, should not be ruled out of consideration, but its use by the patient to continue a situation which precludes participation in everyday realities and activities should be energetically combated. The inner upheaval due to the dynamic experiences which shaped the neurosis must be experienced by the patient, and the very fact that they are recent in the psyche and more readily accessible to the therapy would give them a larger and firmer leverage with which to lift the psychoneurosis into more favorable territory.

---

#### USE OF THE LIFE CHART IN PSYCHIATRIC CONSULTATION

The scheme of this simple chart in general is as follows: In the left hand column there are rectangles in which are written the dates; similar spaces in the right hand column are filled in with the age of the patient in that year; the wide spaces to the left of the center column are used for medical data and those to the right for social data.

The object of this schematization is to bring out chronological relations: In any long history taken under the regular headings of chief complaint, present illness, past history, system review, family history, etc., the significant sequence of events may often be lost sight of entirely because the social data are written up with no reference to the medical happenings. So many details may be brought in to each separate department of the history that one does not see the important socio-medical concatenations. These are frequently in time sequences which show on a life chart, so it becomes a useful instrument for either abstracting a history or taking down histories at the bedside.—STANLEY COBB, M.D., *Use of the Life Chart in Psychiatric Consultation*, in *Clinical Medicine*, September, 1946.



# What Do We Know of Multiple Sclerosis?

Hans H. Reese, M.D.\*

Madison, Wisconsin

SINCE the first clinical descriptions of disseminated sclerosis by Cruveilhier and Carswell in 1838 we have learned much about the clinical and pathological features of the disease. However, we do not know as yet if it is an etiologically uniform disease or if it belongs in the polyetiological syndromes. As long as the etiology of even rather frequent disorders is unknown, and I refer here specifically to multiple sclerosis and to disseminated encephalomyelitis with its characteristic demyelination, our theoretical explanations vary and much depends in the interpretation upon our approach, which may be as a clinician, a neurohistopathologist, an anatomist, or last, but not least, an immunobiologist.

The negative results from experimental investigations over 108 years include bacteria, viruses, spirochaetae and spurious agents. During the last century our hypothetical groping has focused upon myelin destroying enzymes or lipolytic ferments, upon constitutional dispositional altered humoral reactions, upon faulty blood clotting mechanisms, and upon neuroallergic phenomena in the sense of specific antigen-antibody reactions in the nervous system.

Multiple sclerosis is characterized pathologically by (1) demyelinated, glial patches scattered preferably in the white matter throughout the central nervous system which are the end-results of an acute stage of tissue damage with its myelin edema, fat filled microglia elements, with focal macroglial proliferation (astrocytes) and with perivascular gitter cell infiltration of the adventitial mostly venule spaces. Acute, subacute and chronic patchy lesions are scattered through the nervous system, and sometimes quite sharp or faded plaques are seen in the cerebrum, in the brain stem, in the spinal cord; (2) by nerve fibers deprived of myelin sheaths (so-called naked axis cylinders) with some only partially covered with tumefied or fragmented myelin and others presenting destruction of both the myelin sheaths and the axons in young and old lesions which are also present in apparently normal appearing tissues of the nervous system, and (3) by the almost normal ganglion cells even in areas which are surrounded by active degeneration and reaction phenomena. Many attempts have been made to demonstrate various evolutionary stages of the plaques, of the micro-macroglial proliferations, and of vessel changes. The present discourse does not attempt to review facts and the discrepancies of the neuropathology of multiple sclerosis.

The clinical picture of a given case, however, must be evaluated from the point of view that scattered lesions vary in their evolution and that only the severely damaged tissue region will mirror clinical symptoms. For this reason, the age of the demyelinating process, its intensity, and its location are important; furthermore, one must keep in mind that coalescence of small foci into a

large plaque occurs frequently, and that the secondary phenomena of pia-arachnoid involvement intensify and obscure focal signs.

Many theories as to the etiology of multiple sclerosis have been presented during 108 years, which in the hands of well qualified and often critical investigators have given stimuli to a long scale of therapeutic approaches, none of which, however, is a specific remedy. The endless lists of many drugs, non-specific proteins, vaccines, sera (Laiguel-Lavastine-Karessios or Stransky), lipid or endocrine substances, and the more heroic methods of artificial fever, forced spinal drainage, and cervico-dorsal sympathectomy, ganglionectomy, reflect our searches and failures.

Among the theories of the etiology of multiple sclerosis, Putnam's researches relative to vascular occlusions and to faulty coagulation factors have great popularity. Putnam has stated repeatedly that the vascular abnormalities are on the venous side and that the different causes of vascular occlusions may be fibrous plugs or thrombi. He does not believe that the "sclerotic" changes are due to local inflammation by toxins, but adheres to the viewpoint of thromboplastic changes in the clotting mechanism of the blood in preference to vasospasms. B. Simon, Putnam, Reese and others have studied blood coagulation in disseminated sclerosis and other diseases of the central nervous system. Dow and Berglund have partly supported Putnam in "the vascular patterns of lesions in multiple sclerosis," a theory which is not new, since it has been discussed already by Rindfleisch and Ribbert. Of the sixty lesions studied by Dow and Berglund, twenty were without a central vein, twenty were oriented about a normal appearing vein and only nine lesions surrounded a vein with a thrombus. However, in three of these nine lesions the thrombus was outside the lesion, in three the thrombus was partly within it, and in only the remaining three was the thrombus confined to the area. No positive correlation was found between lesions with a thrombus and the size or shape of the lesions, except that when a vein was found within an ellipsoid lesion, its location was almost invariably oriented along the long axis of the plaque. Dow concludes, "The view that demyelination in multiple sclerosis is entirely unrelated to the vascular system does not seem likely in the light of our findings. To assume that the vascular changes, especially thrombi, are an essential part in the pathogenesis of the plaque seems also unlikely, unless one assumes that venous thrombi disappear completely, but at the same time one must assume that they existed long enough to cause permanent demyelination."

O. Marburg, who has contributed so much to the topic of multiple sclerosis, believes that the swelling or varicosity of the myelin sheath is secondary to axonal swelling and, since the latter is reversible, the fragmentation or myelin destruction is a discontinuous process. If,

\*University of Wisconsin Medical School, Madison.

however, the cause of multiple sclerosis should be due to lipolytic ferments, then one must assume that the myelin degeneration is primary. It is very difficult to demonstrate qualitatively lipolytic ferments or lipases. Statistics on "lipolytic figures" vary; the high positive findings may result more from liver dysfunctions, from altered hepatogenic metabolites and thus prepare the nervous tissue for pathological changes.

Brinkner, Weil, and others have searched for a demyelinating agent in the cerebrospinal fluid, partly because the focal locations are commonly on the outer and inner surfaces of the brain, in areas constantly "washed and contacted" by the ventricular and subarachnoidal liquor and partly from their experimental researches. As yet there is no conclusive evidence that a lipolytic or demyelinating agent is in the spinal fluid and attacks the tissues by diffusion.

G. B. Hassin is in strict opposition to any vascular etiology of multiple sclerosis and adheres to his often expressed viewpoint that it is a specific chronic degenerative disease. He flatly denies that the pathological changes are produced via the blood stream, and emphatically rejects statements that thrombi are found in uncomplicated cases of multiple sclerosis. Etiological speculation of a vascular theory have been pushed in the background recently by Pette and Ferraro, to name two outstanding investigators, by a new theory of neuroallergy, in the sense of antigen-antibody reactions in the central nervous system. "Pathergie" of Rössle with hyperergic-serous inflammation and specific tissue-allergic inflammation in a previously sensitized ectodermal tissue which is discussed and supported by these investigators refers to an evaluation and consideration of the timely reactivity facilities of the total organism and of its specific tissues to a given irritation. The readiness and capability of the entire organism to react with its three germ layer structures against a disease-producing agent determines the severity, prognosis, and cure of a pathological process. The dynamic glia tissue reaction in multiple sclerosis is directed towards the removal of the damaged myeline sheaths and not towards any causative agents. Allergic phenomena demonstrate its greatest reactions at first in the vascular system with serous extravasation due to capillary permeability from venules and capillaries, with a greater tendency to stasis and to thrombi formation in the sticky blood vessels, and with parenchymal demyelination, necrosis or softening.

The clinical findings of remittent and nonremittent-progressive multiple sclerosis are protean in character, are geographically and meteorologically variable, and may involve the entire neuraxis with either prominent cerebral-cerebellar (cranial nerves) or with spinal (spinal ganglia and peripheral nerves) signs or with combination types of both. However, the most common forms are of gradual onset preceded by vague complaints. Forty per cent of the cases present as their initial symptom transitory but varying ocular signs, 30 per cent of the cases show motor and sensory disturbances of variable intensity in one or both extremities (lowers five times more involvement than uppers), and from 3 to 7 per

cent of the cases demonstrate as their initial symptoms, speech, bladder, single cranial or spinal nerve, and equilibrium disturbances, or noteworthy psychopathology. The mental deviation, most frequently encountered in 65 per cent of the cases, is euphoria with psycho-infantilism and affective lability; true psychotic manifestations in the form of delirium, hallucinosis and paranoid states are rather rare initially. Much has been written about the clinical symptomatology of multiple sclerosis, therefore a discussion of the various forms, symptoms and signs of the disease are omitted.

Laboratory findings are of some benefit in the differential diagnosis. Achlorhydria is commonly a poor prognostic sign for expected remissions since it interferes with absorption and utilization of essential food nutrients. The spinal fluid may show changes in the cell count, the total protein and gold sol curve. It is a common clinical observation that early multiple sclerosis cases react unfavorably to spinal punctures with prolonged headaches and dizziness. The electroencephalogram is in most cases normal. The pneumoencephalogram varies greatly (Freeman), and demonstrates in more advanced cases asymmetrical dilatation of the ventricles, focal enlargement of convexity sulci and of the frontal or cerebellar lobes, or sometimes a diffuse enlargement of the subarachnoidal liquor spaces.

To evaluate any therapy, a large number of patients with the unquestionable diagnosis of multiple sclerosis must be treated over long periods. R. M. Brickner collected from the literature experiences and results of many therapeutic efforts and tabulated the results accordingly. In my opinion, one must divide the therapeutic test cases into those with a primary isolated or single neurological symptom which give the best results, from those with a recurrent but still single and definite localized symptom which are less responsive to therapy, and in a third group of nonremittent and progressive multiple signs. All clinicians agree that the first symptom or sign, due to a small "fresh" demyelinating plaque regresses at least subjectively in over 52 per cent of the cases. These remissions occur spontaneously upon rest, upon change to a warmer climate and under various medications. In addition many complaints such as paresthesias, scotoma, diplopia, fleeting pareses, ataxia, dysuria are prone to be alleviated by rest and by conservative methods. The initially severe, persistent complaints and the more diffuse, massive focal symptomatology, pointing at once to larger demyelinated foci, resist our present therapeutic armamentarium and progress relentlessly. Exceptions to these rules are found in many cases, even in those with a long progressive course with and without remissions. We are sometimes surprised at their comeback to a useful and productive life.

In all multiple sclerosis cases, whether they be very early, in intermission, or mildly progressive, we should try to prevent focal and general infections, to combat vegetative-endocrine crises (i.e., exposure to cold, chilling, emotional shocks, diet fads and allergy-producing symptoms), and to regulate menstruation and pregnancy. All these factors are aggravating to clinically latent or active multiple sclerosis by interfering with and under-

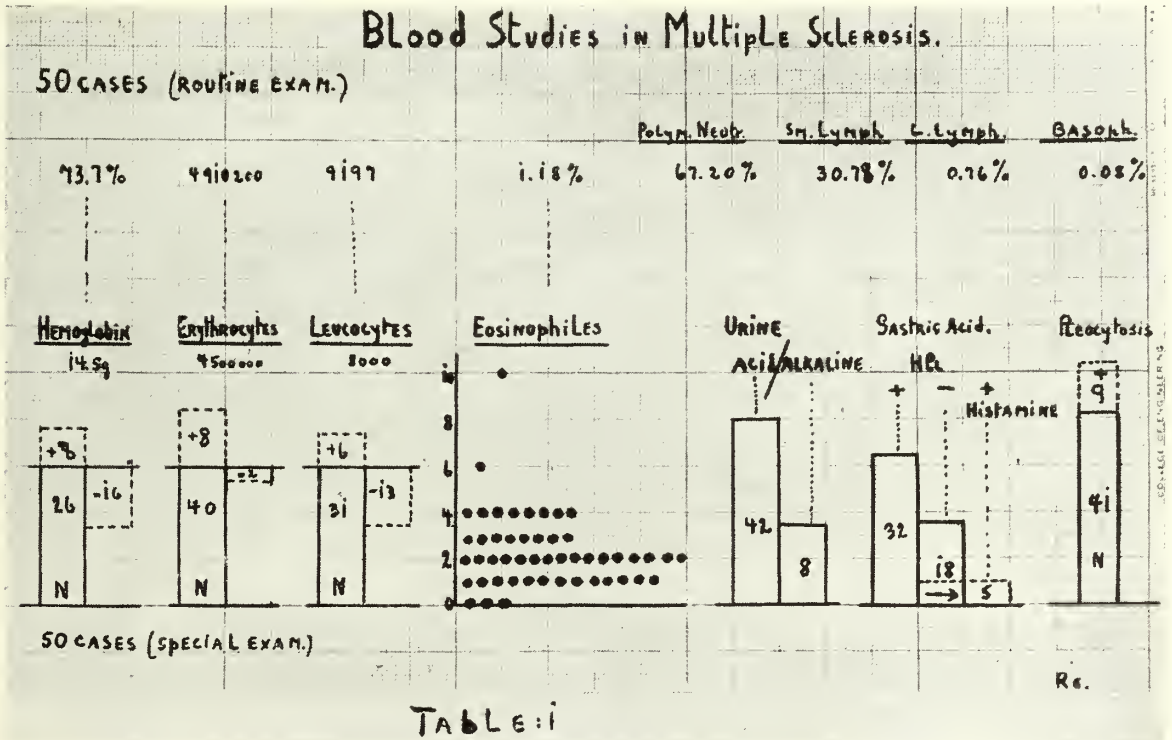


mining the homeostatic equilibrium of the organism. Hereditary, constitutional, and dispositional factors have been investigated, and the researches on identical twins (Curtius, Thums, McAlpine) lead as yet only to oppositional deductions.

A warning may be issued: Never treat an early multiple sclerosis case too drastically, either medically or physio- or hydro-therapeutically. Keep the patient in bed for four weeks and support him according to the needs, since our goal is to support the upset homeostasis,

holds true for multiple sclerosis, and the Rh determination of multiple sclerosis families is not conclusive.

In a previous study we followed Putnam's suggestion, that faulty coagulation due to hyperprothrombocytopenia played a factor in the disease, and therefore evaluated blood coagulation, clotting and prothrombin (Quick modified by Stewart-Pohle method) time in remittant types of multiple sclerosis. Table 2 which has been extended now to 65 cases demonstrates clearly that practically all of our cases have a starting hypoprothrombo-



to arrest the disease process, and to protect especially against recurrences.

We have given attention to blood studies and crystalized our findings in Table 1. The fluctuations in the total and differential blood studies are insignificant so that they cannot serve as diagnostic criteria for exacerbations and remissions in uncomplicated multiple sclerosis. In our series of 241 cases, we studied 65 cases over a long period in regard to clinical allergic reaction phenomena and analyzed the blood eosinophilia. If we accept 1.2 per cent as the average eosinophile cell count in normal individuals, then there is a definite tendency to a higher eosinophilia in multiple sclerosis, though allergic signs in history and clinical examination were lacking (urticaria, eczema, hay fever, asthma, migraine). A number of patients (six) have food idiosyncrasies without positive clinical manifestations, "just a dislike with mild gastro-intestinal complaints." Blood grouping has failed to aid in the prognostication or the suscepti-

bility to multiple sclerosis. The trend of blood groups in the general population with A slightly larger than O cytopenia, and that the coagulation time in all cases is within the accepted normal range of six to twelve minutes (Lee-White's two tube methods). We used, nevertheless, the anticoagulant Dicoumarin in an effort to reduce drastically the blood viscosity and to prevent possible thrombi formation caused by intravascular plugs of fibrinous, plastocytic or platelet origin. The anticoagulant Dicoumarin was used in 28 cases, varying in their trial periods from two to four months, to over one year, and in others over one and a half years.

We have not seen any objective improvement, though all patients stated that the paresthesias and the muscular tension subsided, and that their static and dynamic dysfunctions were less disturbing. The present follow-up study does not support Putnam's recent statement, that anti-coagulant therapy improves objective signs and prevents recurrences. We had discontinued the use of

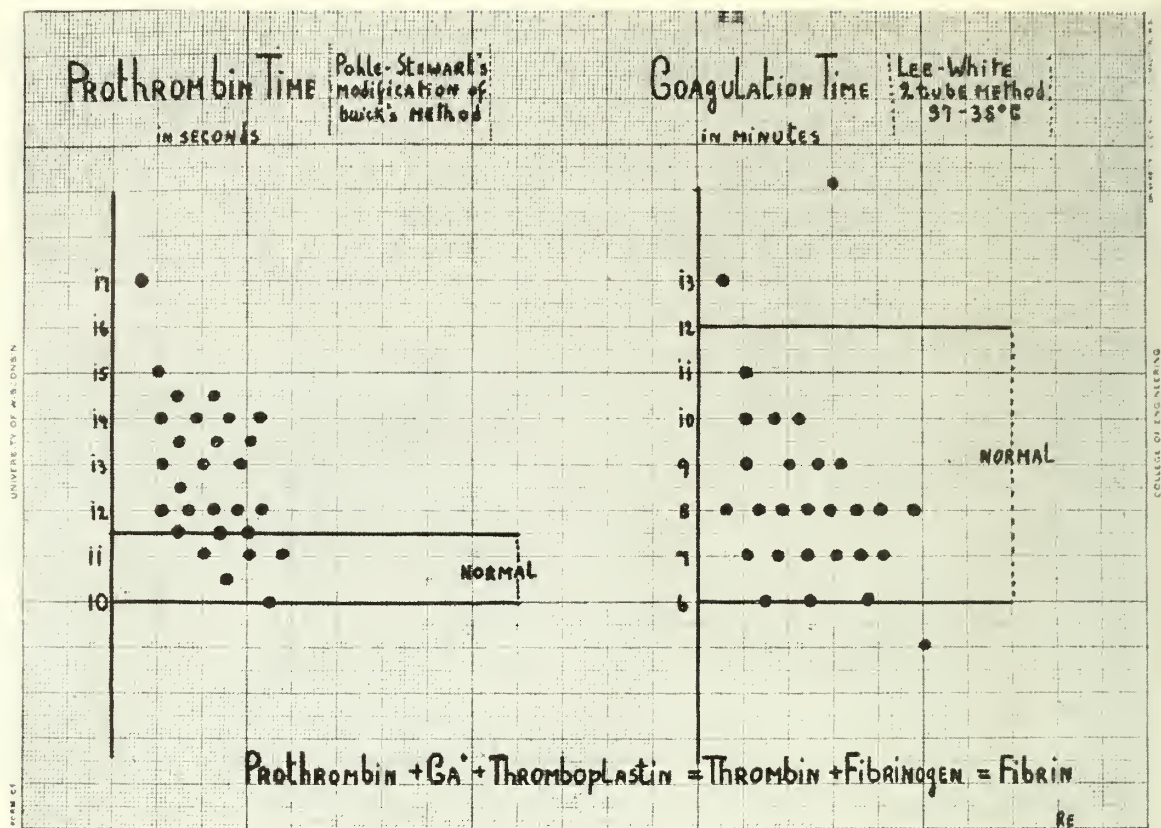


TABLE: 2

Dicoumarin in the reviewed patients for more than six months.

Horton's histamine treatment has given satisfactory results in early and remittent cases of multiple sclerosis. This treatment, following strictly the set-down rules of Horton, is used at present, but we have advised our patients additionally to follow an acidifying diet, to combat fatigue, minor catarrhal infection, and menstrual discomforts by strict bedrest.

CONCLUSION

We do not know the etiology of multiple sclerosis. There is no uniform opinion even from neuropathological studies, if the disease process is primarily a degenerative, an infectious or a neuroallergic disease.

There is no specific therapy available, and each case must be tried on rationally acceptable therapeutic schemes.

DEFICIT OF PSYCHIATRISTS

According to the *Public Health Reports*, June 28, 1946, this nation needs approximately 10,000 psychiatrists. There are approximately 3,500 psychiatrists in the country at present. The fulfillment of this need cannot be attained in the immediate future because of the lack of teachers, facilities, and candidates. There is a deficit of 3,500 psychiatrists urgently needed for public service; i.e., mental hospitals, clinics, and teaching institutions.

Based on the Bureau of Census preliminary figures for 1943, it is estimated that there are 155,000 admissions to mental institutions of all types (includes Veterans' Administration facilities, but not military establishments). The great majority of these patients are psychotic. Allowing 3.5 such admissions a week for each resident, there is psychotic and severe neurotic clinical material enough for training 860 residents per year. (There are 742 residencies and fellowships in psychiatry listed by the A.M.A., but not all of these meet the requirements of the American Board of Psychiatry and Neurology, Inc., for training leading to certification by that Board). This would allow for the graduation of 430 men a year, based on a two-year training program. At this rate it would require 24 years to make up the deficit in psychiatrists, allowing for attrition.



# The Brain Changes Associated with Electrical Shock Treatment: A Critical Review

Bernard J. Alpers, M.D.\*  
Philadelphia, Pennsylvania

SINCE the introduction of electrical shock treatment as a means of combating psychiatric disorders, great interest has been manifested in the brain changes which occur as the result of treatments by this method. Sufficient time has transpired so that it is possible now to evaluate the results of experimental and clinical reports. For this reason, it has seemed desirable to review critically the brain findings in experimentally produced electrical shock, as well as in the human wherever this has been possible. A survey of recent reports relative to this problem would lead one to believe that the matter is settled and that there is nothing further to be said. There are differences of opinion, however; but even if the matter is settled, it is well for us to recognize that this is so, in a problem which was not so long ago, quite controversial. Moreover, electrical shock treatment is a severe shaking-up process, the prescription of which should not be ordered lightly, despite its efficacy in some forms of psychosis. Recognition of what occurs in the brain during the course of shock treatment may well make us pause before adding injury to insult too promiscuously in the course of shock treatment. Though the method has been used widely in the treatment of psychiatric disorders, it has not been without its opponents who look with horror on its use and who regard it as an insult to the nervous system.

With these few words of apology, let us proceed to a review of the record in the problem of the brain changes in electrical shock treatment.

## REVIEW OF EXPERIMENTAL LITERATURE

In order to clarify the approach to a rather involved problem, I think it may be advisable first to summarize the reports in experimentally induced electrical shock and then to survey those pertaining to the human. In this fashion it may be easier to visualize the changes in the two categories.

Since the report of brain changes in the cat after experimentally induced electrical shock was the point of departure for a number of subsequent controversial studies, it may be well to begin with a survey of reports in which changes have been demonstrated in the nervous system.

### ELECTRICAL SHOCK WITH ASSOCIATED BRAIN CHANGES

In a group of 30 cats given electrical shock, Alpers and Hughes<sup>1</sup> found evidence of damage to the nervous system in a high percentage of cases. Of the 30 cats studied, 14 had subarachnoid hemorrhage in some degree and 9 had hemorrhage within the brain substance itself. The subarachnoid hemorrhage was not extensive, except in a few instances. It was usually found scat-

tered over the cerebral hemispheres, but in a few instances it was located around the medulla. The cerebral hemorrhages were all punctate except in two instances, in one of which there was a hemorrhagic infarct and in another a fairly extensive cerebral hemorrhage with hemorrhage into the ventricles. The hemorrhages varied widely in number and size. They were for the most part scattered, appearing at times in a single area of the cortex and nowhere else, or occurring as scattered punctate hemorrhages elsewhere in the brain or brain stem. All parts of the brain were vulnerable—the cerebral hemispheres, the cerebellum, third ventricle, and hypothalamus.

Similar results were recorded in rabbits by Heilbrunn and Weil.<sup>2</sup> The outstanding feature of their experiments was the presence of localized hemorrhages in the pia-arachnoid at the base of the brain and over the cerebellum and spinal cord. These were combined with small pericapillary and perivenous hemorrhages, localized chiefly in the brain stem and spinal cord. Organization of the hemorrhages was clearly evident in those animals which survived for a sufficiently long period of time, thus eliminating the possibility that the hemorrhages were agonal. Similar changes were evident in the areas of hemorrhage in the meninges, where a mild proliferation of the pial tissue could be seen. Astrocytic proliferation of mild degree was seen around the hemorrhages within the brain stem and spinal cord. The ganglion cells in the immediate vicinity of the hemorrhages were shrunken and pyknotic.

Studies carried out on dogs by Neuberger, Whitehead, and Ebaugh<sup>3</sup> indicate that changes occur in the brain following electrical shock treatments, but in the opinion of these investigators, they are not serious. The nerve cells showed widespread damage, sometimes to the point of ischemic cell changes and severe damage. Satellitosis and neuronophagia were found occasionally. In some small areas only pale, ischemic, ghost-like cells remained. Many cells showed the changes typical of chronic cell damage, the cells being small, dark and shrunken. Slight proliferative changes were present in the astrocytes and microglia. Myelin sheath damage was found in a few animals. Vascular dilatation and minute hemorrhages were found in the cerebral cortex, in the meninges, and around the ventricles in some of the brain.

The observed changes, though definite, were not regarded as serious. Most of the nerve cells and nuclei were well preserved; hence the description of widespread damage of the nerve cells must be regarded to mean widespread in distribution but not in number. The changes described in the nerve cells were regarded as reversible.

A study of the effects of electrical shock treatments in rats by Heilbrunn<sup>4</sup> reveals the production of hemor-

\*From the Department of Neurology, Jefferson Medical College, Philadelphia, Pennsylvania.

rhages both in the pia-arachnoid and the brain substance. The meningeal hemorrhages were most numerous and extensive at the base of the brain and considerably less frequent over the cerebral hemispheres and the cerebellum. The hemorrhages into the brain substance were found in all the lobes indiscriminately, in the hypothalamus and cerebellum. They had a particular predilection for the pons and medulla. The hemorrhages were petechial in character. Organization of the hemorrhages was observed both in the meninges and brain substance.

There appears to be some evidence therefore from experiments in rats, rabbits, cats and dogs, that there is brain damage with the use of the electrical current for treatment purposes. I shall not discuss here the validity of these findings or the objections which have been raised to them. It seems best simply to record them here and to leave the controversial aspects for general comment. Hemorrhages have been found in the meninges, especially over the brain stem, in the cerebrum, and in the cerebellum, associated with relatively little glial reaction, but showing indications of organization.

Opposed to these findings are several studies which cast considerable doubt on the validity of the observations recorded.

#### ELECTRICAL SHOCK WITHOUT BRAIN DAMAGE

In a study of three dogs treated in a fashion similar to that of humans, Lidbeck<sup>5</sup> found in one animal a recent perivascular subcortical hemorrhage in the frontal lobe, three capillaries filled with fibrin thrombi, and shrunken nerve cells with a reduction in the number of stainable granules; in two other animals there were occasional areas in which the nerve cells showed a greater degree of shrinkage than normal. Lidbeck regarded the findings as insignificant and looked upon the results as indicating that electrical shock treatment was not dangerous.

In an effort to determine the path of the current in electrical shock, as well as to study the effects of the current on the brain tissue, Alexander and Lowenback<sup>6</sup> studied 23 cats, 19 of which received only single electrical shocks. It was pointed out that if changes were present, they were confined to the path of the current and were not observed beyond its calculated path. "Significant, morphologically recognizable tissue reactions, vascular or otherwise, were limited to that part of the brain which was within the path of the current; that is in our experiments they were limited to the fronto-cruciate lobes or parts of them. In one animal which died after multiple shocks, there were, in addition to the changes within the path, diffuse changes obviously related to the general circulatory disturbance prior to the death of the animal. In all other animals, those parts of the brain which were outside the path of the current . . . showed no morphological or histological changes, neither immediately nor at times varying from a few minutes to nine days after the shocks. Here even temporary vascular reactions were absent. The parietal and occipital lobes, the bulk of the temporal lobes and the brain stem from the thalami backwards showed in all these animals not only a perfectly normal picture of

the neural parenchyma, but also a perfectly normal picture of the vascular pattern."

"Within the path significant changes could be produced with definite regularity. But the threshold for the production of changes which were morphologically and histologically recognizable at times varying from one half hour to seven days after shock, were rather high. No such changes were observed in animals which had received shock from 60 to 450 m.a. for times varying from 5 to 10 seconds; that is, in animals in which the current density within the path had not exceeded 0.6 to 4.5 m.a. per square millimeter of the cross-section of the path through the brain. However, in one animal which had been given a 300 m.a. shock but which was killed only 4 minutes after the shock, blanching of the anterior suprasylvian gyri bilaterally within the path of the current was noted."

It seems clear therefore from the work of Alexander and Lowenback that changes in the brain in electrical shock, when present, are confined to the path of the current. What changes were observed under these circumstances? Of the 19 cats who were given a single electrical shock 9 were described as showing blanching of the cortex, 4 had vasoparalytic stasis, and 6 were described as having no changes. In the majority of cases those animals with blanching had no changes in the nerve cells, axis cylinders, or myelin sheaths. In true instances of blanching swelling and vacuolation of the nerve cells were observed and there was swelling and efflochment of the axis cylinders, with swelling and decreased intensity of staining of the axis cylinders. In the majority of cases with blanching there were therefore either no changes, or alterations of a minor degree in the nerve cells, axis cylinders, or myelin sheaths.

Vasoparalytic stasis was found in animals which were shocked with currents of 2000 m.a. for 5 to 10 seconds with a maximum current density of 20 m.a. per square millimeter of the cross section through the path of the current. It developed therefore in animals shocked by higher currents. By vasomotor paralysis is meant congestion and extreme dilatation of the capillaries, arteries and veins, with or without, but usually with, perivenous hemorrhages.

The threshold for changes in the nerve cells, axis cylinders and myelin sheaths was found to be higher than that for vascular reactions. No changes in these structures were found in animals given single shocks of from 60 to 1500 m.a. of 3 to 10 seconds' duration and survived from 4 minutes to 7 days. No significant changes were found in an animal which received six shocks of 1500 m.a., each of which lasted two-fifths of a second.

Significant changes could be produced with single shocks of higher amperage. As in the case of the vascular reactions, the observed changes were limited to the path of the current. Reversible cell changes such as swelling and vacuolation appeared in animals which had received single shocks of 1800 m.a. for two to four seconds. After single shocks of 2000 m.a. for five seconds and more, irreversible types of nerve cell changes, predominantly severe degrees of pyknosis with bizarre cell deformities were found in cortical areas which



showed vasoparalytic stasis and where current density was great. In the marginal areas where current density was less the nerve cell changes were reversible.

Axis cylinder threshold changes were found at the 1800 m.a. level. These too were reversible in type, consisting of swelling and unraveling of the fibrillae and in a few instances fragmentation. Animals shocked with 2000 m.a. showed irreversible changes in the axis cylinders, consisting of bizarre formations, irregular swelling and shrinkage, and fragmentation.

Myelin sheath changes followed similar rules.

A further study of 13 cats by Winkelman and Moore<sup>7</sup> reveals no changes in the meninges and no evidence of subarachnoid or cortical hemorrhages. Changes were found in the nerve cells of the cerebral cortex in layers II and III, in the frontal and parietal cortex. These consisted of moderate pyknosis of the ganglion cells with hyperchromia of the smaller nerve cells. The changes were not different from those of the control animals. No damage was found in the basal ganglia, hypothalamus or ammon's horn. Pyknosis of the perkinje cells was found at the summit of the cerebellar folia. The spinal cord was normal. Winkelman and Moore conclude that permanent changes do not occur in electrical shock, but that intracellular and biochemical changes take place because of passage of the current and the resultant convulsion.

A study of adult guinea pigs by Windle, Krief, and Arieff<sup>8</sup> reveals no visible hemorrhages of neurocytological changes after single shocks of alternating current of 45 volts and 225 to 240 m.a. for  $\frac{1}{4}$  to  $\frac{3}{8}$  seconds or of 100 volts and 650 to 725 m.a. for 6 to 12 seconds.

A study of the brain changes in the monkey (*macacus rhesus*) was made by Barrera, Lewis, Pacella and Kalinowsky.<sup>9</sup> The conditions of treatment were made to simulate as closely as possible those in the human. Seizures were induced three times per week with voltages varying from 70 to 135 with current times of .10 to .15 seconds. Neuropathological findings were surprisingly meagre. There were no hemorrhages, either petechial or gross. The blood vessels were normal. There were no changes in the myelin sheaths, axis cylinders, neuroglia or microglia. "The nerve cell changes were spotty in distribution and not localized to any particular portion of the brain. In the areas involved some of the nerve cells appeared shrunken with pyknosis of the nucleus, paling of the cytoplasm, and disappearance of the Nissl substance. Some of the cells were only shadow cells . . . Changes of this type occurred in small areas and the nerve cells immediately surrounding these areas were usually entirely normal . . . The incidence of such "pathological" changes bore no direct quantitative relation to any of the characteristics of the series of seizures administered, i.e., frequency, number of seizures, voltage or current time passage, type of resulting seizures." Similar changes were found in the brains of untreated animals. "The changes could therefore not be related to the electrically induced seizure and their significance in the general behavior of the animal seems relatively insignificant." Barrera and his collaborators state that "in the *macacus rhesus* monkeys subjected to electrically

induced seizures administered at frequency, voltage, and current times definitely within the range as utilized in human treatment, there is no evidence, on the basis of our work, to indicate a relation between electrically induced seizures and histopathological changes."

Evidence is offered therefore to indicate (1) that electrical shock treatment is not dangerous, (2) that, if given within safe limits comparable to those used in the treatment of humans, it is not associated with permanent brain damage, (3) that the changes which can be detected subsequent to shock treatments are reversible and functional, that they are confined to the path of the current, and that changes when seen in nerve cells, axis cylinders and myeline sheaths are reversible in character.

I shall leave for subsequent discussion the criticism of these assertions. For the present it seems best to complete the collection of evidence by a survey of the changes which have been recorded in the human cases dying in connection with electrical shock treatment.

#### REVIEW OF HUMAN MATERIAL

The findings in the few human cases which have come to necropsy are almost as conflicting as in experimental animals. Alpers and Hughes<sup>10</sup> reported brain changes in a woman of 45 who had received 62 electrical shock treatments over a period of 5½ months, and who died 7 months after the last treatment, of cardiac failure and bronchopneumonia. The brain in this case revealed pronounced congestion in many portions of the cerebral cortex, perivascular hemorrhages, and perivascular edema. The perivascular hemorrhages were fresh in some instances, but in others there was evidence that the hemorrhage was old. Hemorrhages were seen in the thalamus, medulla, and cerebellum in addition to the cerebral cortex and white matter. Punctate hemorrhages were found under the ependyma of the fourth ventricle.

In a second patient, a woman of 79, who had had six shock treatments and died five months later there was found generalized arteriosclerosis, arteriosclerotic heart disease, sclerosis of the cortical arterioles, ischemic and chronic cell changes of the cortical ganglion cells, and an occasional perivascular hemorrhage. All the changes are probably attributable to the vascular disease of the brain.

Two additional human cases studied at necropsy were reported by Ebaugh, Barnacle, and Neuberger.<sup>11</sup> The first was a patient of 57 years who received 13 electrical shock treatments (85 volts and 900 m.a. for 0.15 seconds) and who died 1½ hours following the last treatment. The heart showed a soft moist discolored area in the upper part of the anterior wall and the interventricular septum, and calcified plaques in the left coronary artery. In the frontal and temporal lobes were several small areas of devastation, entirely devoid of ganglion cells and containing some ghost cells. The astrocytes in these areas were swollen and there was some proliferation of the microglia with fat granules in their processes. Diffuse degeneration of the nerve cells in the cortex was present, consisting chiefly of shrinkage and sclerosis of the cells. Ischemic cell changes were seen elsewhere in the cortex. The hippocampal area revealed ischemic cell

change in scattered nerve cells, with swollen astrocytes and in some places loss of nerve cells. No changes were seen in the vessels of the cortex.

The second case concerned a patient of 57 who received the same dosage as the preceding patient and died following the third treatment. No changes were observed in the heart or other organs. The changes were present throughout the cortex. Areas of ischemic cell change were seen. The neuroglial reaction was slight and was particularly noticeable in the polymorphic layer of the hippocampus. The thalamus contained occasional pale and poorly defined nerve cells with vacuolated cytoplasm and somewhat distorted nuclei. The small cells of the striatum showed occasional satellitosis and changes similar to those observed in the thalamus. The cell changes were patchy. The dorsal vagal nucleus in the medulla revealed occasional pale cells and ghost cells with neuronophagia, enlarged glial nuclei, and small glial rosettes.

Ebaugh and his collaborators believe that the nerve cell changes may be a part of the seizure reaction and that all the lesions in the brain were brought about by the electrical shock treatment.

The problem is elaborated further by Gralnick<sup>12</sup> who reported death following electrical shock in a negro of 38 years who developed syphilis in 1939 but was reported to have no clinical evidence of the disease in 1942. Death occurred after the second electrical shock treatment, two days after the shock. Necropsy revealed edema of the lungs and hypoplasia of the circulatory system.

The brain revealed diffuse congestion of the blood vessels, thickening of the vessel walls, and endarteritis involving the smaller blood vessels. Diffuse degeneration of nerve cells of varying types was seen in the cerebral cortex, chiefly of the ischemic variety. Scattered areas of cell loss were found and some disturbance of the cortical architecture. A considerable degree of neuronophagia was found. The oligoglia cells of the white matter were increased. Glial nodules were found in the medulla and cerebellum. The glial nuclei were considerably increased in the region of the auditory, vagus, and trigeminal nuclei. Vascular changes were pronounced in the basal ganglia, some of the vessels showing hyaline degeneration and calcification. Amyloid bodies were found in the occipital lobes around the posterior horns of the lateral ventricles. No fresh hemorrhages were seen, but blood pigment was seen occasionally around the blood vessels.

The significance of the case reported by Gralnick is obscured by the possible complication of cerebral vascular syphilis, for which reason it seems best not to emphasize it in an evaluation of the brain changes associated with electrical shock.

Levy<sup>13</sup> reports brain hemorrhages in a patient who died of heart failure after electrical shock treatment. "There were a considerable number of dilated capillaries with hemorrhages which undoubtedly antedated the acute myocardial failure, as indicated by the pressure of blood pigment."

Attention to the role of circulatory failure in death from electrical shock treatment was directed by Jetter<sup>14</sup>

who reported death in three cases following shock treatment. His first patient was a man of 61 who died in 12 minutes following his eighth shock treatment. The heart revealed extensive obliterating coronary arteriosclerosis, a recent myocardial infarct, and hypertrophy and dilatation. In the brain were moderate sclerosis of the arteries and arterioles, occasional acellular areas in the cerebral cortex, moderate hyperemia and occasional petechial hemorrhages in the white matter. The second case concerned a patient of 70 years who died 12 minutes after the sixth treatment. The heart revealed obliterating coronary sclerosis, an old myocardial infarct, and hypertrophy and dilatation. The kidney was the seat of arterial and arteriolar nephrosclerosis. The brain revealed moderate sclerotic changes in the arteries and arterioles, occasional acellular areas in the cortex, slight rarefaction of the myelin around the blood vessels, recent small infarcts in all the lobes of the brain, with gutter cells, etc., and minor hemorrhages in the white matter. The third case concerned a young subject of 23 who had had one course of eight treatments and two months later was given another course with death ensuing about twelve hours after the eighth shock. Necropsy revealed severe pulmonary edema, an acutely dilated heart, acute diffuse glomerulonephritis and acute hyperemia of the brain.

The death in Jetter's cases was attributed to heart failure. The petechial hemorrhages found in the white matter in two cases were regarded as a manifestation of agonal anoxemia associated with cardiac collapse.

Six deaths following electrical shock treatment have been recorded in England and Wales (Napier<sup>15</sup>). The situation in three cases may be summarized as follows: (1) hemorrhage into both thyroid lobes following a single shock treatment in a subject of 46 years. The brain showed no significant findings; (2) death from pulmonary tuberculosis in a subject of 52 who had two shock treatments and died two months later; (3) hemorrhagic staining over the right cerebrum in a patient of 62 who died 30 minutes after the fourth shock treatment.

The occurrence of fat embolism as a possible factor in death following electrical shock treatment is reported by Meyer and Teare.<sup>16</sup> Their patient, a man of 63, collapsed following a single treatment and died twelve hours later. Study of the brain revealed many capillaries blocked by fat emboli which were present diffusely throughout the brain and cerebellum, and were more frequent in the gray matter. No other changes were found.

A further case is reported by Gralnick.<sup>12</sup> It concerns a man of 61 who died two days following his second electrical shock treatment. Autopsy examination revealed a large meningioma lying in the subfrontal region, petechial hemorrhages in the mesencephalon, the pons, cerebellum and white matter. Larger hemorrhages were seen in the pons.

The findings in the few reported cases of death following electrical shock are conflicting, but they give us at least some concept of the conditions encountered at necropsy. On the one hand are reported (1) hemor-



rhages of small size and varying age scattered throughout the brain (Alpers and Hughes); (2) scattered areas of cell loss and ischemic cell change (Ebaugh, Barnacle and Neuberger); (3) no brain change of significance except for minor petechial hemorrhages in the white matter associated with acute cardiac failure and attributed to agonal anoxemia (Jetter); (4) fat emboli (Meyer and Teare).

Not only is there no unanimity of opinion concerning what occurs in the brain but there is not even uniformity of findings.

#### DISCUSSION

It is obvious that there is no agreement on the brain changes encountered in the course of electrical shock treatment either in animals or in the human. The problem however is the same in the two groups—the nature of the findings and their meaning. In animals the circumstances can be varied according to the plans of the investigator, whereas in man the circumstances are usually beyond the control of the physician. It is precisely the circumstances of the experiments and the autopsy studies which have aroused criticism and doubt and it is to these to which I should like to direct attention for the moment.

In an effort to ascertain whether brain changes occur in the course of shock treatment, emphasis has been too heavily placed on the fatal features of whatever damage has occurred. Clinical experience has long since taught that electrical shock treatment is safe and in the vast majority of instances without danger. It has been estimated that it was a cause of death in 0.05 per cent (Kolb and Vogel) of 7,207 cases and 0.8 in 11,000 cases (Impostate and Almansi). The problem is obviously not whether electrical shock is a cause of death, but whether it is associated with brain changes of any sort, and if so what these changes may signify. That this is an important problem can hardly be denied in view of the shaking up which patients receive during the course of a treatment which is now in common use and which depends for its effectiveness on stimulation of the cerebral cortex. I shall attempt therefore to approach the evidence with this issue in mind, and shall make an effort to determine what we can from the data now available.

#### EXPERIMENTAL DATA

1. *The problem of dosage.* That the problem of comparable dosage is one of great importance, cannot be denied. If the results obtained in experimental animals and in humans are to be evaluated properly, the conditions of dosage and density of current must be similar. Thus far, no such comparable study has been made to my knowledge. The dosages used have either been in excess of those used in humans, or the conditions of the experiment have differed along other lines. It seems certain now that the original dosages used in the cats reported by Alpers and Hughes were greater than those used in humans and the same is probably true also of the experiments of Weil. One of the major obstacles to agreement on the brain changes in shock lies in the fact that it has been claimed that in those instances

in which irreversible brain damage has been found, that the dosage in animals is considerably greater than that used in humans. Neymann, in commenting on Weil's experiments in rabbits, estimates the fact that if the electrodes used were equated for use in human cases, one would have to use electrodes 100 to 211 cm.<sup>2</sup> in area. The currents of 130 volts and 300 m.a. were strong enough to produce electrical convulsions in practically any human subject weighing 50 Kg. In the experiments of Alpers and Hughes disc electrodes 5 mm. in diameter were used and currents of 150 to 200 m.a. were applied to the scalp.

2. *The problem of actual brain damage.* It is doubtful whether the conditions of experiments in other reported series are comparable to those found in the human. In the majority of the experiments of Alexander and Lowenback (19 out of 26 animals), only single shocks were used. The same is true of Windle and his collaborators who reported no changes in the nerve cells following electrical shock. The conditions therefore do not simulate the actual circumstances encountered in treatment in the human and the reported findings are of value only in relation to single shock studies. They give valuable information concerning the functional changes following single shocks, but they do not reproduce the conditions produced in man.

On the other hand, there have been several groups of experiments in which such conditions have been reproduced. Here, too, the results are open to criticism. In four of the animals studied by Alexander and Lowenback, "vasoparalytic stasis" was found even with a single shock, the findings consisting of dilatation of capillaries, arteries, and veins with or without, but usually with, perivenous hemorrhages. In one animal which received 52 shocks of 1400 m.a. for a total time of 33 seconds, severe pyknosis of nerve cells was produced in parts which were limited to the central core of the current. Of the three dogs reported by Lidbeck with negative results, dog 1 (16 treatments, 250-300 m.a. 0.2 seconds) showed a small perivascular subcortical hemorrhage, with shrunken nerve cells in all the sections; dogs 2 and 3 (16 treatments, 350 m.a., 0.3 seconds) had a greater number of shrunken cells. In 13 cats Winkelman and Moore found moderate pyknosis and hyperchromia of the smaller nerve cells of Laminae II and III and pyknosis of the purkinje cells. Their conclusion is that *permanent* morphological changes do not result from electrical shock, but that intracellular and biochemical changes take place from passage of the current and from the resulting convulsion. Similar changes were found in monkeys by Barrera and his associates, but the changes in the nerve cells were not regarded as significant because of the disclosure of similar findings in control animals.

The argument which I am laboring is that brain changes have been disclosed even in those cases in which the experiments have been regarded as negative. They have not consisted of perivenous hemorrhages as a rule, though these too have been found, but they have been characterized by changes in the nerve cells themselves, usually without glial reaction. The problem of para-

mount significance is whether changes of any sort occur. The answer to this must be in the affirmative. Whether the changes are permanent or transitory is open to investigation. If hemorrhages develop, the possibility of permanent damage must be conceded. If sclerosis of the cells develops, the problem of irreversible change is not so readily settled, since it is difficult to determine from fixed specimens alone whether irretrievable damage to a nerve cell has been done.

Possibly the factor of greatest significance is that changes of some sort do develop in electrical shock treatment, and it is therefore not a form of treatment to be regarded lightly or to be used indiscriminately. From the experimental evidence alone it is not possible to assert dogmatically that no brain damage is done by the passage of repeated electrical currents through the brain. More data is still necessary.

#### HUMAN DATA

Unfortunately, the missing data and the answer are not to be found in the cases of death in human subjects following electrical shock. A variety of findings have been disclosed: perivascular hemorrhages, areas of cell loss, diffuse ganglion cell disease, sclerosis of ganglion cells, and subarachnoid hemorrhage. The subjects in many instances have fallen within an age range in which the type of ganglion cell disease recorded could be normal except for one patient reported by Gralnick in a subject 38 years of age in whom, unfortunately, the problem of syphilis complicated the histological picture.

This much is certain: that electrical shock as administered to the human is not in itself fatal. Nor is the cause of death to be found in the brain damage. On this, all are agreed. Death is usually the result of cardiac or cardiovascular collapse in subjects with coronary disease, but isolated instances of death with hemorrhage into the thyroid gland and in uremia have been recorded.

The problem of vital importance is not whether the procedure is safe, but whether it is in any sense harmful by the production of changes of any sort within the nervous system. The answer is not yet available from human material. All instances of death following electrical shock treatment are extremely important and require recording until a more complete picture of what occurs in the human brain can be elucidated.

#### MECHANISM OF ACTION OF SHOCK

Though the problem of brain damage is still unsettled, other vital problems concerning the mechanism of action of electrical shock have been more or less clarified. It seems clear that only a small percentage of the electrical current delivered by the ordinary apparatus is conveyed through the nervous system. Currents such as those in routine usage—70-150 volts, 300-1200 m.a.; 0.1-0.5 seconds—“would probably be exceedingly dangerous and probably fatal if such currents in their entirety passed through the cortex or other parts of the central nervous system. But such considerations become less significant when it is realized that probably only a small portion of the current flowing between the electrodes actually passes through any one portion or even the entire brain.

. . . Most of the current appears to pass through the scalp” (Barrera).

It seems definite also that whatever brain changes occur, whether they are transitory or permanent, depending upon the circumstances of the experiment, they occur only in the path of the current or at its immediate periphery. This has been demonstrated by Alexander and Lowenback. They state that their experiments demonstrate that “changes were produced only within the path of the current, but that these changes were not always present throughout the entire path.” On the other hand it is doubtful whether it is possible to state definitely that the path of the current can be delineated by the changes which developed between the electrodes. Brain tissue is not the ideal conductor of electricity, and from the standpoint of physics it would be possible to determine the paths of the current only in the case of a known good conductor surrounded by a poor conductor. It is questionable whether brain tissue fulfills these requirements. It seems to be more accurate to speak of diffusion of the current than of concentration. Since it is possible also that other factors besides the electrical current are operative in the brain developments during shock, it is difficult to be certain which changes are the result of the direct action of the current and which are due to other factors. A second factor in the possible production of brain changes is found in the excessive stimulation of the vagus-vasomotor centers in the medulla causing in turn generalized circulatory disturbances interfering with the circulation to the brain tissue. Finally, possible changes in the brain tissue must be attributed to the effects of the convulsion itself.

#### SUMMARY

A survey of the brain changes found in experimental electrical shock and in reported human cases, reveals a wide diversity of opinion. In the experimental animal, on the one hand, are reported petechial hemorrhages which probably represent the results of greater dosage and density of current than that used in the treatment of human beings. In contrast to this are reported scattered cell loss and cell changes which have often been interpreted as being reversible. Even in instances in which no significant changes are recorded, there has been observed an occasional petechial hemorrhage which has been attributed to overdosage. When such hemorrhages have been disclosed in the study of human cases they have been regarded, as a rule, as agonal.

The results in human cases have been less conclusive than those reported in experimental animals, since, in almost every instance, some extraneous factor has entered into the situation and made analysis of the direct effects of electrical shock difficult to evaluate. Among such factors are: advanced age which has introduced doubt whether the recorded cell changes are due to electrical shock or to unrelated vascular disease; cardiac complications which introduce the element of anoxia as an explanation of the brain changes; long latencies between the termination of shock and the death of the patient; and complicating syphilis of the brain.

Despite these obfuscating factors, the suspicion per-



sists that changes of some sort occur as the result of electrical shock treatment. The probabilities are that these are functional in nature in the ordinary case and are unattended by permanent or irreversible brain damage. Clinical correlations would tend to support this contention, since the confusion, anxiety, memory loss, and other effects of shock disappear in the course of time. The possibility of damage is present, however, under two conditions: (1) in the presence of a large number of treatments, even in young and healthy subjects; (2) in the presence of existing brain damage. I have under my care at the present time a young lawyer who received elsewhere over 50 shock treatments, and who, after a year, still complains of enough memory loss to interfere with his work, though his hypomania has not recurred. It is doubtful, in my opinion, whether he will ever regain his normal memory capacity. The rare indicate also the procedure is not entirely benign, and that damage may ensue sufficient to cause serious sequelae.

In an effort to determine whether electrical shock was a safe procedure, emphasis was placed primarily on whether it caused irreversible brain damage and whether it could be regarded as a cause of death. Experience has shown amply that it is not a cause of death by virtue of brain damage, and that where death occurs it is usually the result of cardiovascular disease. The problem, as I have stated elsewhere, however, is not whether it causes death, but whether it causes damage and, if so, how frequently. We are not in possession of the facts which can answer this question, so that, for the present, electrical shock must be regarded as a form of treatment to be used judiciously and sparingly, for those conditions which can definitely profit by its application.

Though the study of human material has not revealed what happens to the brain in electrical shock, it has thrown some light on the types of cases which are likely to develop harmful effects. Autopsied cases suggest that brain damage is likely to occur in conditions associated with pre-existing brain damage, as in cerebral arteriosclerosis. It may be advisable therefore to prescribe shock treatment with caution in instances with known brain damage.

I realize how indefinite have been my conclusions concerning the effects of electrical shock on the structure instances of convulsive seizures following electrical shock

of the nervous system, but the available facts have forced this position upon me. If I have been able to indicate only that more studies are necessary concerning the problem in question, and that security in the application of shock treatment is ill-founded, I shall not apologize too profusely for leaving you in a state of ferment.

#### BIBLIOGRAPHY

1. Alpers, B. J., and Hughes, J.: Changes in the Brain after Electrically Induced Convulsions in Cats. *Arch. Neurol. & Psychiat.* 47:385 (March), 1942.
2. Heilbrunn, G., and Weil, A.: Pathologic Changes in the Central Nervous System in Experimental Electric Shock. *Arch. Neurol. & Psychiat.*, 47:918 (June), 1942.
3. Neuberger, K. T., Whitehead, H. W., Rutledge, E. K., and Ebaugh, F. G.: Pathologic Changes in the Brains of Dogs Given Repeated Electric Shocks. *Am. J. Med. Sci.*, 204:381 (Sept.), 1942.
4. Heilbrunn, G.: Prevention of Hemorrhages in the Brain in Experimental Electric Shock. *Arch. Neurol. & Psychiat.*, 50:450 (Oct.), 1943.
5. Lidbeck, W.: Pathologic Changes in the Brain after Electric Shock. *J. Neuropath. & Exp. Neurol.*, 3:81 (Jan.), 1944.
6. Alexander, L., and Loewenback, H.: Experimental Studies on Electro-shock Treatment. *J. Neuropath. & Exp. Neurol.*, 3:139 (April), 1944.
7. Winkelman, N. W., and Moore, M. T.: Neurohistologic Changes in Experimental Electric Shock Treatment. *J. Neuropath. & Exp. Neurol.*, 3:199 (July), 1944.
8. Windle, W. F., Krief, W. J. S., and Arieff, A. J. (Unpublished).
9. Barrera, S. E., Lewis, N. D. C., Pacella, B. L., and Kalinowsky, L.: Brain Changes Associated with Electrically Induced Seizures: Studies in Macacus rhesus. *Tran. Am. Neurol. Assn.*, 68:31, 1942.
10. Alpers, B. J., and Hughes, J.: Brain Changes in Electrically Induced Convulsions in Humans. *J. Neuropath. & Exp. Neurol.*, 1:175 (July), 1942.
11. Ebaugh, F., Barnacle, C. H., and Neuberger, C. T.: Fatalities Following Electric Convulsive Therapy. *Arch. Neurol. & Psychiat.*, 49:107 (Jan.), 1943.
12. Galnick, A.: Fatalities Associated with Electric Shock. *Arch. Neurol. & Psychiat.*, 51:397 (April), 1944.
13. Levy: Discussion of paper by Heilbrunn and Weil. *Arch. Neurol. & Psychiat.*, 47:928 (June), 1942.
14. Jetter, W. W.: Fatal Circulatory Failure Caused by Electric Shock Therapy. *Arch. Neurol. & Psychiat.*, 51:557 (June), 1944.
15. Napier, F. J.: Death from Electric Convulsive Therapy. *J. Ment. Sc.*, 90: 875 (Oct.), 1944.
16. Meyer, A., and Teare, D.: Cerebral Fat Embolism after Electrical Convulsion Therapy. *Brit. Med. Jour.*, 2:42 (July), 1945.
17. Galnick, A.: Fatality Incident to Electroshock Treatment. *J. Nerv. and Ment. Dis.*, 102:483 (Nov.), 1945.

#### A DOCTOR'S MISSION

Jean Jacques Rousseau, in *Emile, or Education* (1762), Book I, says, "Medicine is all the fashion in these days, and very naturally. It is the amusement of the idle and unemployed, who do not know what to do with their time in taking care of themselves. If by ill-luck they had happened to be born immortal, they would have been the most miserable of men; a life they could not lose would be of no value to them. Such men must have doctors to threaten and flatter them, to give them the only pleasure they can enjoy, the pleasure of not being dead."—From *Army Medical Library News*, July 1946.

# A Note on The Development of Speech Patterns

Roy R. Grinker, M.D.\*

Chicago, Illinois

**M**ANY traits of the human personality are acquired by the process of identification with important figures of the developing child's immediate personal environment. Mannerisms, gestures, gaits, facial expressions, tastes or dislikes for foods and types of dress are some of the visible and observable manifestations of the products of simple unconscious imitation. These and many other patterns of behavior are modified by contact with a constantly changing host of relatives, teachers and other idealized or loved persons. They may continue to shift even in adult life as in the case of the subordinate who adopts the gestures and manners of each of his succession of chiefs.

Less obvious results of identification are more subtle expressions of the personality that arise from incorporation of fragments of the behavior of idealized persons of the childhood environment. These become precipitated as parts of the individual's ideals and color his ethics, morality or tolerance toward himself and others. Ego identifications are more complicated and less definable, manifesting themselves by types of reactivity to specific conflictual situations, by manners of solution of life problems, by the type of reactivity under stress and by the character or psychoneurosis in adult life. Less obvious, more subtly expressed, they are also properties of deeper personality levels and are more fixed and less modifiable by fresh identifications.

The pattern of speech is an easily observable external manifestation of the personality. Man tends to judge his fellows quickly by the several qualities expressed in their verbalizations. Grammatical correctness, syntax, vocabulary, inflection, pronunciation, apart from the content of the speech, are criteria not only of education and culture, but also of personality. Speech is, therefore, constantly guarded in more formal interpersonal communication and it is usually modified with progress in cultural development. It is, therefore, surprising to find in American-borne, well-educated and intelligent persons, marked residues of foreign sounds, old-world inflections and even primitive speech patterns. One is tempted to explain these old incongruous precipitates of speech by the simplest and most obvious means. Perhaps the second or third generation Americans have patterned their speech after the immigrant parent or grandparent by whom they have been raised. Perhaps they have been taught the language of the Fatherland in childhood simultaneously with English, and therefore retain a partial foreign characteristic in articulation, manifested by more audible gutturals, harsher consonants or by special inflections. Such explanations do not completely satisfy, especially when "d" replaces "th" or when the vocabulary is limited in spite of the fact that every other American cultural pattern is adopted with violent renunciation

of the "old foreign." What then holds the young American to some remnant of speech pattern of his parents whose other foreign cultural patterns he despises, whose old worldliness causes him shame? Why does he keep this one clear and obvious stigma of the old?

I shall attempt to outline only one possible explanation among several that are applicable to various types, by giving a fragment of an analysis which resulted in a complete metamorphosis of the speech pattern from that of a low immigrant type to one of an educated American. The analytic work leading up to the crucial interpretation and the subsequent analysis still in progress are not necessary for an understanding of the dynamics of the abnormal speech. From one case far reaching conclusions and general explanation cannot be made. Yet it can be suggested that similar processes are at work in other individuals who maintain an unmodifiable remnant of parent speech although all other external behavior has been adapted to American customs.

Mr. S. is a 36 year old male who has suffered from a severe obsessional neurosis for about five years. He has been treated by support, persuasion, scolding and hospitalization and finally began his analysis after all other procedures had failed. He had many obsessions and much ritualistic compulsive thinking but little in the way of overt ceremonial behavior. Since the onset of his neurosis he had always had great quantities of free anxiety which was centered around the idea that he might go insane. Through devious channels of almost ludicrous complexity he could develop the possibility of his impending insanity from very little evidence. If anyone in his family developed any nervous disorder, the patient could go insane because insanity was inheritable. He would call distant relatives on the telephone or write to them in order to read into their conversations or letters evidences of instability which would mean without question that he would go insane.

Mr. S. is American born, the only child of Bohemian parents who spoke their mother tongue and used English poorly. The father, who died after the patient had developed his neurosis, was an intelligent wastrel who spent his life in coffee houses drinking and gambling after failing in every job and business venture he attempted. He was brutal to his family, completely tyrannizing his wife and only child with physical and verbal blows. The patient was permitted no freedom or independence and was not even given decent clothes to wear. The mother was a weak, ineffectual woman who was fearful of all the world and with her mother believed in magic and superstition. She maintained only the bare rudiments of a home. The patient finished grade school and learned the butchering trade and was always successful in his work life and alone supported the family. After falling in love and marrying the daughter of a wealthy department store owner, he entered her family's

\*From the Division of Neuropsychiatry of the Michael Reese Hospital, Chicago, Illinois.



business at which he made a phenomenal success. On his father-in-law's death he managed the store so well that he surpassed its previous sales records even under bad conditions.

During the opening phases of his analysis the patient presented a problem in communications with the analyst. He spoke in a soporific monotone. "Dese", "dats", and "dose" were used instead of these, that and those. His vocabulary was meager and filled with slang, vulgar expressions and obscenities. The analyst's interpretations were constantly interrupted by the patient's request for repetition in simpler terms. He understood few polysyllabic words and frequently requested definitions of even simple phrases. It was like talking to a 10 year old boy instead of to a successful business executive. Yet the patient was highly intelligent, which made the discrepancy between internal thought and external expression all the greater and more puzzling. There was no indication of conscious deception in his ignorance and no suspicion that he used the technique of non-understanding as resistance or hostility to the therapist.

During the analysis the patient's mother developed evidences of metastatic carcinomatosis from the breast which had been removed a few months prior. Great quantities of guilt were felt and expressed by the patient due to close-to-conscious hostility to the mother. It soon became obvious that the most superficial explanation for this hostility was the feeling that his mother should not have stayed with the father and permitted the patient to be subjected to his childhood mistreatment.

As the mother became weaker, the patient became more anxious which he rationalized on the possibility of his impending insanity. If the mother becomes very sick she might go insane at the end and then surely so would her son. At that time he had a dream as follows:

"I am in de cemetery standing by a grave, an open grave. I see dem push a coffin down. I am looking inside de coffin and dere is my ma but I don't feel no sadness."

This dream was recounted with great anxiety and crying. It was terrible, here his mother was dying and suffering and her son dreamed she was dead. "Really I love my ma. I want that she should live. What a bastard I am to dream dis. I really must be nuts."

The analyst interpreted to the patient that he was reacting to his dream as if it were a death wish to the mother but that it had no reference to the now living and suffering mother. The dream indicated a wish for the death of the mother inside himself. It was also quite obvious that he felt guilty and was punishing himself with the threat of insanity.

The patient then began to associate on how much he was like his mother. He was fearful and superstitious and still had the same magical beliefs that she had. He told of many examples of similarity in their attitudes and emotionality. He then remembered that as a child his mother used to take him to the cemetery to visit the family graves. They had to walk along a road from the end of the streetcar line past the Chicago State Hospital for the Insane and his mother told him of the horrible people locked up because they were "mad".

The analyst pointed out that insanity and death were linked together and inseparable in his mind. To wish anyone bad, to wish death was an angry or mad attitude punishable in kind by going "mad" or insane. This interpretation was received by the patient with a severe emotional but confirmatory reaction. With tears and sobbing he stated that he knew all the time that he felt enraged at his mother for having kept him in such a horrible existence but now he has the *feeling* it's true.

This piece of analytic work clearly demonstrated the anger toward the mother which could not be expressed in childhood but was the motive power for an incorporation or identification of her. This may be called identification because of hostility. The aggressions, guilt and punishment then became intrapsychic processes with symptoms of depression, guilt and search for rationalized suffering.

The next day the patient returned in a quiet state and to the analyst's surprise began his associations in perfect English. No longer were the articles mispronounced and the vocabulary was remarkably expanded. The reader will recall that no interpretations concerning speech or vocabulary had been made. The patient asked the analyst if he noticed anything different in his speech. When answered in the affirmative he stated that not only had he been emotional and superstitious like his mother but he had talked like her. He recalled how she had made fun of him as a child for the new and long words he had learned and tried to use.

Gradually, over a period of weeks, the patient's speech improved not only in pronunciation and grammar but the monotony gave way to a normal rhythm of inflection and a more agreeable pitch. Interpretations, even though given in complicated English, were understood. Sometimes after using an exceptionally long word or a complicated phrase the patient would stop and admire in astonishment his sudden newly-found vocabulary.

The mistaken notion is often encountered that identification is always based on love of an authoritative or idealized figure who is imitated. Experience in the army with combat veterans who have developed psychopathic-like personalities with antisocial and aggressive tendencies proved conclusively the frequency of identifications based on hostility. In boys, whose internalized checks and controls were developed late in life outside the home and were, therefore, weak and easily dislodged by the permissive and required aggressiveness in combat, the early roots of the superego were shown to be corrupt and destructive and based on early hostility to a sadistic parent.

It is my thesis that speech patterns that are non-adaptive and represent a lag behind other intellectual and cultural achievements are identifications formed at an early age in the oral sadistic phase of development and are based on hostility to the person with whom the identification is made. Later modifications of speech patterns are possible only if the child can overcome his ambivalence and fuse his love and hate. Where foreign speech patterns persist as a cultural lag, hostility to the parental figures has not been adequately solved and represents an unmodified hostile identification.

# Neuritis Ossificans with Osteogenic Sarcoma in Brachial Plexus Following Trauma: Report of Case

Henry W. Woltman, M.D.\*

Alfred W. Adson, M.D.†

Kenneth H. Abbott, M.D.‡

Rochester, Minnesota

THE immediate effects of an injury are often of greater legal than medical interest. Delayed effects may be disconcerting to the attorney, but they often introduce more interesting aspects to the physician. It is for the latter reason and because of the extreme rarity of the condition that the following report of a case is placed in record.

## REPORT OF CASE

A housewife and cook, aged twenty-nine years, presented herself on February 15, 1939, the chief symptoms of which she complained being pain, weakness and wasting of the left upper extremity. Minor symptoms included some deterioration of vision during the previous five years, and during the past two weeks, an occasional ringing in the ears, like the sound of a bell.

The patient's family history, past history and marital history disclosed nothing remarkable.

She attributed the disability in her arm to an accident she had had two years before. In April, 1937, while she was making her way along a sidewalk and against a strong wind, a heavy sign was blown over and fell against her right lower limb. This, in turn, threw her against a building, which she struck with her left shoulder. She was rendered unconscious for a moment and then became aware of a bruised shoulder. She noted that the skin was intact and walked to the office of a physician, who found no bones broken. Pain in the shoulder became extremely severe and five or six days later began to shoot down the outer aspect of the left arm and forearm. Two months after the injury, she became aware that the muscles of the posterior aspect of the shoulder and of the dorsolateral aspect of the forearm had become wasted. She also observed some twitching of the muscles back of the left arm. One year after the injury, a sensation of numbness appeared along the lateral surface of the left arm, forearm, thumb and index finger. One month before she came, the pain, which had tormented her daily, left abruptly and coincidentally with her discovery of an inability to raise the left arm at the shoulder, to extend the arm at the elbow and to extend the wrist. Although she said that the paralysis had appeared suddenly, she seemed none too certain of this.

The patient was a well-developed, fairly well-nourished, co-operative and friendly Italian woman. There was slight scoliosis and the left shoulder was carried a little

higher than the right. Both upper and lower extremities on the left measured from  $\frac{1}{4}$  to  $\frac{1}{2}$  inch (0.6 to 1.3 cm.) less in circumference than those on the right. The left upper extremity perspired more than did the right and it was also cooler. Except for some myopia, the examination of the eyes gave negative results. She was recovering from the tinnitus and from a recent cold.

The principal findings noted on neurologic examination included complete paralysis and atrophy of the left deltoid; however, moderate abduction of the left arm could be accomplished by accessory muscles. The triceps and brachioradialis were also completely paralyzed and internal rotation of the left forearm was moderately impaired. The triceps reflex on the left side was absent. Over the outer aspect of the arm was a longitudinally oriented strip of skin that was moderately insensitive to touch, markedly insensitive to pain and completely insensitive to temperature (Fig. 1).

Urinalysis, hemoglobin determination, flocculation reactions of the blood for syphilis and roentgenograms of the skull, cervical segment of the spinal column and left shoulder were negative. On examination, the cerebrospinal fluid was entirely normal: the Kolmer and Kline reactions were negative, the reaction for globulin was negative, the content of protein was 30 mg. per 100 c.c., there was one small lymphocyte to the cubic millimeter, and the colloidal gold reaction was 0000000000. The initial pressure of the spinal fluid was 17 cm. of water with the patient lying on her side, and response to jugular compression tests was prompt.

A diagnosis of brachial neuritis often is made with great freedom; yet underlying it must be a cause, the demonstration of which is often beset with difficulty. A thorough discussion of the differential diagnosis would become too long. The first possibility that received serious consideration was that of neoplasm. Of this, the usual signal is a focal lesion with progression. We could not be sure that the disturbance was steadily progressive and we could find no evidence of a tumor.

Among possible occupational hazards, the patient mentioned that for five years she had polished a copper bar daily and had washed the clothing of a brother who was working in a lead and zinc refining plant. Blood smears showed no basophilic stippling and there were no other symptoms or signs of lead poisoning.

Why continue to think of a tumor when there was such a good history of an injury? After all, "ascending neuritis" following injury is not unknown and contracting scar tissue is commonly invoked to explain extension of

\*Section on Neurology, Mayo Clinic, Rochester, Minn.

†Section on Neurologic Surgery, Mayo Clinic, Rochester, Minn.

‡Fellow in Neurologic Surgery, Mayo Foundation, Rochester, Minn.



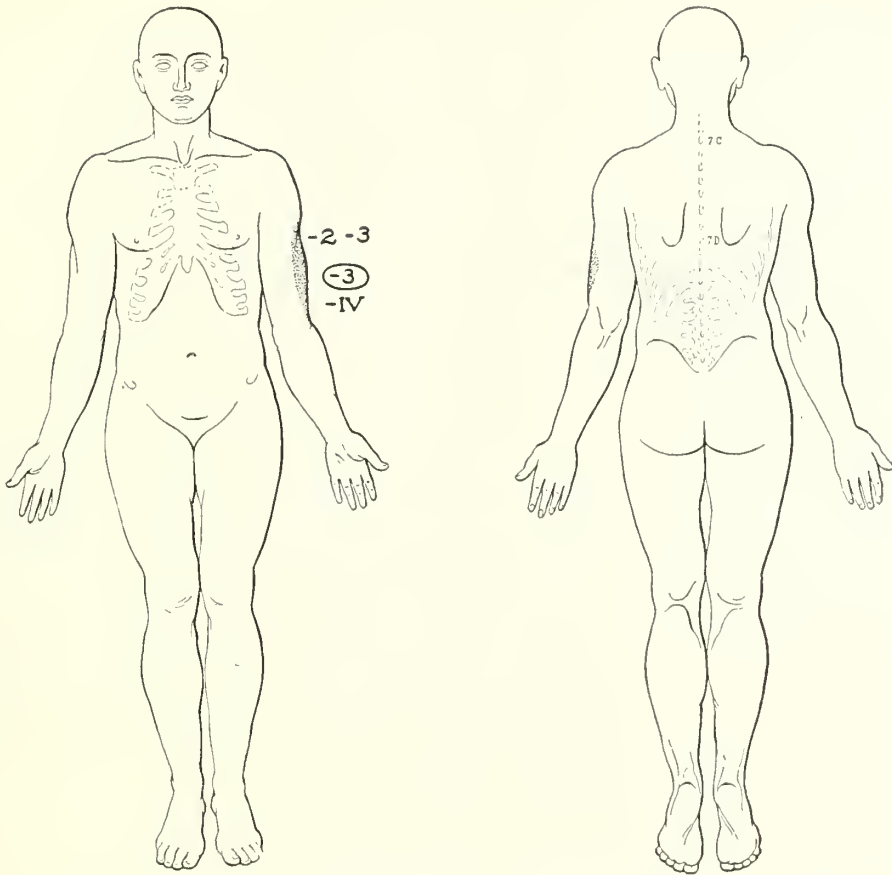


Fig. 1. Sensory disturbance as noted April 6, 1940. The arabic numerals designate tactile sensation; the encircled arabic numerals, appreciation of pain; the roman numerals, appreciation of temperature. 0 signifies normal, —1 slight impairment, —4 complete absence.

a disability following injury. It was concluded that the disturbance was the result of trauma and a diagnosis was made of posttraumatic neuritis, or plexitis, involving principally the posterior cord. The arm was supported, physical therapy instituted and a favorable prognosis was given.

The patient returned April 6, 1940, and reported that she had improved, was free from pain and could now raise the arm to her head. The muscles previously paralyzed had remained so.

Nothing further was heard from the patient until May 20, 1946, when she reregistered. She said that the improvement that had taken place was lost about 1942 and that since then she had had a constant, crushing pain in the left hand and forearm and in the left upper portion of the thorax. This pain was subject to exacerbations and remissions. In January, 1945, loss of sensation in the left upper extremity had become so marked that she had burned herself severely without any knowledge of it. In March, 1946, there appeared as well, constant burning in the right lower extremity and some staggering in walking. In May, she said, she had vomited some blood. However, this seems to have been blood-streaked sputum.

She also believed herself to be pregnant and the examination disclosed this to be true. The fundus of the uterus, about three times normal size, was incarcerated in the sacral pelvis but eventually could be liberated.

At this time, the entire left upper extremity was completely paralyzed, atrophied and anesthetic (Fig. 2). There was also impairment in appreciation of pain and temperature on the right side from the third intercostal space downward and complete loss of appreciation of pain and temperature of the right leg and foot. Tactile sensation was retained on the right side. The tendon reflexes were absent in the left upper extremity but the quadriceps and triceps surae reflexes were more active on the left than on the right. Babinski's sign was slightly positive on the left and minimal on the right. Appreciation of vibration and movements of the joints was normal in both lower extremities.

Urinalysis gave negative results. The concentration of hemoglobin was 9.3 gm. per 100 c.c. of blood; the erythrocytes numbered 3,900,000 and leukocytes 10,000 per cubic millimeter of blood. Kline, Kahn, Hinton and Kolmer tests of the blood gave negative results. Roentgenograms of the thorax were negative and examination

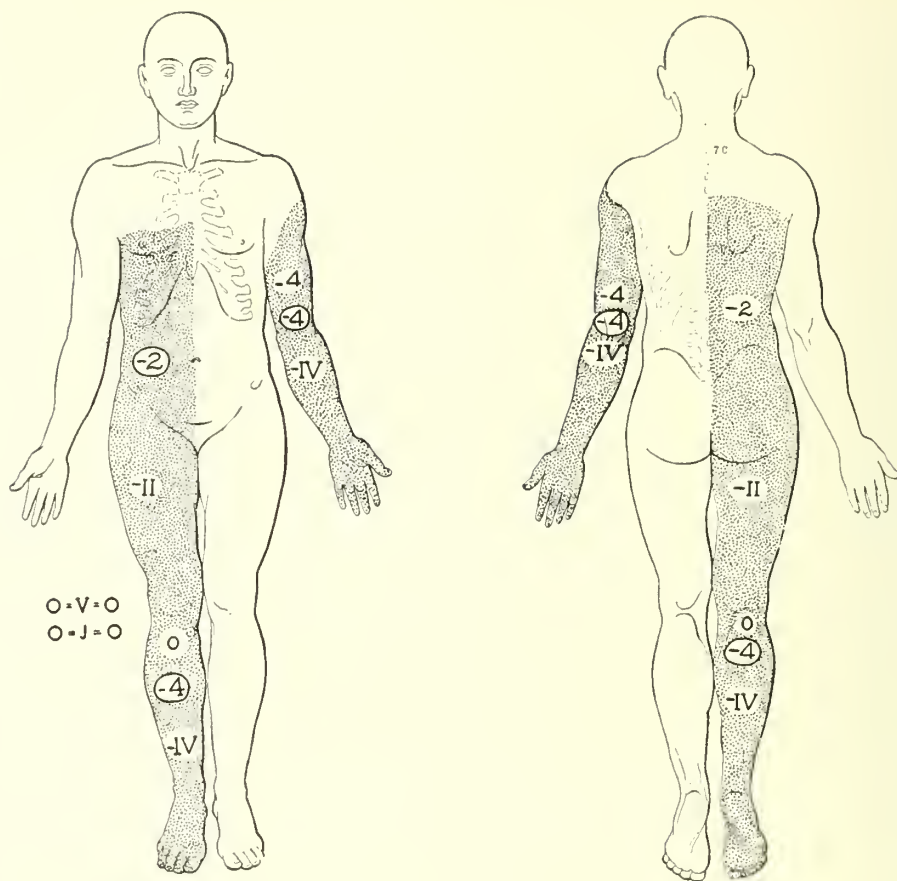


Fig. 2. On May 22, 1946, the above sensory disturbances were noted. The significance of the numerals is explained in Figure 1.

of the sputum for *Mycobacterium tuberculosis* gave negative results. Roentgenograms of the cervical and thoracic segments of the spinal column disclosed a large irregular mass of calcification in the soft tissue lateral to the lower cervical portion of the spinal column and in the supraclavicular region on the left side (Fig. 3). These findings suggested myositis ossificans but it occupied the region of the left brachial plexus. Traversing the left supraclavicular region from the shoulder obliquely upward toward the neck could be felt a stony-hard, firmly anchored ridge. We assumed that this represented a deposit of calcium along the sheath of the brachial plexus.

The neurologic findings were those of a complete lesion of the left brachial plexus and a Brown-Sequard syndrome caused by a lesion possibly at the first thoracic segment on the left side. This location of the lesion was postulated because no sensory disturbance was found in the right upper extremity, whereas such a disturbance might be expected if the lesion were situated higher in the cervical portion of the spinal cord. The complete functional loss of the left brachial plexus obliterated any signs on this side that might have assisted in establishing the level of the lesion.

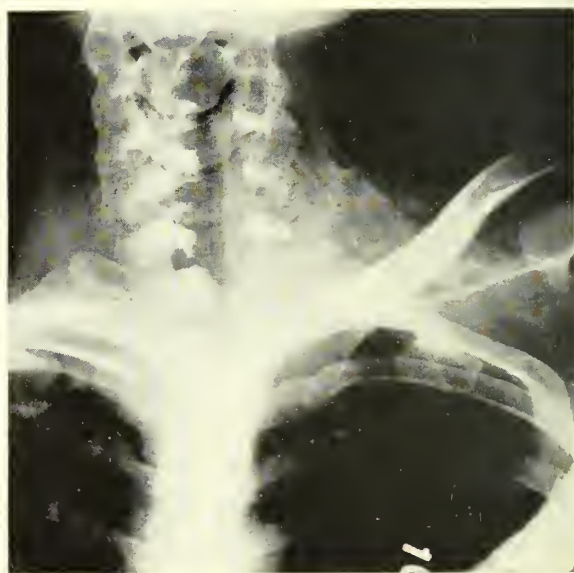


Fig. 3. Roentgenogram of cervical segment of the spinal column revealing extensive plaque-like calcification in lesion of brachial plexus. Right hemilaminectomy C4-C7.



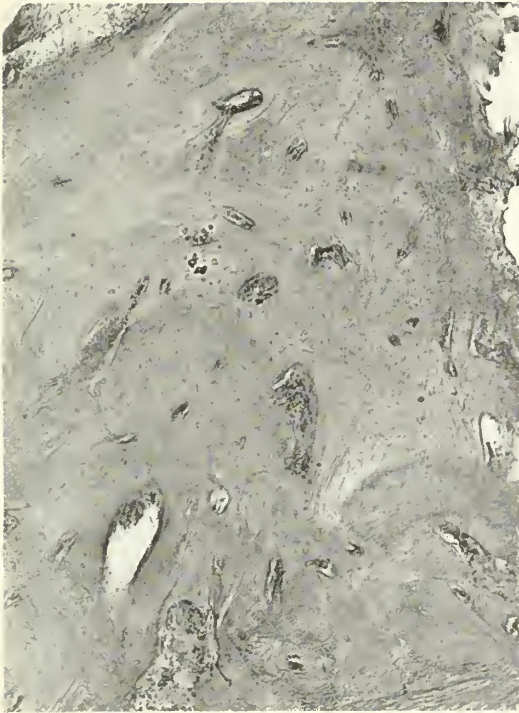


Fig. 4. Section from differentiated portion of the tumor, showing relatively normal architecture of bone (hematoxylin and eosin  $\times 50$ ).

Since the patient gave a history of having pain in her thorax and she had coughed up blood, we thought again of a tumor, possibly a Pancoast or sulcus tumor, at the apex of a lung, which commonly invades the brachial plexus. However, the course of the illness was not rapid enough for this, roentgenograms of the lungs disclosed no such tumor and the lesion was calcified. For the second time, we considered, then discarded, the diagnosis of neoplasm. We returned to the assumption that injury had been followed by hemorrhage into the brachial plexus with subsequent calcification of this hemorrhage.

On May 30, one of us (Adson) performed unilateral laminectomy, removing the left laminae of the fifth, sixth and seventh cervical and first thoracic vertebrae and in part that of the second thoracic vertebra. This uncovered a mass which appeared to intrude through the foramen between the fifth and sixth cervical vertebrae into the spinal canal, extended over the dura and became adherent to the cord. The mass was part of a sensory root. It did not invade the cord but indented it and displaced it toward the opposite side. There were many adhesions between the nerve roots and the cord. The sensory root with its contained mass was excised, thus freeing the cord. The tissue, on examination, was reported as showing a reorganizing calcified and fibrotic hemorrhage.

These findings seemed to verify our impression that the old trauma had caused a hemorrhage that extended along the plexus, was slowly organized, then calcified and eventually compressed the plexus, thus accounting for the prolonged course and subsequent disability.

This explanation seemed plausible; however, it was unique in our experience. On June 13, the left brachial plexus was explored. It was found to be calcified and gave one the impression of a rib. Flakes of bone chipped off as a specimen about 1 cm. in length and 3 or 4 mm. in diameter were removed from the fifth cervical nerve. The center of the nerve appeared to be somewhat softer than the periphery and now did not give the impression of a hematoma but of what was called "neuritis ossificans." The pathologist reported the specimen to be an osteogenic sarcoma, grade 1 (Broders' method), differentiating into mature bone (Figs. 4, 5, 6 and 7).

On June 28, the patient reported that almost all of the burning pain had left the right lower extremity and that the left lower extremity seemed to be considerably stronger than it had been. The postoperative course was otherwise uneventful.

On August 12, the patient's daughter wrote that the pain in the left upper extremity had returned and that the left lower extremity was somewhat unsteady. The pregnancy was progressing in a normal manner.

#### COMMENT

The development of a tumor at the site of an injury has been observed so often that some relationship between the two is no longer questioned.<sup>1</sup> Just what takes place to initiate the hyperplastic response is not known, and this case sheds no light on this problem. A rare feature in this case is the extensive deposition of calcium in the brachial plexus. Burge and his associates<sup>2</sup> stated that active, injured and dying tissues are electronegative



Fig. 5. Detailed view of an area in Figure 4, depicting two haversian canals. Mature osteoblasts are seen scattered about in an osseous matrix (hematoxylin and eosin  $\times 200$ ).

to inactive, uninjured and sound tissues, a situation that may be related to pathologic calcification.

Unusual clinical pictures and metabolic problems arise also in cases of extensive and massive calcinosis of subcutaneous<sup>4</sup> and fascial<sup>5</sup> structures. Such disorders may begin in childhood and lead to cutaneous ulceration of calcareous tubers and extensive immobilization of the musculature. Periarterial deposition of calcium phosphates and carbonates may become so extensive as to make the taking of the blood pressure impossible; yet the patient may reach advanced age without distress or restricted activity.

Israel<sup>5</sup> described extensive calcification in the "organs of movement," that is, bone, joint capsules and fascia, in the limbs of patients who have been paralyzed by some central neurologic lesion. The only case that could be discovered in the available literature in which extensive calcification was described in a nerve was one included in his series. This concerned a twenty-nine-year-old woman who had myelitis and decubitus ulcer. The left sciatic nerve, 5 cm. below its origin, was surrounded by an epineural shell of bone for a distance of 7.5 cm.

In our case, some of the calcification found in the plexus may have been related to an old hemorrhage, as biopsy of the tissue taken from the spinal canal suggested, but most of it probably was related to the osteogenic sarcoma noted in the tissue removed at the second operation. Such "parosteal osteoidsarcomas," as Virchow<sup>6</sup> called them, are also rare and have been noted in fascia

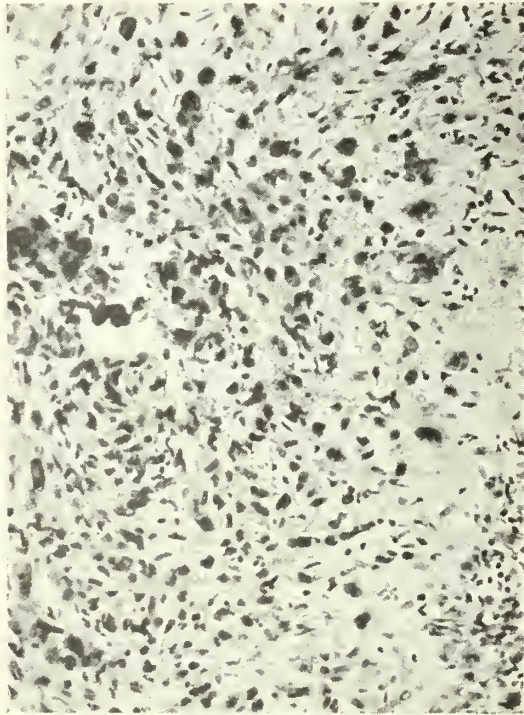


Fig. 6. View of one of the more undifferentiated regions of the tumor, showing fibroblastic and osteoblastic cells lying in a fibrosteoid matrix. Osteogenic sarcoma, grade 1 (hematoxylin and eosin x180).

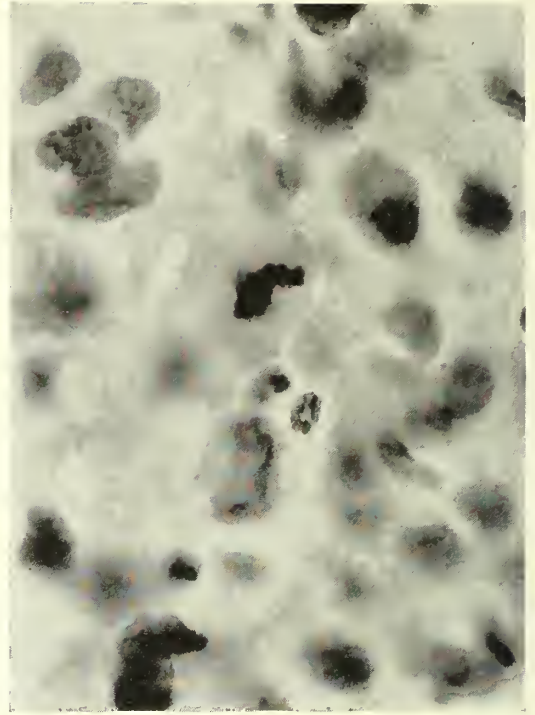


Fig. 7. Details of malignant osteoblasts, one in the process of undergoing division through pathologic mitosis (hematoxylin and eosin x800).

at some distance from bone and in the sheath of the carotid vessels.<sup>7</sup>

#### SUMMARY

The case here reported concerned a thirty-six-year-old woman in whom, after an injury to the shoulder, there appeared, first a paralysis of the brachial plexus, and then a Brown-Sequard syndrome. Laminectomy disclosed a calcified fibrotic hemorrhage; exploration of the brachial plexus disclosed an osteogenic sarcoma. The relationship of the lesion to the trauma and the massive, palpable, stony plexus, visualized also in the roentgenograms, are features of unusual interest and rare occurrence.

#### REFERENCES

1. Girard, Henry: Sur les ostéo-sarcomes d'origine costale. Sarcome de la dixième côte droite. Bull. et mém. Soc. d. chirurgiens de Paris. 36:882 (July 27), 1910.
2. Burge, W. E., Orth, O. S., Neild, H. W., Ash, J., and Krouse, R.: Mechanism of pathologic calcification, Arch. Path. 20:690 (Nov.), 1935.
3. Fock, Herbert: Ein Fall von Kalkablagerungen unter der Haut oder sog. "Kalkgicht," Acta med. Scandinav. 65:169, 1926-1927.
4. Cohn, Max and Freye: Ungewöhnliche Kalkablagerung im Bindegewebe, Med. Klin. 26 (pt. 2):1400 (Sept. 19), 1930.
5. Israel, Arthur: Ueber neuropathische Verknochierungen in zentral gelähmten Gliedern. Arch. f. klin. Chir. 118:507, 1921.
6. Hammer: Ueber ein malignes fasciales Riesenzellensarkom mit Knochenbildung, Beitr. z. klin. Chir. 31:727 (Nov.), 1901.
7. Adams, John: Enchondroma from the anterior part of the sheath of the carotid vessels (Abst.), Tr. Path. Soc. London. 1:153, 1846-1848.



# The Psychiatrist Looks at Family Life

Douglas D. Bond, M.D.\*  
Cleveland, Ohio

**T**HIS title is an open one, because any psychiatrist, in a way, does nothing but look at family life. Many of you may have the impression that he does no more than look, then shudder and turn away in distress, and leave the work that he sees to be done there to some good agency. Actually this is true in large measure and will have to remain true. First, there will not be anywhere near the needed number of competent psychiatrists in this country for the next hundred years. Second, a psychiatrist often cannot do what his knowledge tells him is the most important part of his work—work that must be done by businessmen, schoolteachers, politicians and labor leaders; for psychiatric thought which arose from the careful study of a few who through their illness made clear the foundations of human feeling and character, has left the patient and has spread to the consideration of a sickly hostile world.

It is high time that some new light be cast on the aggressions and hostilities of this world, which our feeble moralizing and legislation have been so impotent to check, for the atomic weapons now at hand are man's clear challenge to himself to survive or die. I do not pretend that psychiatry has the answers nor that it alone can save the world. No one knows better than a psychiatrist how deep and firm are man's destructive forces nor how dependent a physician is upon the help of others for the application of his knowledge, but in the light of some of psychiatry's knowledge our world should be examined and the clear errors of the past corrected, the outworn prejudices uprooted, and the common good made evident to all. We can but try.

It is the family which is the basic unit of our society, the hothouse for our children, and thus the background for our men and women. It is in the emotional setting of the family that some of the secrets of our adult behavior have been found, far more than we had any idea of finding, and the more learned of the environmental importance, the fewer character traits and emotional difficulties have been delegated to hereditary causes. One of the most striking findings is the way in which a child patterns himself on the character of the parent, a patterning which is emotionally forced to give a confusing pseudo-hereditary picture. In fact this process of patterning is an essential quality of growth itself and in a way the parent lives on as an emotional part of the child. Surprising as it may seem, this occurs just as readily when the parent is far from an exemplary person as it does when he or she is one. You may recognize this quality in one of your friends who bitterly resented one or the other of his or her parents and then with an uncanny exactness duplicated many of the resented mother's

or father's attributes or traits. A child is a helpless thing who has no choice as to parentage, or as to models for his development. It is an appalling fact in our society that everyone must be examined if he is to be allowed to drive a car, but that, examination or no, anyone can have a baby. Most animal husbandmen spend years in the scientific study of raising their stock. How many parents prepare themselves properly for the rearing of their children?

We are apt to think of environment in terms of wealth or of poverty, in terms of neighborhood, or housing, but it is something more than that. A bad environment is likely to call to our minds a picture of squalor, brutality or illiteracy. These things, of course, are bad but there is a more subtle kind of bad environment of just as much importance. We are all shocked and can easily see the default when we read of a mother engaged in wartime industry locking her small children out of the house to do what they may while she works. We are less aware of the emotional locking out of children which many of us do on all social and intellectual levels. Much of this neglect is sheer tragedy for parent, child, and society and has its roots in many things. A surprising number of people have children for casual and perverted reasons; in the hopes that a child will mend a breaking marriage; out of rivalry with a neighbor, or a brother or a sister; in order to create an image of themselves so they can in a way live again, forcing the child to fulfill the things they missed in life regardless of the child's desire; because of ignorance or neglect of birth control; for the security and comfort that the children will provide for them in their old age; for the extra labor children give. All these reasons have one common fault—the child is not regarded as a human being; as an individual with desires, rights and abilities of its own or as a great responsibility and pleasure. After birth a child is often held responsible for his sex—one parent or the other wanted the other kind. A girl late in her third pregnancy, and in the third year of her wartime marriage, which is more correctly described as the living together of two immature people in a rivalry as to who can take the most, said bitterly, "if this one isn't a girl, I'm through—I'll give it away." And she meant it. Parents select their favorites and show it. They select them often in accordance with their order of birth, their appearance, or their charm. They line their children up in family quarrels. A mother neglected by her husband may try to substitute her son. One parent or the other may be intensely jealous of the affection the other shows toward a child or gets from it. A father is often so busy doing "important" things that he never sees his children at all. Most important of all they pass on their own prejudices as facts. The sanctity of the home is still inviolate—not unless people are financially destitute or until a certain type of crime has been proved can a home

\*Annual address given before the Cleveland Family Society, May, 1946.

\*Department of Psychiatry, Western Reserve University School of Medicine, Cleveland, Ohio.

be invaded by society. Physical neglect of a child is the only charge allowed by most states before someone outside can legally step in. Physical neglect may be much less harmful than emotional neglect and yet appalling types of homes are allowed to discharge their distorted products into society daily to marry and produce their kind.

The importance of this today is that adult hostilities and aggressions have their roots in childhood resentments and it is in the understanding and the intelligent management of our children that some hope for a healthy world may come. This is a terrific responsibility to place upon parents and although I do not see how it can be finally placed elsewhere, at least we can do something to alleviate this burden. Mothers may be taxed too much when there are many children, inadequate housing, no help, or illness. It is very difficult to be a good and thoughtful parent when you are worried about the existence of the next meal, the imperviousness of the roof, and have a large family wash to do, when there is no place for the children to play except under your feet, and you are suspicious of your husband. These things are easy to see, but it is just as hard to be a good mother if your own life has taught you that motherhood is something to be taken for granted, that it doesn't have the dignity of a profession or an intellectual pursuit or isn't as worthy as trying to straighten out the lives of other people; or if you didn't really want your children; or if you wanted them to make up for some unhappiness of your own. In a word, being a parent becomes an enormous task when you haven't the capacity, born of emotional maturity, happiness and some economic security to enjoy your children. How many people plan their lives so that their children will interfere with them as little as possible; consign them to nurses for upbringing while they take care of their house, join social clubs or public-spirited organizations in order to live around their children rather than with them.

While much of this criticism is aimed at mothers, fathers should get their share. Too often the father appears in a child's life in the role of a disciplinarian, as if he were an extension of the arm of the law called on to punish some mild delinquency, then fading into his own nebulous background when the crisis is past. I have already mentioned the importance of having a pattern or an ideal as a guide for a child to grow on. It is a distorted ideal indeed for the little boy who never sees his father except at those times when punishment brings them together. Recently I saw the mother of a severely delinquent boy. His school had done everything possible to help him. The mother entered the hospital because she was depressed, sleepless, worried. She and her husband had fought so constantly over his infidelity that she had urged him to join the Army, which he had done. Later he was reported missing in action and finally his death was confirmed. His death hit her very hard, as it often does in such circumstances. Her 12-year-old boy remembered his father well and declared he was going to be just like him. When she asked him why he did things to hurt and upset her, she always got the answer, "Well, he hurt you, didn't he?" The boy in-

sisted on wearing his father's clothes, and in assuming his father's manners. He objected violently to a long line of suitors for his mother's hand. Some of the reasons for the child's delinquency are not obscure. But we should hesitate to pass moral judgments. If this delinquent boy had no chance, what chance had his parents in their childhood? The mother was the sixth child of an alcoholic mother and father who fought brutally with each other throughout the years. The patient left home and married and her first child was born when she was fifteen. The father was the son of a petty criminal and his home was no more happy.

We all like to feel that our homes are our castles; that in them we escape from public observation. We are extremely sensitive about any intrusion as to bringing up our children or getting along with our wives or husbands. But hasn't the day for this isolationism passed? We have discarded this policy as a nation but we cling to it bitterly in our own homes, and isn't that really the more fundamental concept? If the home is the breeding place of the nation, shouldn't it be subject to more scrutiny, more thought and more effort than any other institution we have? And shouldn't the ability to run a good home and to raise children with both a sense of freedom and a sense of responsibility be the most dignified and honored occupation in our time?

As extension of the home and family the schools probably are of next importance in the molding of our lives. Our teachers can have enormous influence in breaking down prejudice, in pointing out the necessity and responsibility of living together harmoniously and in helping us to do it by example, in showing the real picture of the world as it is and not as someone would like us to believe for purposes of his own. History is taught today with an emphasis on past differences, glorifying war with an eye to falsely putting one's own nation above any other, regardless of fact. Even the outcome of battles is falsely reported. Many sections and countries are still fighting issues long since dead just as bitterly as they did many years ago. I do not advocate a false presentation of history or a deleted one, but an accurate one with the emphasis upon the now neglected lessons to be learned from the repeated common mistakes that all nations have made—certainly the only real point of any historical knowledge.

As to the teachers themselves, isn't there some discrepancy in our values when some of our teachers get less than a thousand dollars a year for raising the hope of tomorrow and a movie actor gets several hundred thousand dollars a year? How can one obtain the quota of well-balanced, intelligent, ambitious teachers we need when of all the professions it is the most poorly remunerated? There are a few who can afford to make this sacrifice but not many. The emphasis has been and still is present in many communities to regard marriage as a disqualification for teaching. Certainly there is no more chastening nor enlightening experience for an advisor on how to bring up children than to have a few of his or her own.

There are two tendencies in the modern use of schools that I would like to mention and condemn, for I feel



they are important. One concerns the way many parents use schools as a place where they can unload their children. They ask that the school keep the children all day and keep them occupied so that they themselves will be free of that responsibility. This tendency is perhaps more marked in private schools where the functioning depends to a somewhat greater degree upon the pleasure of their patrons. Pupils here are often regimented to an extraordinary degree and so burdened with the amount of detailed knowledge required that they have little time to live. Parents who do this not infrequently have children whose school adjustment is far from satisfactory and the teacher is often unjustly held responsible and expected to cope with problems far beyond her scope.

Perhaps arising from this latter condition is the attitude which is prevalent among teachers, some social workers, and some physicians, that parents are unnecessary evils. An attempt is made to keep parents away from the school because the children may get upset; to have the parent interfere as little as possible in the daily routine; to separate the child from the parent. This attitude is striking in many hospitals and among many others who deal with families, who, though serving the interests of the child, lose sight of the enormous importance of the parent to the child. Parents are certainly necessary and even bad parents are very frequently better than none. After all, children in hospitals and schools return to the parents and this return must always be kept in mind. Parents need education and teachers can help them. Many parents are sincere and honestly trying to understand their children better. Encouragement along this line should be given and people who deal with children directly must remember that the parents' problem is an enormous one solved only with difficulty. Furthermore, in the last analysis, parents are more important in the child's welfare than anyone else. Anyone who has tried to remove a child from what they consider a bad home will tell you of the difficulties involved. Despite many obvious unhappinesses and hardships, the child does not want to leave, and the parents, despite their obvious rejection of him, are loath either to admit their incompetence or to lose their child.

While schools are an extension of the family life and teachers extensions of parents, they are no more than that and it is seldom that they can take the formers' place. They can provide help and respite to any mother but they are aides. Schools can do much to modify ideas of right and wrong, many of which are falsely imposed by neurotic parents. They can do much with the authority of their position and of their groups of children to lessen guilt and tame aggression and open doors to socially desirable outlets of enjoyment. Although lip service is easily given to the concept that the social attitude of the child is the most important aspect of his school, his being thrown with others and forced to recognize that others exist and that he must adapt himself to them is considered to be automatic. I think we all agree that his social education is as important a part of his schooling as anything else and many of us will agree that it is the most important. It deserves far more thought than it is given now as it should never be a

hit or miss proposition. It should be planned and it should be subjected to the experimental method. As much time should be given it as is given to the decision of what textbooks to read. Although in larger cities the standards for teachers are relatively high, in many communities they are inadequate, and even in our best communities teachers are not trained to understand the complicated patterns of intellectual and emotional growth of children. More emphasis is needed in this regard. No one would be quicker to accept such training than the teachers themselves who are often woefully bewildered by the complicated problems of their pupils and their families.

I think many of you will feel that this is a gloomy and critical discussion, and in a way I think it should be. I would like to say that I realize that there are excellent parents and that many of our teachers do a remarkable job. But in these times when we should all be searching for the causes and reasons for war and the ways of peace, I think it is important to turn our eyes on some of those defects which we take for granted, which we try to dismiss as someone else's responsibility. A little reflection will tell us all that many of the reasons for war are only too evident. They are within each and every one of us and the secrets for managing them and turning them to constructive effort may not be so obscure after all if we at least avoid many of the pitfalls of our present and our past. This will not be easy, for education in the field of emotions is a slow process and takes a great deal of personal courage, but as someone said, "The voice of the intellect is soft but it is persistent."

One of the great difficulties at this time is the over-enthusiasm about psychotherapy and its effectiveness. There are too few psychiatrists and this shortage cannot be remedied in any reasonable length of time. Besides that there are still more limitations. A person's character and his conscience are parts of him, just as is his arm or leg, and when they are defective, it may be impossible to correct them, let alone rebuild them. The conscience in a way can be thought of as a person's internal parent who watches and guides thoughts and actions, for it is formed largely by parental influence. When a defective parent as an example becomes a real part of the child, the child then has a defective part.

In a way it is of some value to think of the problem of civilization in the light of the rearing of our children. A child is born not only helpless but with many emotional demands that spurn compromise or delay. Emotional maturing should take place in essence through learning. From experience immediate gratifications are often not found as satisfactory as they first seem, for they may cause others so much pain that in the long run suffering rather than enjoyment will result. This is the first step, to learn that a long term goal is often more desirable and satisfying than the quick gratification of an impulse. We learn this first in regard to our immediate families, then some of us can carry it further to a small group, some to a large group, and a few to the world. It is a difficult feat to keep pushing this principle to larger and larger groups and farther and farther away

from ourselves and we frequently fail. How striking it is that a person's social morals are better at home. Expressing desires to override and destroy, or to steal from a member of one's own family is abhorrent to most people, but it is a little different with a big concern, one's government, or another country. Despite our civilized front, the little child impatiently demands "I want it and I want it now and that is more important than anything else in the world" and this philosophy underlies all the economic and other reasons for war. It is men who cause war and not external forces. It is our job in civilizing our children to help them see that the simple principle of long term gain is the same for all and it is our responsibility to do our best to accomplish that end.

If we examine ourselves closely we will not be appalled by the depth to which men fall during war for we will see that in a more subtle way we have never risen very high on the social scale. It is in the handling of our families and our family affairs and in the raising of our children and in creating and applying those things that we already know from the study of people to our social order that our chance for survival lies.

I would like to close with a quotation from the speech by General Chisholm of the Canadian Army. "If now we all revert to our little private concerns, if we all tell ourselves 'it is someone else's responsibility,' there will one day be none of us left, not even any to bury the dead."

---

### COMMITMENT OF THE MENTALLY ILL

That errors and miscarriages of justice are possible even in these enlightened times and notwithstanding the existence of statutes carefully safeguarding the liberty of the individual against arbitrary or false commitment, is illustrated by an occasional case which has come before the courts.

On the other hand, it is true that the statutory provisions of many of our states reflect a point of view dating from a time when the institutions were regarded merely as places of custody and restraint of liberty for fear of the harm their inmates might do if left at large. The modern mental institution is a hospital, designed to treat and cure disease by the application of medical science, and possessing facilities for promoting the mental and physical comfort of the patients. Legislators have accepted this newer hospital view at least to the extent of formally changing the name of the institutions from "insane asylums" to "state hospitals" and by appropriating the funds to permit them to carry on their modern functions, but this recognition has still not carried over to acceptance of the idea that the facilities of these hospitals should be accessible to those who need their services as fully and freely as other hospitals are available, without hindrance from unnecessary legal formality. The very term "commitment" is an inheritance from the time when the insane were treated as disorderly characters and committed to a jail, and in too many states the "commitment" procedure is still obviously patterned after that governing conviction of crime.

The problem, then, is to eliminate the legal requirements which serve no useful purpose and which may even do harm, without sacrificing those legal safeguards necessary to protect the liberties of the individual. To accomplish this end, it is necessary for the lawyers to recognize that commitment to a mental institution involves unique consideration not involved in ordinary cases where the parties are presumably sane, and that the ordinary concepts of what due process requires therefore do not necessarily apply. It is one thing to say that no (sane) person's rights should be legally determined without a hearing, of which he must be served with notice and at which he must be given the right to attend and defend. It is quite another matter to say that a person whose friends or relatives have petitioned to have him committed to a mental institution, and whom two or more physicians have certified as requiring such commitment, must be served with a legal notice that such proceedings have been commenced, without regard for the effect which such a notice may have upon his condition, and must be put to the experience of sitting through a legal hearing and listening to loved ones and the family physician who perhaps has labored hard to win the patient's confidence, testify to his infirmities. The legal-minded reader will say, but suppose the person is actually sane, surely he should be given notice and allowed to prove his sanity. The answer must, of course, be in the affirmative; but the vast majority of commitment cases are not attempts to "railroad" sane men into an institution. We need a procedure which will adequately protect the sane without needlessly subjecting the sick to heartless and harmful mental torture. The ordinary forms of judicial procedure are not adapted to accomplish this; a special procedure is called for.—From "Commitment of the Mentally Insane," W. OVERHOLSER, M.D., Sc.D., and H. WEIHOFEN, J.D., J.S.D., in *Amer. Jour. Psychiatry*, May, 1946.



# Endogenous Toxic Encephalitis

A. B. Baker, M.D., and David Daly, M.D.\*

Minneapolis, Minnesota

**I**N contrast to the apparent resistance of the central nervous system to many of the infectious agents, it appears that the brain is particularly susceptible to the action of most toxins which readily diffuse through the blood-brain barrier to produce both clinical and pathological changes. By far the most common of the cerebral toxins are exogenous in nature and include heavy metals (arsenic, lead, mercury, manganese, gold, silver, etc.), industrial organic solvents (benzine, carbon tetrachloride, tetrachlorethylene, aniline, alcohol, etc.), drugs (barbiturates, paraldehyde, sulfa drugs, opiates, etc.) and some bacterial toxins (tetanus, diphtheria, botulinus). Many of these exogenous toxins, particularly the drugs and industrial solvents have been increasing in importance particularly because of their use in various branches of trade, industry and of daily life.

Amongst the cerebral toxins there is a much smaller group of conditions in which the brain damage apparently results from a toxin liberated within the human body and not obtained from the outside. This group has been called the endogenous toxic encephalitides and includes the cerebral complications occurring in such conditions as uremia, porphyria, eclampsia, liver damage, burns, etc. The exact nature of the toxic agent is not known in any of these diseases, but there can be no question about the fact that some substance is liberated in each that has a definite destructive action upon the nervous system. The clinical picture usually suggests a diffuse involvement of the brain while the pathological changes are of a degenerative rather than an inflammatory nature. The brain changes generally consist of neuronal damage, vascular changes and focal or diffuse myelin destruction. These findings are similar, in many respects, to those seen in the exogenous toxins.

It is of interest to note that these endogenous toxic encephalitides complicate diseases which fall into the sphere of a wide variety of medical specialties; thus emphasizing the overlapping of the field of neurology with many other branches of medicine.

## UREMIA

It has long been recognized that in uremia there occurs an auto-intoxication that may result in damage to many of the body tissues. Since some of the most common symptoms in this disease, namely, the convulsions and the lethargy, indicate cerebral involvement, it at once becomes apparent that the central nervous system does represent at least one of the most important regions of toxic injury. The importance of the cerebral damage in this illness as related to the widespread clinical symptomatology was well recognized in the older literature, but seems to have been ignored in many of the recent writings.

The symptoms of uremia can be divided roughly in

two groups: those of depression of the central nervous system, e.g., apathy, muscular weakness, stupor and coma; and those of neuromuscular hyperexcitability with increased tendon jerks, muscular twitchings and convulsions. The former are by far the most common and appear earliest in the illness. The patient may appear mentally and physically fatigued, tiring easily and being unable to concentrate. Dull, constant but not severe headaches may develop. The patient soon becomes apathetic and complains of muscular weakness and a constant feeling of drowsiness, while at the same time he may have periods of restlessness and intractable insomnia. Clouding of the sensorium, although occurring, is not the rule, many of the patients remaining well oriented until death. The speech, however, may be difficult and often unintelligible.

Symptoms of neuromuscular hyperexcitability, namely, muscular twitchings and convulsions, are very frequent in uremia and often accompany the picture of lethargy, stupor or coma. The muscular twitchings are usually fibrillary in nature and may involve large muscle groups. The convulsions usually appear terminally and are generalized in nature. Focal or Jacksonian seizures may occur but are uncommon. Occasionally these epileptiform seizures continue even after the patient has recovered from the uremia, indicating the persistence of cortical irritation or brain damage.

Aside from these better known neurological symptoms, there occurs in uremia a host of less common and often bizarre findings that frequently cover the entire field of neuropsychiatric symptomatology. It is when these predominate that the diagnosis is often overlooked. Most frequent are the vague and often unusual neurological syndromes. Monoplegias, hemiplegias, aphasias and apraxias have been reported. Of the motor symptoms, hemiplegia is most frequent. This usually is of a flaccid type and is often ascending, producing a Landry's type of paralysis. The involvement is transient, lasting hours or days and then disappearing only to return after a variable period. Two of our cases revealed such episodes; in one of them the involvement implicated all limbs, resulting in a quadriplegia. Miller and Michalovici<sup>1</sup> described a case in a 26-year-old male who developed a right-sided hemiplegia with a left facial palsy. Rothmann<sup>2</sup> described a case of transient amaurosis. This amaurosis may be associated with convulsions and may even remain as a permanent defect. Uremic deafness may occur. Vertigo and nystagmus are infrequent symptoms.

In an occasional case of uremia the mental symptoms may be the earliest and often the predominating ones throughout the illness. The most frequent picture consists of an acute confusion associated with motor unrest, incoherence and terrifying hallucinations. Occasionally there is a rapid mood change from an uncontrollable hyperactivity to a depression accompanied by hypochon-

\*From the Division of Neurology, University of Minnesota Medical School, Minneapolis.

driasis and delusions of persecution. Almost every form of mental illness has been described in uremia from profound melancholia to typical catalepsy with echolalia, negativism and waxy flexibility. Mental deterioration may occur and can be transient or permanent depending upon the severity of the cerebral injury.

Since the cerebral symptomatology is not specific but merely indicates some type of nervous system involvement, one must always seek for any additional symptoms or signs that might help in the diagnosis. These are frequently found in the accompanying gastrointestinal symptoms and the alterations in the blood chemistry. The gastrointestinal symptoms usually consist of a uremic stomatitis, a uriferous odor of the breath, vomiting and diarrhea. The changes in the blood chemistry are well known and need no discussion.

In a recent investigation we had the opportunity of studying the brain changes in seven cases of uremia. It was at once apparent that this disease produces severe and often irreversible changes within the cerebral tissues. The type of alteration varied with the duration of the illness. In the acute cases the predominant damage occurred within the cortical neurons which showed the typical picture of acute nerve cell damage. In the more chronic illness the most striking changes were parenchymal rather than neuronal and consisted of focal and perivascular areas of demyelination and necrosis. The neurons showed both acute and chronic changes in the more prolonged illness, many of the cells appearing as tiny dark masses within which none of the cell structures could be identified.

The etiology of the cerebral complications in uremia still remains a moot question in spite of extensive investigations. The experimental data thus far accumulated would indicate that the uremic syndrome is either the result of a disturbance of electrolytes, an increase in the nitrogenous metabolites within the blood or the evolution of some toxin hitherto unrecognized. This latter view finds some corroboration in the work of Foster,<sup>3</sup> who was able to isolate a crystalline substance from uremic blood which, when injected intraperitoneally into guinea-pigs, produced paralysis, convulsions and death. Unfortunately, this work has not as yet been confirmed.

The work of Harrison and Mason<sup>4</sup> would indicate that in uremia the brain is subjected to two antagonistic influences, one stimulating, the other depressing in nature. According to these investigators, the increased neuromuscular irritability is apparently due to more than a deficit of ionized calcium, as injections of a suitable calcium salt will not always alleviate the symptoms. De Wesselow<sup>5</sup> and Harrison and Mason<sup>4</sup> found no connections between the diminution of serum calcium and the generalized convulsions. Becher<sup>6</sup> and de Wesselow<sup>5</sup> placed a greater prognostic value on the rise in serum phosphates than the deficit of calcium.

The depression in nervous system functions in uremia has been suspected by some to be due to a rise in blood phenols. (Dickes,<sup>7</sup> Becher<sup>6</sup> and Mason, et al.<sup>8</sup>). These authors do not agree as to whether the phenols must be free or can be combined. Certainly chronic phenol poi-

soning produces a clinical picture resembling some cases of uremia.

More recently a great deal of interest has been centered upon the significance of altered potassium levels within the blood of uremic patients. The recent work of Brown, Currens and Marchand<sup>9</sup> seems to indicate that too high a level of blood potassium is as dangerous as too little. Cardiac arrest may develop from either. The changes in the electrocardiograph may be helpful in such cases.

#### PORPHYRIA

Porphyria, although a relatively rare condition, is of interest to the neuropsychiatrist and neuropathologist because it frequently results in extensive damage to the nervous system. As a matter of fact, the nervous system involvement may comprise the predominant symptomatology, often obscuring the fundamental nature of the disease process.

The clinical picture of porphyria is most variable and is often confused with variants of other well known neuropsychiatric disorders. Most frequently affected seem to be the peripheral nerves, resulting in the development of a motor weakness primarily of the lower limbs. The weakness is flaccid in type and usually ascends slowly to involve the upper extremities. In the fatal cases, the disease ascends to the brain stem, resulting in dysphagia, dysarthria and finally death from medullary paralysis. In most cases, the peripheral nerves reveal an extensive patchy degeneration of both the myelin sheaths and the axons. Mason and his associates<sup>10</sup> also observed collections of lymphocytes around scattered vessels within the nerve trunks.

In porphyria there may occur a wide variety of both neurological and psychiatric manifestations often entirely independent of the lower motor neuron involvement, thus indicating definite cerebral damage. The neurological findings that have been reported suggest a diffuse and extensive involvement of the nervous system (headaches, hyperactive knee jerks, ataxia, nystagmus, pupillary irregularities, facial twitchings, somnolence, convulsions, etc.). Of these the convulsive seizures are the most frequent and have been described by many investigators. Almost as frequent as the neurological symptoms are the marked and variable mental disturbances. These may appear as a toxic delirium with restlessness, irritability, hallucinations and delusions; as a severe depression often with suicidal tendencies; or as an acute manic excitement. In view of the definite clinical manifestations of cerebral involvement, it is somewhat surprising that so few reports are available describing histopathologic alterations in the brain. That such changes, reversible or irreversible, should occur would seem most probable in view of the clinical picture.

Neuropathologic studies reported by Baker and Watson<sup>11</sup> and a few other investigators<sup>12,13</sup> indicate clearly that in addition to the changes already described in the peripheral nerves there occurs also a diffuse damage to the central nervous system itself. This is manifested by patchy areas of nerve cell degeneration consisting of chromatolysis and cellular swelling together with scattered foci of perivascular demyelination.



Although the exact nature of the toxic substance in porphyria is thus undetermined, there can be little doubt that some product of the abnormal metabolism is in many cases capable of producing actual nervous system damage. The frequency and nature of the peripheral nerve involvement is well known. This portion of the nervous system, no doubt, carries the brunt of the attack, often giving rise to permanent sequelae in the nature of atrophies, contractures, trophic changes, etc. However, insufficient emphasis has been given to the brain changes in this disease. A careful survey of the reported cases reveals that many of the patients, at some time during their illness, do develop evidence of scattered cerebral lesions. Most of these changes must be reversible since the clinical manifestations usually clear up during the remissions. However, in the presence of such profound neurological and psychiatric phenomena, it seems inevitable that some irreversible tissue alterations should occur. And, as a matter of fact, damage to the central nervous system is not so uncommon as the sporadic reports would lead one to believe. From a review of the literature and a study of our own cases, it is apparent that repeated attacks of porphyria may produce a degeneration of brain tissues and cells, resulting in slow recovery or even in permanent functional damage. The frequency with which such structural alterations will be found will no doubt vary with the intensity of the histopathological studies.

#### ECLAMPSIA

The occurrence of convulsions as a dreaded complication of pregnancy has been recognized since ancient times. It is mentioned in the writings of the Egyptians, Greeks, and Chinese. In the last century the subject of eclampsia has become one of intense interest to obstetricians and others. A tremendous mass of literature has accumulated regarding its symptomatology, etiology and pathology. Nevertheless, in spite of the fact that cerebral involvement is one of the outstanding symptoms, surprisingly little is known about the central nervous system pathology.

Typically, eclampsia occurs as a convulsion or series of convulsions appearing near term. It is usually preceded by certain premonitory signs including hypertension, albuminuria and edema. As the disease progresses, cerebral symptoms become apparent. These include headaches, tinnitus, drowsiness, delirium, confusion, stupor and coma. Visual disturbances, particularly in the form of scotomata, are frequent. Amaurosis occurs in occasional cases. The convulsion is usually generalized in character with tonic and clonic phases. It is indistinguishable in character from the grand mal seizures of idiopathic epilepsy. Following the seizure, the patient is stuporous or comatose for a varying period of time just as is noted following convulsions from other causes. According to Dieckmann,<sup>14</sup> amnesia for twenty-four hours or more following the convulsion occurs in 40 per cent of the cases. Eclampsia without convulsions may occur. In these cases the patient suddenly passes into coma and frequently expires. In the absence of convulsions antemortem diagnosis of eclampsia is often not made. Although it is extremely rare, eclampsia may

occur without convulsions or coma. Only a few such cases have been reported.

There are several complications of toxemias of pregnancy. One of the most frequent is a cerebrovascular accident. This may be either thrombosis or hemorrhage. About one hundred such cases have been described with an over-all mortality much higher than that of an uncomplicated toxemia. Infrequently a toxic psychosis may supervene either in severe pre-eclampsia or between convulsions in eclampsia. The development of a postpartum psychosis following eclampsia can occur but is uncommon. The rarest complication of all is epileptic seizures persisting after eclampsia. Only three such cases have been reported.

The pathology of eclampsia requires further elucidation. Schmorl<sup>15</sup> described diffuse petechial hemorrhages and areas of focal necrosis. Sioli<sup>16</sup> reported thromboses, perivascular hemorrhages and degenerative changes in the vascular endothelium. Diamond<sup>17</sup> observed degeneration of the ganglion cells, diffuse glial proliferation, meningeal infiltration by cellular elements and reactive phenomenon in the vascular system in addition to the changes already described. It would seem that the most constant and wide-spread alterations consist of nerve cell degeneration, demyelination, glial proliferation and proliferative endarteritis. Such pathologic changes suggest strongly the presence of a toxin disseminated widely throughout the central nervous system by a vascular route. Although no such agent has been identified at present, it is the feeling of many investigators that the pathologic lesions of eclampsia are the consequence of the complex interaction of multiple factors, among them being an unidentified endogenous toxin.

#### BURNS

In recent years improvements in the immediate treatment of extensive body burns have made it possible for patients to survive the initial phase of shock. Nevertheless, many of these patients succumb in the next two or three days during what is often referred to as the "toxemic" phase of burns. At this time patients frequently exhibit signs of severe cerebral involvement. These patients may suddenly develop restlessness leading to manic excitement, confusion, disorientation or drowsiness and apathy which may progress to stupor and finally coma. Late sequelae may develop weeks or months after a severe burn. These include convulsions, amaurosis, aphasia, movement disorders and personality changes. Hydrocephalus and cortical atrophy may be demonstrated by pneumoencephalography.

Kruse<sup>18</sup> reported the case of a 15-month-old child who suffered extensive second-degree burns of the trunk. At first the child appeared to be recovering, but after about four weeks it suddenly developed fever, convulsions and blindness. Repeated pneumoencephalograms revealed a progressive hydrocephalus. The blindness disappeared after another month but the child remained mentally deficient.

Globus and Bender<sup>19</sup> reported the case of an eight-year-old boy who sustained severe second-degree burns of the extremities and face. This patient showed no objective neurologic findings at any time but did show

personality changes in the subsequent months. He died after six months and at autopsy severe degenerative encephalopathy was found.

Pathologic studies of this condition are not numerous. Walker and Shenkin<sup>20</sup> described severe nerve cell degeneration with ghost cell formation in the cortex and hypothalamus, and marked dilatation of the pericellular and perivascular spaces. Globus and Bender<sup>19</sup> reported a case dying after six months with extensive demyelination and gliosis.

At the present time studies in this field are insufficient to permit a definitive statement on the pathogenesis of these lesions. It has been customary to attribute the picture to shock and anoxia; however, more recent work has shaken this concept. In many cases anoxia is absent altogether or present in such minimal degree as to be insufficient to explain the clinical picture of cerebral damage. The pathological picture is more consistent with an endogenous toxic damage. In support of this hypothesis is the experimental evidence of brain damage produced in guinea-pigs by the injection of extracts from burned tissue. In addition there is some evidence to suggest that the serum of burned dogs contains a toxic substance or substances which is injurious to normal dogs.

#### LIVER DISEASE

A frequent and well recognized manifestation of terminal hepatic failure is the onset of coma. The whole problem of the interrelationship between hepatic and cerebral damage is quite obscure even at this time. The problem was given impetus by Wilson's description in 1912 of the familial occurrence of portal cirrhosis and lenticular degeneration. Since then, there has accumulated experimental data, some of which is conflicting, on cerebral alterations produced by liver damage. By the use of Eck's fistula in dogs it has been possible to produce signs of cerebral involvement including ataxia, tremors, twitchings, amaurosis and coma. The neuropathologic picture found is one of focal necroses and nerve cell degeneration. De Jong<sup>21</sup> has been able to produce what he terms "experimental catatonia" in dogs either by means of ligation of the hepatic artery or of an Eck's fistula. Crandall and Weil<sup>22</sup> ligated the common bile ducts or the pancreatic ducts of dogs and were able to demonstrate the appearance on the fourth day of substances in the serum which were destructive to the spinal cords of rats *in vitro*. These substances were not lipases. The brains of the dogs showed spongy necrosis of the ventricular walls, diffuse nerve cell damage, demyelination and glial proliferation. It was their opinion that these toxins were disseminated via the choroid plexus or the walls of the cerebral vessels.

The clinical manifestations of cerebral damage, other than coma, in chronic liver disease are usually not well described. However, in a series of unpublished cases which we have observed we have seen several bizarre neuropsychiatric pictures including pyramidal tract disturbances, Parkinsonian rigidity and facies, perseveration and echolalia, decerebrate rigidity and a thalamic-like syndrome. Neuropathologic studies in some of these cases revealed diffuse ganglion cell degeneration and

widespread severe demyelination which tended to be perivascular in character. At the present time further studies are planned to clarify the nature of this process. We are convinced that it is due to the hematogenous spread of substances normally detoxified by the liver.

#### DISCUSSION

In this brief review, no attempt has been made to cover the entire field of the endogenous toxic encephalitis. It is apparent from our studies that these toxins play an important role in the production of cerebral damage and that they should be given more attention in the final evaluation of many of the more unusual neuropsychiatric involvements. With our increasing knowledge of body metabolism it is probable that more and more of these endogenous toxins will be uncovered and that their effect upon the nervous system will be of prominent importance in the final outcome of any therapeutic procedure instituted. It is hoped that the present report will stimulate interest in the occurrence and recognition of these various forms of encephalitis and that through more careful and more constant evaluation of cerebral function, many instances of the milder cerebral involvements will be recognized.

#### BIBLIOGRAPHY

- Hiller, F., and Michalovici, E.: *Lésions organiques cérébrales au cours de l'urémie*. Schweiz. Arch. f. Neurol. u. Psychiat., 46:203, 1941.
- Rothmann, M.: *Ueber die transitorische Erblindung bei Urämie*. Klin. Wchnschr., 31:691, 1894.
- Foster, N. B.: *The Isolation of a Toxic Substance from Blood of Uremic Patients*. Tr. A. Am. Physicians 30:305, 1915.
- Harrison, T. R., and Mason, M. T.: *The Pathogenesis of the Uremic Syndrome*. Medicine, 16:1, 1937.
- de Wesselow, O. L. V.: *On Phosphorus and Calcium of the Blood in Renal Disease*. Quart. J. Med., 16:341, 1923.
- Becher, E.: *Studien über die Pathogenese der echten Urämie, insbesondere über die Bedeutung der retinierten Phenole und anderer Darmfäulnisprodukte*, Zentralbl. f. inn. med. 46:369, 1925.
- Dickes, R.: *Relation Between the Symptoms of Uremia and the Blood Levels of Phenols*. Arch. Int. Med. 69:446, 1942.
- Mason, M. F., Resnick, H., Minot, A. S., Rainey, J., Pilcher, C., and Harrison, T. R.: *Mechanism of Experimental Uremia*. Arch. Int. Med., 60:312, 1937.
- Brown, M. R., Currens, J. H., and Marchand, J. F.: *Muscular Paralysis and Electrocardiographic Abnormalities Resulting from Potassium Loss in Chronic Nephritis*. J.A.M.A., 124:545, 1944.
- Mason, V. R., Courville, C., and Ziskind, E.: *Porphyria in Human Disease*. Medicine, 12:355, 1933.
- Baker, A. B., and Watson, C. J.: *Central Nervous System in Porphyria*. J. Neuropath. and Exp. Neurol., 4:68, 1945.
- Courcou, A., Lhermitte, J., and Boulanger-Pillet: *La paralysie extenso-progressive Rematoporphyrique*. Press méd., 2:1609, 1929.
- Golden, L. A.: *Hematoporphyria Neuritis*. Am. J. Med. Sc., 206:474, 1943.
- Dieckmann, W. J.: *Toxemias of Pregnancy*. St. Louis, 1941.
- Schmorl, W.: *Zur Lehre von der Eklampsie*. Arch. f. Gynäk., 65:504, 1902.
- Sioli: cited by Diamond.
- Diamond, I. B.: *Puerperal Eclampsie. A Neuropathologic Study*. Arch. Neurol. and Psychiat., 35:1320, 1936.
- Kruse, F.: *Encephalitis und Amaurose nach Verbrennung*. Deutsch. med. Wochenschr., 54:1039, 1938.
- Globus, J. H., and Bender, M. B.: *Disseminated Toxic Degenerative Encephalopathy (Disseminated Sclerosing Demyelination) Secondary to Severe and Extensive Burns*. Jour. Nerv. and Ment. Dis., 83:518, 1936.
- Walker, J., and Shenkin, H.: *Studies on the Toxic Syndrome after Burns, II. Central Nervous System as a Cause of Death*. Ann. Surg., 121:301, 1945.
- De Jong, H. H.: *Experimental Catatonia*. Baltimore, 1945.
- Crandall, L. A., and Weil, A.: *Pathology of Central Nervous System in Diseases of the Liver*. Arch. Neurol. and Psychiat., 29:1066, 1933.



# Occlusions of Arteries Supplying the Brain-Stem and Cerebellum

John E. Skogland, M.D.  
Houston, Texas

**I**N contrast to occlusions of cerebral arteries vascular lesions of the brain-stem and cerebellum are uncommon. The purpose of this paper is to review certain established syndromes resulting from occlusions of arteries supplying the medulla oblongata, pons, and cerebellum, and to cite the relative incidence of these lesions over a nine year period (1935 through 1943) at the Charity Hospital of Louisiana in New Orleans.\*

## ANATOMY

To facilitate an understanding of vascular lesions of the brain-stem and cerebellum, the anatomical relations of important blood vessels will be described.<sup>1</sup> The two vertebral arteries which carry blood into the posterior fossa of the cranial cavity arise on either side from the subclavian arteries and pass upward along the anterolateral surfaces of the medulla oblongata, finally coursing medially to join at the lower border of the pons. By their union these form the basilar artery which continues up in the midline anteriorly, finally to bifurcate at the upper border of the pons into the posterior cerebral arteries which enter into formation of the Circle of Willis. Just below its termination each vertebral artery gives off an important branch, the anterior spinal artery, which courses downward and medially anterior to the medulla oblongata. The two vessels unite in the vicinity of the lower end of the medulla to form a single anterior spinal artery which descends along the anterior median fissure to the ventral aspect of the spinal cord. The posterior spinal arteries arise either from the vertebral or from the posterior inferior cerebellar arteries and extend caudally to reach the posterior surface of the spinal cord. The largest branch of the vertebral is generally the posterior inferior cerebellar artery; this arises at the lower border of the olive and ascends in the neighborhood of the postero-lateral sulcus almost to the lower border of the pons, then loops posteriorly to descend along the infero-lateral wall of the fourth ventricle, reaching the inferior surface of the cerebellum. It divides into medial and lateral branches. The anterior inferior cerebellar and superior cerebellar arteries originate from the basilar artery. The former comes off from the basilar a little above its point of origin, passes laterally across the pons and over the brachium pontis to supply the anterior portion of the inferior surface of the cerebellum. The superior cerebellar artery arises just below the level at which the basilar bifurcates into the posterior cerebral arteries, courses laterally and posteriorly over the pons, finally to reach the superior surface of the cerebellum where it divides into medial and lateral branches. After reaching the cerebellum, all these

vessels anastomose freely and send collaterals into the deeper parts.

The vascular supply of the medulla oblongata is derived from the anterior spinal, posterior inferior cerebellar, vertebral and basilar arteries. The pyramids, including the decussation, medial lemnisci, and hypoglossal nuclei are major structures supplied by the anterior spinal arteries. Each posterior spinal artery distributes blood to the nuclei gracilis and cuneatus as well as to the caudal and dorsal parts of the restiform body. There has been a great deal of attention given the problem of the blood supply of the lateral area of the medulla oblongata. The general belief has been that the posterior inferior cerebellar artery nurtures all of this region lying between the inferior olivary nucleus and the restiform body. Recent investigations cast some doubt upon that concept. Foix, Hillemand and Schalit<sup>2</sup> describe a branch of the basilar artery, termed the artery of the lateral fossa, which they claim supplies a large wedge shaped area in the lateral portion of the medulla. To some extent, the studies of Alexander and Suh<sup>3</sup> are confirmatory. These authors identified the same vessel arising from the basilar artery and demonstrated that, as a rule, it distributes blood to the anterior portion of the lateral medullary area, while more posteriorly this region was nourished by a branch from the posterior inferior cerebellar artery supplemented by a few direct branches from the vertebral artery.

The pons receives its blood supply from the basilar, superior cerebellar and anterior inferior cerebellar arteries. Numerous slender branches springing from the basilar artery pass backward to supply the central substance of the pons. Branches from the superior cerebellar artery reach the upper dorsolateral portion of the pons. At a lower level the lateral portion of the pons is nourished by the anterior inferior cerebellar artery.

There is known to be considerable variation in the arrangement and distribution of these vessels. Moreover, branches are not always symmetrical or equal in caliber. Not infrequently the vertebral arteries have a very short course, fusing to form the basilar at an unusually low level. In such a circumstance it has been observed that direct branches from the basilar may supply structures located in the medial portion of the medulla. Union of the vertebral arteries at some distance above the lower border of the pons is a rare variation. Except for the aforementioned differences in its level of origin, the course of the basilar artery has been found fairly constant. The site at which the anterior spinal artery springs from the vertebral is greatly variable. In numerous instances branches from the two sides fail to fuse, though generally transverse communications exist between the vessels. The anterior spinal artery occasionally is absent on one side. The area ordinarily supplied by it is then

\*The author was formerly assistant professor of neuropsychiatry at Louisiana State University Medical School and visiting physician at the Charity Hospital of Louisiana in New Orleans.

nourished by the vertebral artery. Anomalies of the posterior inferior cerebellar artery are especially common. It may arise from the basilar instead of from the vertebral artery. Occasionally the vessel originates on one side from the vertebral artery and on the other side from the basilar artery. Sometimes the posterior inferior cerebellar artery is absent on one side; less frequently it is absent on both sides. When such an arrangement exists, this vessel is replaced in the supply of the medulla oblongata by branches from the vertebral artery. The loop made by the vessel on the lateral aspect of the brain-stem varies in form. In a small proportion of cases the loop is not present and the artery passes directly outward to the cerebellum. At times the anterior inferior cerebellar artery springs from the vertebral. Absence of this vessel also has been reported. In other cases it has been found to have origin from the lower end of the basilar in common with the posterior inferior cerebellar artery. Anomalies of the superior cerebellar artery are uncommon. Rarely, the vessel is absent and is replaced by branches from the posterior cerebral artery.

#### PATHOLOGY

Occlusions of arteries supplying the brain-stem and cerebellum result from the same pathological processes which account for cerebral vascular insults. The most common cause is thrombosis, generally developing on the basis of arteriosclerosis, though occasionally resulting from vascular neurosyphilis. At times obstruction is caused by an embolus, arising most often from an endocarditis. Hemorrhage into the brain-stem, unrelated to trauma, occurs infrequently.

Following obstruction of a vessel the segment of brain irrigated by it undergoes prompt softening and degeneration. Anastomoses between collaterals of various vessels are too poor through the brain-stem to permit much compensation for a diminution in blood supply. In contrast, branches of these arteries reaching the cerebellum anastomose so freely that, as an aftermath of occlusion, there is comparatively little destruction of the cerebellar substance.

#### POSTERIOR INFERIOR CEREBELLAR ARTERY

The earliest references to the syndrome of the posterior inferior cerebellar artery were made by Senator,<sup>4,5</sup> Remak,<sup>6</sup> and Wallenberg.<sup>7,8</sup> The latter is generally credited with the first detailed description of the symptomatology, and as a consequence the syndrome resulting from occlusion of the posterior inferior cerebellar artery has been termed the Wallenberg syndrome. Recently Romano and Merritt<sup>9</sup> have pointed out that the description of his own case made in 1810 by Gaspard Vieusseux, though not diagnosed specifically then, corresponds closely with the classical picture of thrombosis of the posterior inferior cerebellar artery.

This is the most common of the vascular lesions to be reviewed here. Though every neurologist occasionally encounters a case of this type in his practice, a disproportionately small number have been reported in medical literature. Gerard<sup>10</sup> found 39 cases reported prior to 1923. In a survey of literature published between that date and 1937, Sheehan and Smyth<sup>11</sup> collected another 22 cases

and added 2 of their own. Subsequently more than a dozen additional cases have been reported.

A review by the author of the records at Charity Hospital revealed that four patients presenting the syndrome of the posterior inferior cerebellar artery were admitted during the years 1935 through 1943. In all instances this was a clinical diagnosis; no deaths occurred in the group.

Symptoms resulting from thrombosis of the posterior inferior cerebellar artery are fairly uniform.<sup>12,13</sup> The onset usually is sudden, though there may be a period during which an increase in severity of symptoms is noticed. Consciousness is not lost. Vertigo is a prominent feature and is explainable on the basis of involvement of the vestibular nuclei. Vomiting also may occur. Occasionally when the cochlear nuclei are involved, deafness develops on the side of the lesion. Dysphagia is common, caused by paralysis of the soft palate and larynx on the side of the lesion resulting from involvement of the nucleus ambiguus. If there also is vocal cord paralysis, the voice will be hoarse. Pain or paraesthesiae referred along the distribution of the trigeminal nerve on the side of the lesion reflect some irritation of its sensory pathways. With involvement of the restiform body incoordination develops ipsilaterally and there is a tendency to fall toward the side of the lesion.

In addition to the above phenomena, neurological examination characteristically reveals the following: Impairment of sensibility to pain and temperature over the trunk and extremities on the side opposite the lesion as a result of involvement of the lateral spinothalamic tract. Occasionally the disturbance in pain and temperature sensation extends upward on the opposite side to include the face. This is an indication of interference with conduction through the ventral central trigeminal tract. Tactile sensibility remains normal, and usually there is no interference with deep sensibility. Nystagmus is prominent, especially on deviation of the eyes toward the side of the lesion. It results from implication within the medulla of fibers connecting the vestibular with the oculomotor nuclei. Diplopia may exist. Horner's syndrome, resulting from involvement of the intramedullary sympathetic pathway, is evident ipsilaterally. Myosis is the most frequently encountered manifestation, ptosis is seen less often, while enophthalmos is very rare.

Significantly, there is no paralysis of the extremities, facial muscles or tongue.

The prognosis is generally good and in most instances slow recovery ensues.

#### VERTEBRAL ARTERY

Occlusion of a vertebral artery, sometimes designated the Babinski-Nageotte syndrome, is rarely recognized by the clinician.

Only a single case of thrombosis of the vertebral artery was discovered in reviewing the Charity Hospital records from 1935 through 1943. This was a clinical diagnosis.

It has proved difficult to distinguish clinically between occlusions of the vertebral and the posterior inferior cerebellar arteries.<sup>11,14</sup> Cases have been reported in which the classical symptomatology of thrombosis of the pos-



terior inferior cerebellar artery existed, yet at necropsy thrombosis of the vertebral artery was discovered.

The most commonly emphasized basis for differentiation between these lesions is occurrence of weakness in the tongue, trunk or extremities. Typically, there is involvement of the pyramidal tract in thrombosis of the vertebral artery. Thus, in addition to symptoms referable to infarction of the lateral medullary region, varying degrees of muscular weakness and hyper-reflexia are found contralateral to the lesion. However, lack of evidence of pyramidal tract involvement cannot be offered as conclusive proof that an occlusion is confined to the posterior inferior cerebellar artery. Other ground for differentiation evolves from the observation that the posterior inferior cerebellar artery never supplies the spinothalamic tract below the lower border of the nucleus ambiguus; hence, crossed and dissociated anesthesia without dysphagia or laryngeal paralysis is indicative of occlusion of the vertebral artery.

#### ANTERIOR SPINAL ARTERY

Because it is commonly accompanied by involvement of other vessels, notably the posterior inferior cerebellar or the vertebral artery, occlusion of the anterior spinal artery is seldom diagnosed. No patient admitted to Charity Hospital during the years covered by the present review was given such a diagnosis.

Following thrombosis of the anterior spinal artery there is destruction in the medulla oblongata of one or both pyramids, the medial lemniscus and occasionally fibers of the hypoglossal nerve.<sup>15</sup>

In the classical syndrome there develops on the opposite side of the body weakness and hyper-reflexia, together with loss of deep or discriminative sensibility. In some instances paralysis and atrophy of the tongue occur ipsilaterally. Nystagmus may exist when the area of infarction includes the posterior longitudinal bundle. Bilateral involvement of the pyramidal tracts and medial lemnisci may be expected if the two anterior spinal arteries have united close to their origin.

#### SUPERIOR CEREBELLAR ARTERY

The syndrome of the superior cerebellar artery was first described by Mills<sup>16</sup> in 1908. Freeman<sup>17</sup> in 1941 was able to find reports of 22 cases. No patient admitted to Charity Hospital during the years of this review received such a diagnosis.

The classical components of the syndrome include homolateral signs of cerebellar dysfunction, as well as impairment in pain and temperature sensation over the opposite side of the body.

Cerebellar signs include ataxia, adiadokokinesia, dysarthria, hypotonia and rebound phenomenon. Involuntary movements, involving especially the upper extremity, are a prominent feature. Intention tremor exists and nystagmus may be present. These symptoms and signs are explained by involvement of the cerebellar hemisphere, brachium conjunctivum and dentate nucleus. An explanation for the observation that symptoms are more prominent in the upper than in the lower extremity lies in the fact that the superior surface of the cerebellar hemisphere exercises control over movements of the upper extremity while the inferior surface, sup-

plied by the anterior inferior cerebellar artery, influences movement of the lower extremity.

Contralateral impairment in pain and temperature sensation, including face, trunk, and extremities, results from degeneration of the spinothalamic tract passing through the dorsolateral region of the pontile tegmentum. Fibers carrying other forms of sensation have a more medial position and derive blood from pontile branches of the basilar artery.

Occasionally there are signs indicating slight pyramidal tract involvement; reflex changes and weakness in the extremities have been noted. In several instances the sixth or seventh cranial nerves have shown weakness. Occurrence of pyramidal tract signs or cranial nerve palsies suggests some anomaly of the superior cerebellar artery.

#### BASILAR ARTERY

Reference is made to 17 cases of thrombosis of the basilar artery in a review published in 1932 by the Russian authors, Pines and Gilinsky.<sup>18</sup> Scattered case reports have appeared subsequently.

In the present review of Charity Hospital records, 3 cases of thrombosis of the basilar artery, all verified at autopsy, were encountered. Unfortunately, the clinical work-up in each case was incomplete, and no detailed neuropathological studies were made. Nevertheless, since this lesion is rare, all three cases are abstracted below.

The clinical syndrome associated with thrombosis of the basilar artery has not been clearly defined. There is variation in the symptomatology depending upon the level at which the artery is occluded. Pyramidal tract signs, unilateral or bilateral, stand out as the most consistent feature. Convulsions have been reported. Cranial nerve palsies may occur. It has been suggested that cranial nerve dysfunction is a manifestation of pseudobulbar palsy resulting from bilateral pyramidal tract involvement, since infarction in the pons does not generally extend to include cranial nerve nuclei. Temperature elevation is typical. Coma usually develops a short while after onset of symptoms, and there is a fatal termination within several days.

It is of special interest to note that in a great majority of the reported cases syphilis has been the cause of thrombosis of the basilar artery.

Case 1. (T-39-35967). 56 year old colored male, admitted 8-1-39 and died 8-3-39. Illness began 7-25-39 with dizziness and ataxia. Shortly after onset noticed numbness in right hand. Later speech became indistinct, he had difficulty using the left upper limb and there was weakness of the left side of the face. Steady progression of symptoms. Passed into coma 7-31-39. Review of past history revealed that he was treated at Charity Hospital in 1934 and again in 1937 for luetic heart disease with decompensation. Blood Wassermann was known to be positive since 1934.

Respiration was of the Cheyne-Stokes type. Blood pressure 186/100. Pulse was 115 to 120. Temperature 104.2 degrees on entry, rising terminally to 105.6 degrees. There was slight ptosis on the left. Paralysis of the left side of the face, the tongue and the left upper extremity was noted. No other abnormalities were recorded. The blood Wassermann reaction was positive. Spinal fluid examination, including the Wassermann, was entirely normal.

At autopsy (A-39-824) only gross study of the brain was made. A thrombosis of the basilar artery was found 1 cm.

above its formation by the vertebrals; secondary softening of the right side of the pons was evident.

Case 2. (T-39-12595). 67 year old white female, admitted 3-17-39 and died the same day. Onset of illness the morning of entry, when she could not be aroused from sleep. No other symptoms elicited. Had diabetes for years, and because of gangrene right leg had to be amputated in 1938.

On admission she was comatose and generally flaccid. Pupils were constricted. Respirations were slow. No fever until just before death when temperature rose to 102.6 degrees. Blood pressure 160/80, changing later to 200/75. Pulse varied between 80 and 95. No blood or spinal fluid Wassermann test was made.

Autopsy (A-39-312) revealed recent thrombosis of the basilar artery with extensive softening through the pons, mid-brain and cerebellum. Detailed microscopic examination was not reported.

Case 3. (6315). 40 year old colored female, admitted 2-6-35 and died 2-12-35. In coma on entry, and no history was obtainable.

Temperature, 99 degrees, rising terminally to 104 degrees. Blood pressure 150/80. Remained comatose. All tendon reflexes were hyperactive. The extent of paralysis that existed is not clearly recorded. Blood and spinal fluid Wassermann tests strongly positive.

Gross examination of the brain at autopsy revealed thrombosis of the basilar artery near its bifurcation into the posterior cerebral arteries. There was extensive softening through the pons. No pathological change was recognized in the medulla oblongata or cerebellum.

#### SUMMARY

Because of the infrequency with which thrombosis of arteries supplying the brain-stem and cerebellum is encountered, the associated clinical syndromes are not generally familiar and may pass unrecognized. In the foregoing review syndromes associated with thrombosis in five principal arteries are described. The close correlation between clinical symptoms and distribution of pathological changes is emphasized. The incidence of such vascular lesions in a large general hospital is mentioned.

#### BIBLIOGRAPHY

1. Stopford, J. S. B.: The Arteries of the Pons and Medulla Oblongata. *J. Anat. & Physiol.*, 50:131 and 255, 1916; 51:250, 1917.
2. Foix, C. L., Hillemand, P., and Schalit, I.: Sur le syndrome lateral du bulbe et l'irrigation du bulbe superieur:

L'artere de la fossette laterale du bulbe, le syndrome dit de la cerebelleuse inferieure, territoire de ces arteres. *Rev. neurol.*, 32:160, 1925.

3. Alexander, L., and Suh, T. H.: Arterial Supply of Lateral Paraolivary Area of the Medulla Oblongata in Man. *Arch. Neurol. & Psychiat.*, 38:1243, 1937.

4. Senator, H.: Apoplektische Bulbarparalyse mit wechselständiger Empfindungslähmung. *Arch. f. Psychiat.*, 11:713, 1881.

5. Senator, H.: Zur Diagnostik der Herderkrankungen in der Brücke und dem verlängerten Mark. *Arch. f. Psychiat.*, 14:643, 1883.

6. Remak, R.: Krankenvorstellung eines Falles vom Hemi-anesthesia alterans. *Berl. Klin. Wchnschr.*, 18:300, 1881.

7. Wallenberg, A.: Acute Bulbär affection (Embolie der Art. cerebelli post. inf. sin.). *Arch. f. Psychiat.*, 23:504, 1895.

8. Wallenberg, A.: Anatomischer Befund in einem als akute Bulbär affection (Emolie der Art. cerebelli post. inf. sin.?) beschriebenen Fall. *Arch. f. Psychiat.*, 34:923, 1901.

9. Romano, J., and Merritt, H. H.: Singular Affection of Gaspard Vieusseux: Early Description of Lateral Medullary Syndrome. *Bull. Hist. Med.*, 9:72, 1941.

10. Gerard, M. W.: Afferent Impulses of the Trigeminal Nerve: The Intramedullary Course of the Painful, Thermal and Tactile Impulses. *Arch. Neurol. & Psychiat.*, 9:306, 1923.

11. Sheehan, D., and Smyth, G. E.: A Study of the Anatomy of Vertebral Thrombosis: With Reports on Two Cases. *Lancet (London)*, 2:614, 1937.

12. Merritt, H., and Finland, M.: Vascular Lesions of the Hind-Brain (Lateral Medullary Syndrome). *Brain*, 53:290, 1930.

13. Thompson, R. H.: Occlusion of the Posterior Inferior Cerebellar Artery: A Clinical Study of Four Cases. *Arch. Neurol. & Psychiat.*, 22:530, 1929.

14. Ramsbottom, A., and Stopford, J. S. B.: Occlusion of the Posterior Inferior Cerebellar Artery. *Brit. M. J.*, 1:364, 1924.

15. Davison, C.: Syndrome of the Anterior Spinal Artery of the Medulla Oblongata. *Arch. Neurol. & Psychiat.*, 37:91, 1937.

16. Mills, C. K.: Hemianesthesia to Pain and Temperature and Loss of Emotional Expression on the Right Side with Ataxia of the Upper Limb on the Left. *J. Nerv. & Ment. Dis.*, 35:331, 1908.

17. Freeman, W., and Jaffe, D.: Occlusion of the Superior Cerebellar Artery. *Arch. Neurol. & Psychiat.*, 46:115, 1941.

18. Pines, L., and Gilinsky, E.: Ueber die Thrombose der Arteria basilaris und ueber die Vascularisation der Brücke. *Arch. f. Psychiat.*, 97:380, 1932.

### NATIONAL MENTAL HEALTH INSTITUTE TO BE CONSTRUCTED

The Public Health Service has asked for an appropriation of \$5,200,000 for the development of the National Program provided by the Mental Health Act recently adopted by congress. \$850,000 of this amount will be used for starting construction of a National Mental Health Institute at Bethesda, Maryland. The building of this institute is expected ultimately to cost \$7,500,000. It will include a 200 bed hospital for study of nervous and mental diseases and will serve as a center of psychiatric research and training.

Members of the National Mental Health Advisory Council appointed by Surgeon General Thomas Parran to aid and advise in the development of the program are Drs. W. C. Menninger of Topeka, Kansas; John Ro-

mano, Professor of Psychiatry at the Rochester University Medical School; Edward A. Strecker of Philadelphia; Frank F. Tallman, Mental Hygiene Commissioner of the state of Ohio; David M. Levy, Child Psychiatrist, New York; George S. Stevenson, Medical Director of the National Committee for Mental Hygiene, New York.

Dr. Parran has also appointed four consultants to the Council: Drs. S. Alan Challman of Minneapolis; William Malamud of Boston; Frank Fremont-Smith and Nolan D. C. Lewis of New York. Dr. Robert H. Felix, Chief of the Public Health Service's Mental Hygiene Division, is in charge of the overall program.—From *New York Medicine*, Sept. 20, 1946.



# Psychiatric Care in Hospitals

L. R. Gowan, M.D., M.S.

Duluth, Minnesota

WE have just passed through the acute stage of a great world war. National crises have always focused the attention of our nation to the importance of a citizenry, stable enough and adaptable enough to meet the needs of the hour, both in dependable materials and resourceful manpower. War brings out both man's strength and his weakness by threatening his collective and individual security. The mobilization of a great armed force offers an opportunity for taking an inventory of our nation's health. As a result we are awakened from a state of more or less complacency to a point of making great effort to overcome our exposed deficiencies. War exposes the weaknesses of the mental health of a nation far more than it does its physical health. In spite of the fact that we enjoy the best health of any nation in the world, it is the natural reaction of the American people to wish to raise our health standards even higher.

Psychiatry made great strides forward during and following World War I. It is advancing with a more rapid, steadier stride at the present time as a result of the impetus received from World War II. During the past few years several thousand physicians, serving in the armed forces, came in contact for the first time with organized psychiatric departments functioning as special units in general hospitals. They have witnessed first hand what can be accomplished by close cooperation of medical, surgical, and psychiatric sections. They had on innumerable occasions experiences with patients with problems, outwardly organic in nature, but later proven to be psychogenic. They have recognized the profound effects of emotional stress on the development of disturbed physiological states, some of which produced irreversible organic lesions. They learned to diligently search the background of every patient, seeking to formulate the early emotional pattern which under increased stress led to the production of an emotional or organic illness. For example, they learned to objectively study every psychiatric patient presenting the complaint of abdominal distress and as a result, 75 per cent of all patients in the gastro-intestinal department of one of our service hospitals were referred to that department from the psychiatric section. Many of these physicians were given special training in psychiatry. Most of them will continue in the field after seeking more adequate training. These men know what psychosomatic medicine means. They know the significance of early mental symptoms. They are tuned in, as it were, for continued interest and a useful career in caring for emotionally disturbed people.

The social dislocations which accompany war have focused the attention of the press and radio on the resulting psychiatric problem. The nation is aware of the existence of psychiatry and what it means as never before. Psychiatry has touched the lives directly or in-

directly of more of our citizens than ever before.

The time is at hand for stabilizing these advances and taking advantage of this recognition, so that the nation as a whole can benefit from better mental health through prevention of mental illness and more adequate care for those suffering from abnormal mental conditions. Those of us whose duty it is to administer to the sick in our offices, clinics and hospitals, must see to it that no citizen suffering from mental illness lacks proper professional direction and hospital care. The increasing number of people in this country recognized as needing care for emotional disturbances is too great to hope for their adequate care in existing state and federal institutions and private sanatoria, including all the proposed additional beds to be made available in the near future.

It has been estimated that 35 to 65 per cent of the problems presenting themselves to the average general practitioner requires psychiatric understanding. Strecker<sup>1</sup> has stated that 75 per cent of the clientele of the general practitioner during the first ten years of his professional life consists of the neuroses, organic disturbances complicated by neurotic conditions, psychopathological complications of chronic organic disease, the mental aspect of convalescence, and partial or complete psychopathological problems in children.

Rees and Billings<sup>2</sup> determined that in the state of Colorado alone there were from three thousand to nine thousand patients annually admitted to general hospitals, the majority of whom were admitted with physical diagnosis and were not known to be psychiatric patients at the time of admission. Heldt,<sup>3</sup> a pioneer in general hospital care of psychiatric patients estimates that, "From 12 to 20 per cent of all patients admitted to a general hospital will be found to present conditions and problems that are primarily neuropsychiatric regardless of the patient's complaint or the diagnostic impression on first contact. If mention be made, as well, of all cases showing secondary and minor disturbances of nervous organization the percentage promptly rises to 30 per cent and higher."

Ebaugh<sup>4</sup> states that very few general hospitals have provisions to care for the mental patients, and "those that do not have the facilities will not let you bring a nervous and mental patient into them—if they know it. In spite of this attitude every hospital admits psychiatric patients without knowing it and they are usually treated without any consideration for the psychiatric issues."

"No doubt exists at the present time as to the urgent need for the provision in general hospitals of early treatment facilities for psychiatric patients. In every community and every county and state in the nation, there are hundreds and thousands of these individuals seeking care, ready and willing to pay for it and not finding hospital or medical facilities provided."

With the advent of shock therapy for mental diseases, first insulin, then metrazol, and later electroshock, the

Read before the annual meeting of the Midwest Hospital Association, Kansas City, Mo., April 25, 1946.

therapeutic armamentarium of psychiatric care has risen to a plane of usefulness and practicability on a level with that of general medicine and surgery. With proper selection of patients and therapy, the period of hospital care required to bring about cure or improvement sufficient to allow the patient to return home has been greatly shortened. In fact, in many instances less hospital care is required for acute mental states than for many medical and surgical patients with as great or greater expectation for returning to their homes and living a useful life. The expense of the former long period of extended hospital care has been reduced so greatly as to bring private hospital mental care well within the pocketbook of many families who formerly could not have provided such care.

In addition to providing treatment for those cases admitted to the hospital with a known mental illness, a special psychiatric department offers an additional service to every other department in the hospital. From day to day in any general hospital there are many cases developing mental disturbances that either were not recognized at the time of entry or developed later as a complication of a medical, surgical, or obstetrical condition. Severe febrile states, particularly in elderly people, frequently are accompanied by acute mental upsets requiring protection and special care. Acute postoperative and postpuerperal mental states are too well known to elaborate on. These are best taken care of in a special department and at much less expense to the family. Eye cases requiring several days of postoperative darkness are prone to become readily upset mentally. Acute traumatic cases, especially head injuries, frequently have more or less prolonged periods of confusion, excitement, and delirium. These cases cannot safely be given sufficient sedation to keep them quiet and under control and can be best cared for, if not actually in a special department, at least by a staff of nurses who know how to use hydrotherapy and other nonhypnotic means of controlling a clouded brain. If for no other reason than practicability, general hospitals of the country must prepare to take care of psychiatric patients.

One of the greatest drawbacks to the understanding and provision of adequate care for mental illness has been the still existent bug-bear that to be mentally ill puts a stigma upon the patient and his family. There is nothing that will tear down this belief more quickly or more surely than to have people become better acquainted with mental illness. This can be done by having each community educated through their local general hospitals. To have mentally ill patients whisked away to some distant hospital, away from their homes and families only augments the idea that they in some way must be to blame for allowing themselves to become mentally ill, thus bringing disgrace to their families. Removal to the friendly atmosphere of a general hospital in their own home community not only has a beneficial influence on the welfare of the patient, but is much less disturbing to his family as well.

Marked advances have been made especially in the last decade in the recognition of the part that emotional disturbances play in the development of physical illness, and/or in the delay of their recovery. Many excellent

articles, monographs, and texts have been written on the subject of psychosomatic medicine. Much stress is being laid on the teaching of psychiatry and related conditions in our medical schools. The development of special psychiatric departments in general hospitals throughout the country will furnish a medium of training for hundreds of young doctors who otherwise could not possibly gain adequate insight and understanding of borderline and frank mental illnesses. Such a department must be an integral part of the hospital. It must not be considered something apart from the hospital as a whole. The attending staff in the psychiatric department must accept the opportunity to teach both resident and general medical and surgical staff at every opportunity, otherwise they will not be fulfilling their duty toward the advancement of psychiatry and the raising of the standards of psychiatric care in their community.

A special psychiatric section should be open to all staff members for admission of their patients, but consultations with trained psychiatrists should be the rule. Treatment procedures should be under the direction of qualified psychiatrists only. Unless this is done the department will be most difficult to run efficiently and many patients will be given inappropriate or inadequate treatment; incorrect diagnoses will be made and the department will not accomplish its true purpose, which is correct diagnosis and proper treatment. By closely aligning the activities of such a department with the rest of the hospital much interest can be aroused on the part of non-psychiatrists, and mutual benefit will result.

The presence of special psychiatric departments in general hospitals makes for better care for many patients in whom complicating physical diseases may be present. The first requisite of adequate care for a mentally ill patient is a thorough physical examination. With competent internists, surgeons, and others always available as consultants, the psychiatrist can make certain that he is not overlooking a contributing or causal physical factor in the production of the mental illness. Complete laboratory facilities also add to the ease with which a mental patient can be carefully studied. General hospitals having approved internships and residencies lessen the load of work required on the part of the psychiatrists, allowing more time for personal interviewing and personal application to the problems at hand.

Ebaugh<sup>4</sup> points out that "instead of being merely a specialty, psychiatry must be looked on as a fundamental of general medical practice, assuming a place along the side of anatomy, physiology, pathology and therapy on the one hand, and representing a major clinical division of medicine on the other. Psychiatry is that phase of medicine which deals with the therapy of the person. Behavior reactions on the part of a person are not necessarily wholly in nature of ideas, emotions or moods, but very often include important somatic physiological and even organic aspects which can be understood in terms of a physical approach."

Adequate psychiatric training and experience cannot be obtained in medical school days alone. The hope of the future lies in having every physician recognize the part that emotions play in the development of somatic



disease, and being ready to recognize incipient mental disturbances and accept the responsibility of providing prompt and adequate treatment. Without psychiatric departments in general hospitals with available psychiatric consultants this cannot be achieved.

Every experienced psychiatrist knows too well the difficulty encountered in attempting to care for a psychiatric patient in a general hospital that does not have the necessary facilities to care for such a patient. From the administrative heads, the nursing staff, and even from an unsympathetic, misunderstanding medical staff, psychiatrists in such a general hospital are exposed to lifted eyebrows, signs of irritation and other evidences of being a culprit in attempting to care for a mentally ill patient outside of an asylum. The slightest commotion, inconvenience, or noise caused by a patient practically calls for a general court-martial, although there may be many times as much noise and commotion from the nursery, obstetrical, or surgical floors. The family of the unfortunate patient is beseeched to remove him elsewhere though they may be loath to do so. Or else they must provide round-the-clock special nursing which they may be unable to do without great financial hardship. On the contrary, any psychiatrist who has had experience in treating mental patients in a special department of a general hospital can testify to the feeling of complete acceptance of such a patient on the part of the administrative, nursing, and medical staff.

As one who has witnessed the evolution and growth of a special department for the treatment of mental patients in a general hospital, let me relate some of my experiences.

For many years, the administrative heads of St. Mary's Hospital, Duluth, Minnesota, the Sisters of St. Benedict, recognized the need of supplying better community service by opening their doors to those who were mentally ill. These patients were treated and observed for varying periods of time. Some remained only a short time until further provision could be made for them. Others quickly adjusted to general hospital care and remained until recovery was complete. There was, however, a feeling of inadequate protection, insufficient trained nursing supervision, and a lack of acceptance on the part of many. In 1934, plans were afoot for some alterations and improvements in a first floor wing in this hospital. Because of an already favorable attitude, it took little urging on the part of the writer to have this wing set aside for a psychiatric section. Accordingly, with little structural change needed, eleven private rooms were made available with protected windows, completely closed off from the rest of the hospital. Later a recreational sitting room was provided by combining an adjoining clothes room and an unused elevator area which had for many years been waste space. Shortly thereafter a continuous tub room was added. In addition to the closed section there are many other rooms on an adjoining first floor wing that are used freely for the psychiatric patients who do not need the protection of a guarded department, but who nevertheless do need special psychiatric care. The total number of available beds fluctuates somewhat, but the daily average number

of strictly psychiatric patients in this hospital is close to fifty. These patients are primarily acute cases requiring and receiving active psychiatric care. Cases of senility and other chronic, organic psychiatric or borderline mental cases requiring only custodial care are not placed in these beds if it can be possibly avoided. These beds are reserved for psychiatric cases requiring active care. In the present time of crowded hospital conditions there is always a waiting list.

This department is not ideal by any means as yet. Many needed improvements, such as type of window screens, recessed heating, etc., have not been installed because of an impending building program which calls for a completely modern psychiatric division. Nevertheless, in spite of the lack of some of the niceties of modern architectural refinement and conveniences, the department has done yeoman service. It has served the community in such a fashion as to allow this hospital to hold its head a little higher and deserve the name of being truly a general hospital, for how can a hospital be considered a general hospital when it excludes certain types of patients? This department has steadily increased in usefulness. In 1945 the department cared for three times as many patients as it did in 1935. The number of consultations requested of the psychiatrists in attendance has increased in the same ratio. The department is thoroughly accepted as a necessary and useful addition to the general service which the hospital offers the community. This special section has furnished teaching material for interns, residents, and nurses. It has quickened the interest of the general staff to no little degree. It has taken its rightful place in producing enlightening and instructive case study material for monthly staff meetings. But what is more important, it has cared for mentally ill people at a time favorable for their recovery. It has done so at a minimum of expense to their families who have been close enough at hand to feel that they have contributed something more than money to the recovery of their loved ones. These families have a better understanding, less emotional reaction, and greater acceptance of the experience because a general hospital which takes care of the physically sick was willing and prepared to administer to the mentally sick as well.

#### SUMMARY

I can summarize this paper most fittingly by again quoting from Dr. Ebaugh,<sup>1</sup> "The establishment of psychiatric facilities in a general hospital brings substantial benefits to the hospital, the community, the patient, and the medical profession. The hospital gains economically, becomes truly general, raises the level of medical practice within its walls, improves relationships with the community, saves money for everyone concerned, and becomes capable of competently discharging important educational responsibility to nurses, medical students, interns, and residents. The community gains through the acquisition of local complete medical and hospital facilities, by saving money in transportation, hospital bills, social maladjustments, and the expense of unnecessary chronicity through the availability of early treatment facilities not otherwise available and through the opportunity to

learn a constructive mental hygiene through teaching and practical demonstration. The patient gains through the opportunity of receiving complete early care easily accessible to his home with no stigma attached, and is saved from incomplete approaches with long periods of observation and diagnostic study because effective therapeutic help is available at home. The medical profession is offered the advantage of a stimulating bilateral consultation arrangement, acquires a broader concept of medicine and therapy, including psychotherapy, combats the need for irregular practitioners, acquires broader research facilities, and allows the private physician to retain and care for cases he would otherwise send away. Psychiatry is given an opportunity to demonstrate the value of early attention, methods of modern therapy,

and the application of constructive mental hygiene principles. Its unhealthy isolation is removed, and old ideas of 'insanity' are dissipated by the demonstration that its patients can be studied as objectively, efficiently, and scientifically as those in any other branch of medicine."

#### BIBLIOGRAPHY

1. Strecker, E. A.: Psychiatric Education. Paper read before the International Congress on Mental Hygiene. *Ment. Hyg.*, 14:797-812.
2. Rees, M., and Billings, E. G.: Care of the Neurotic Patient in a General Hospital. *Hospitals*, 11:21 (Aug.), 1937.
3. Heldt, Thos. J.: The Mental Hygiene Viewpoint in the General Hospital. *Ment. Hyg.*, 17:208-217 (April), 1933.
4. Ebaugh, Franklin G.: The Care of the Psychiatric Patient in General Hospitals. American Hospital Association, Chicago, 1940.

## Book Reviews

**Surgical Treatment of the Nervous System**, by F. W. BANCROFT, M.D., and C. PILCHER, M.D. Philadelphia: J. B. Lippincott Co., 1946, 534 pages, illustrated. \$18.00.

This volume comprises the first attempt of presenting a survey of the advances in the surgical treatment of the nervous system. The book is beautifully written and well illustrated. Each of the chapters is handled by a different author who has approached his subject in his own way. This naturally makes for considerable variation in style and in approach to the subject. In spite of this large group of contributors all the sections are brief, concise, well written and make for excellent reading.

Probably the greatest single weakness in this work is the fact that many of the authors have covered their subjects from an individual standpoint and have not included a comprehensive review of the entire field so as to allow this volume to be used as an adequate reference book in neurosurgery. One notices also that certain types of neurosurgery have been omitted, such as techniques and procedures in psycho-surgery.

Special attention might be called to certain chapters in this volume which are extremely outstanding. The section by Peet and Echols on surgical disorders of the cranial nerves is one of the best in the book. This particular chapter clearly covers the entire field in a simplified, comprehensive but still detailed manner. One can highly recommend this chapter as one of the finest written on this subject. Another excellent chapter has been written by White on surgery of the sympathetic nervous system.

In general, one might say that this volume can be highly recommended for the use of the undergraduate or even the post-graduate student in neurosurgery. It certainly does not seem to be comprehensive enough to take the place of a reference book in this field. A. B. B.

**Psychotherapy in General Medicine**, by GEDDES SMITH, Associate, The Commonwealth Fund, New York, 1946. Available in quantity for free distribution by medical schools, medical societies, and public agencies. Single copies, twenty-five cents.

Presented in this report are the results of an experimental postgraduate course on Psychotherapy in General Practice at the Center for Continuation Study of the University of Minnesota. This course was attended by twenty-five physicians during the first two weeks of April, 1946, and was sponsored jointly by the Commonwealth Fund and the Division of Postgraduate Education of the University of Minnesota.

Lectures and general seminars included: General Orientation, Patient-Physician Relationship, Normal Personality Development, Meaning of a Psychoneurosis, Diagnosis of a Psycho-

neurosis, Anxiety, General Principles of Psychotherapy, Special Therapies, Common Psychopathology, Sex Education and Marriage Counseling, Care of Veterans, Physiological Functioning as Affected by Emotions, and case presentations.

In this report the author has outlined the course and described it from every angle, including comments by the participants. The general consensus is that the experiment was a success and a rewarding experience for both students and instructors.

**Toward Mental Health**, by GEORGE THORMAN. Public Affairs Pamphlet No. 120, prepared in cooperation with the National Mental Health Foundation. New York, 1946. 32 pages. 10 cents.

A program of popular mass education on mental health has been launched by the Public Affairs Committee, Inc., of New York and the National Mental Health Foundation of Philadelphia, a non-profit educational organization. The campaign is designed to educate the American public to a sound and sympathetic approach toward mental illness, and to aid in its early recognition and treatment.

The pamphlet discusses fears, nervous indigestion, moodiness, and other emotional sicknesses in everyday terms. The personalized facts in the pamphlet summarize valuable wartime research and have been checked by a panel of leading mental health authorities. The summary advocates a three-point action program: (1) Help by acquainting yourself with the truth about mental illness—how it develops, how it is treated, and how it can be prevented. (2) Join with others in the fight against nervous and mental disorders by supporting those organizations that are working for the improvement of mental institutions, pressing for enlightened legislation, and helping to establish centers for prevention, treatment, and research. (3) See to it that your community provides facilities for prevention and early treatment. Good hospitals and clinics come only when an enlightened citizenry sees the need for them and is willing to spend the money it takes to operate them.

#### SUBSCRIPTION RATE CHANGE

Effective with the January 1947 issue, the beginning of the 77th year of this journal's publication, the subscription rate will be advanced to \$3 per year. This is made necessary by increased costs of paper and printing. During the last fifteen years the publication has grown from a 48-page journal to one running from 80 to 102 pages each issue. Six to ten professional papers per issue, written by authorities—against four or five in an earlier day—provide readers with a variety and high quality of content. The editorials are noted for the maturity and soundness of their views.

New subscribers remitting before December 31, 1946, and current subscribers renewing may enjoy the \$2 rate through 1947. To others the rate will be \$3.



# Huntington's Chorea in Relation to the Heredity of Personality Disorders

Burtrum C. Schiele, M.D.\*

Minneapolis, Minnesota

HUNTINGTON'S chorea has created interest far out of proportion to its numerical importance. Such interest stems largely from the fact that the disorder is a relatively clear-cut clinical entity and that it has certain hereditary characteristics which make it a promising field for the study of human genetics. It is the only psychotic state which is clearly hereditary and which may at times present the clinical picture of a "functional" psychosis.

Huntington,<sup>1,2</sup> and most of those who followed him, have listed the classical characteristics of the disease as: (1) Onset in middle or late life; (2) a characteristic chorea; (3) dementia; (4) progressive course; (5) hereditary nature.

While these statements are accurate in the main, further study has necessitated their modification and has revealed important additional facts. The essential characteristics as they are understood today will be briefly described with special emphasis on certain points which are either of special importance or about which there is conflicting opinion or widespread misconception.

## AGE OF ONSET

Insidious development makes it difficult to determine the exact time of onset. However, this is usually taken to mean the age at which the disorder becomes frankly manifest.

The classical statement that most cases become apparent at or after age 35 is only partly true. Statistics on several large series of cases<sup>3</sup> indicate that one fourth begin before the age of 30 and one tenth begin before the age of 20. Although the vast majority have their onset between the ages of 25 and 50, apparently authentic cases have been reported with the onset as early as 4 and as late as 70.

## THE CHOREA

The characteristic chorea is usually easily distinguished from Sydenham's chorea in that it is coarse, and involves the trunk and large joints bilaterally. The abnormal movements either develop gradually out of a general restlessness and clumsiness or may appear first localized in the hands, face, head, or some other region. In severe cases the chorea progresses to involve virtually all the voluntary musculature of the body, swallowing becomes difficult and speech unintelligible.

As with most tremors, the movements are made worse when attention is focused upon them and they disappear during sleep. They do not respond to drugs. Aside from the abnormal movements there are no positive neurologic or physical findings. Motor power is good. Extensive laboratory studies have been negative.<sup>4</sup>

## THE PERSONALITY DISORDER

Very little is known regarding the nature of the per-

psychotic or pre-choreic personality. Evidently many are good-natured, even-tempered, ambitious, successful, "normal" people before the onset of the symptoms. Others are characterized as "always" having been unstable and temperamental. It would be of importance to establish clearly the characteristics of the pre-psychotic make-up of choreic individuals, but this is difficult for many reasons including the fact the prodromal symptoms of the personality disorder grow insidiously out of the basic personality traits and are difficult to distinguish from the latter. The first evidences of the personality disorder are usually nervousness, restlessness, discontentment, and emotional instability.

The established personality disorder may vary greatly from case to case. The following rough groups may be distinguished:

(a) Mild personality changes with slow, if any, progression. Intellectual loss is slight, and interest declines, but the patient is not grossly deviant. Such cases usually can get along well outside of an institution.

(b) Cases in which the personality disorder resembles the "functional" psychoses. The clinical picture, at least for some time, does not show evidence of the organic pattern; that is the memory, orientation, and intellect are intact. Instead the clinical picture may show predominant mood changes—manic excitement, depression with self-depreciation, guilt feelings and suicide; or it may show paranoid delusions, hallucinations, and queer behavior. Such a picture may continue for years before the sensorium defects become evident. Needless to say, many of these patients are mistakenly diagnosed as having schizophrenia or manic-depressive psychosis.

(c) The dementing type. This variety shows early development of memory defects, dullness, narrowing of comprehension, and poor judgment. The habits deteriorate, subtly at first; the subjects become careless in dress and work. Inhibitions are released, leading to disregard for social convention. Irritability is usually marked, violent emotional outbursts are common, as are instances of assaultiveness.

It is evident that there are no definitely distinguishing features to the mental picture of Huntington's chorea. The symptoms of an organic type of psychosis, especially the memory defects and intellectual dulling, eventually appear in most cases. For many years, however, a patient may present a clinical picture which is not readily distinguished from one of the functional psychoses, or in the case of milder choreics from the psychoneuroses or psychopathic personalities.

Diagnosis presents no difficulties in the fully developed case, especially if there is a positive family history. Very rarely a toxic or degenerative disease of the brain (such as senility) may cause abnormal involuntary movements

\*Department of Psychiatry, University of Minnesota.

suggesting this type of chorea. The most common and by far the most important diagnostic problem, however, concerns the patients who develop the personality disorders before the onset of the chorea.

The chorea is recognized before, or simultaneously with, the psychosis in about 75 per cent of the cases. It may exist for many years before gross mental changes appear. In approximately 25 per cent of the cases, the personality disturbance appears first, commonly preceding the chorea by four to six years, although an extreme of nineteen years has been recorded. In exceptional cases the chorea may be very slight, and it is not unusual for the chorea and the psychosis to differ in severity in the individual case.

#### COURSE AND TERMINATION

The progressive course which characterizes the majority was once thought to be the absolute rule. We now know that a fair number of choreics remain stationary for many years or at least progress very slowly. However, authentic cases of recovery are almost unknown. In other words the victims of the disease always die with it and usually from its effects; exhaustion, suicide, intercurrent infection, or cerebral vascular accidents are common causes of death.

The duration of the fully developed syndrome varies from one to fifty years in extreme cases. However, there is a remarkable tendency for a large proportion of cases to be of thirteen to sixteen years in duration regardless of the age of onset.

#### PATHOLOGY

The pathology<sup>5</sup> is characterized by extensive nerve cell deficiency and degeneration with proliferation of the fibrous neuroglial elements which result in gross brain atrophy with dilatation of the ventricles. These changes are most marked in the cerebral cortex, especially the frontal region, and in the corpus striatum. In the latter, involvement is primarily in the caudate nucleus and the putamen.

Although the above findings are generally accepted as typical for an advanced case, there is surprisingly little agreement as to details. One pathologist went so far as to state that the occurrence of organic changes in the brain is the only point upon which there is complete agreement.

As in many other diseases of the central nervous system the pathological findings correlate rather poorly with the clinical findings. Cases are reported in which the pathological findings are virtually identical but in which the clinical picture, duration, type of onset, and severity vary to the extreme.<sup>3,5,6</sup>

The abnormal involuntary movements are believed to be related to the structural changes in the basal ganglia while the personality and intellectual symptoms are determined in part by those changes in the cortex, especially the frontal region. In both instances it appears that the abnormal symptoms result, not so much from the cells which are damaged, as from the "uninhibited" action of the remaining structures.

#### HEREDITY

The inheritance of insanity has been a topic of great interest for generations. Little progress has been made

largely because of the complexity of the problem. Among the serious stumbling blocks is our lack of a satisfactory scientific classification of the psychoses. However, in Huntington's chorea we find a condition which is relatively well defined. It is easy to identify clinically since it is clearly distinguishable from other forms of personality and neurological aberration.

It is generally agreed that there is direct dominant transmission to the child from an affected parent of either sex.

Predictability is poorly understood beyond the facts: (a) that each child of a choreic parent has a one to one chance to develop the disease, (b) the ages of from 25 to 55 are those during which the disease is most likely to show itself. As he passes the age of 55, an individual from an afflicted family can have increasing assurance that he is not likely to develop the disease. If he does not develop it, he need not fear that his children will have it.

In 1872, Huntington wrote "Unstable and whimsical as the disease may be in other respects, in this it is firm, it never skips a generation to again manifest itself in another; once having yielded its claims, it never regains them." This is essentially true today. However, a parent may die before the disease becomes manifest—but after he has transmitted the condition to his son. Most cases of "skipped generation" are of this type. Sporadic cases due to mutations or "sports" are believed to be rare but they can occur. Such cases may be transmitted to succeeding generations. The detection of a positive family history is often more difficult than many physicians apparently realize. There are many reasons why the history may be falsely negative:

(1) The patient may be an illegitimate offspring of a choreic parent. This is a fairly likely occurrence since Huntington's chorea is often characterized by immoral and lascivious behavior.

(2) The parent may die before the condition develops but after it has been transmitted to his children.

(3) For these or other reasons he may not know of his parent's condition.

(4) Patients and families, perhaps for shame, family pride, or other reasons, may deny the family history.

#### POSSIBLE GENETIC SIGNIFICANCE OF BIOTYPES AND OTHER VARIATIONS

While Huntington's chorea as a disease has many variations, these are not so marked among the individuals within a kinship. In other words, certain families have a unique trait or combination of traits which tend to reappear in all the choreics of that kinship. For example, one family may be characterized by an early age of onset, rapid progression, and marked severity of the symptoms. Another may be characterized by slow progression and mild personality disorders, or by the onset of the tremors in some special location as in the case of the family known as the "head noddors."<sup>7</sup>

The occurrence and transmission of these various family differences enable us to recognize sub-varieties or biotypes.

These biotypes have been a source of considerable interest to geneticists in that certain elements of the dis-



order may be inherited without the transmission of the rest of the disease picture. Thus, it seems probable that the separate transmission of the hereditary potentials leading to the chorea and to the psychosis is possible. Such variations may be the result of "hybridization of the biotype with diluted and untrue clinical expression."<sup>7</sup> Certainly, any single hereditary potential can be expressed differently in different individuals or families.<sup>8</sup> Such considerations may give us clues as to the manner in which hereditary potentials may appear among the etiological factors in certain cases of schizophrenia, psychopathic personality, and other types of personality disorders.

The hereditary aspects of the functional psychosis are poorly understood largely because of the complexity of the problem. Certainly, we do not have a working understanding on which there is any common agreement. Unfortunately, hereditary considerations are often either overvaluated or largely ignored. By comparison with many of the psychoses, Huntington's chorea is a relatively clear-cut condition concerning which there are fairly definite rules. Even here there are other factors of etiological significance. Although the hereditary factor appears to be of overwhelming importance, it is not the sole predeterminer in the symptomatology of this condition. The mental content and many of the behavior aberrations, for example, must be related to the life experiences and other environmental influences.

The belief is widespread<sup>3,9</sup> that choreic families also contain a large number of non-choreic members who are psychotic, emotionally unstable, epileptic, psychopathic, or otherwise defective. Although this is apparently true of many families, there are others in which there are a large number distinguished by economic, professional, or political attainments. Unfortunately, no good study on non-choreics in the affected families has been made which would settle this question. Even if a significantly high number of deviant non-choreic individuals can be shown to exist in these families, the psychogenic and social aspects of the genesis of their deviations must also be considered.

The psychogenic importance of the fear of chorea itself must be considerable in the case of non-choreic siblings. Likewise, psychologically traumatic situations are frequent in a family in which a parent is afflicted by this unfortunate disease.

#### EUGENIC CONSIDERATIONS

The marriage rate and the fertility are both high. In one sample<sup>10</sup> there were only 35 single as compared to 218 married choreics. The average choreic family probably has about five children.

The perversity of the human race in the face of such dangers is well known. Many cases are cited in which it has been impossible to dissuade normal people from marrying potential choreics, e.g.: one farmer, whose wife had died of the disorder, married her sister and she too developed the disease.<sup>7</sup> In other words, even if predictability were possible, the problem would not be solved.

However, one of the first steps forward toward the control of this disorder should be an attempt to discover criteria which will indicate or at least give clues as to

which members of a sibship will develop the disease. As far as is known to the author, no work has been done on this. The periodic examination of every member of several sibships by modern methods may well provide the desired criteria. In addition to routine history, medical, neurological, and psychiatric examinations, the studies should include electroencephalography and a battery of standardized tests. The latter might well consist of (a) a group of general personality tests like the Minnesota Multiphasic Personality Inventory and the Rorschach test; (b) psychometric tests of coordination, motor control, and steadiness; (c) tests for intelligence and for intellectual changes associated with brain damage.

It seems unlikely that effective treatment can be found though cortical extirpation,<sup>11</sup> vitamin E and fever therapy are among the treatments being considered. Eugenic control may be possible at some future date through the combined efforts of several disciplines such as medicine, sociology, and genetics.

#### OCURRENCE

The first cases of Huntington's chorea are believed to have migrated to the United States from England in 1636.<sup>12</sup> At one time almost all of the choreics were to be found in the New York-New England area though subsequently lesser centers have been described in Michigan, Iowa, and other parts of the country. There is no real evidence that the disease is dying out as some writers have claimed. On the contrary, it probably is slowly increasing.

In 1916 it was possible for Davenport<sup>6</sup> to collect the records on 962 choreics in this country. It is estimated that mental institutions have one or two choreics for every one thousand patients, and that there are about four times that many at home. The sexes are about equally divided, and it occurs most commonly in the Caucasian race.

No complete data are available regarding the occurrence of the condition in Minnesota. The mental hospitals of the state, with a patient population of approximately 12,000, usually have between 40 and 50 recognized cases at any one time. At present there is no way of knowing how many non-institutionalized cases there are in Minnesota, but it is reasonable to suppose there are between 150 and 200. It is likely there will be many more cases in the future. By way of illustration, one Minnesota sibship from the Z kinship, previously reported by the author,<sup>13</sup> had a total of 36 living offspring in 1943. All of these are living in Minnesota; and though the majority are too young as yet, many will develop the disease.

#### SUMMARY

1. The clinical features of Huntington's chorea have been presented with adequate emphasis on the variation and biotypes.

2. The hereditary characteristics of Huntington's chorea make it a promising field for the study of human genetics. The hereditary transmissions of specific biotypes and of unique individual traits suggest that further hybridization and transmutation may result in hereditary potentials which have an important role in the production of other personality disturbances such as the functional psychoses and certain non-psychotic behavior aberrations.

3. There is no effective treatment, but prevention may be possible. An important first step in such control will be the establishment of criteria by which it will be possible to predict which members of a sibship will develop the disease. The periodic study of several sibships by a battery of modern tests and examinations should provide the desired criteria.

#### BIBLIOGRAPHY

1. Huntington, George: On Choreia. *Med. and Surg. Repr.*, Philadelphia, 26:317 (April), 1872.
2. Neurographs, I:1908 (Huntington's Choreia Number).

3. Bell, Julia: Huntington's Chorea. *Treasury of Human Inheritance*, 4:1934.
4. Falstein, E. I., and Stone, T. T.: Laboratory Studies in Huntington's Chorea. *Ill. Med. J.*, 77:47-49, 1940.
5. Stone, T. T., and Falstein, E. I.: The Pathology of Huntington's Chorea. *J. of Nerv. and Ment. Dis.*, 88:602-626, 773-797, 1938.
6. Wilson, S. A. K., and Bruce, A. N.: *Neurology*, 844-857. Williams and Wilkins, Baltimore, 1940.
7. Davenport, Charles B., and Muncey, Elizabeth: Huntington's Chorea in Relation to Heredity and Eugenics. *Am. J. of Insan.*, 23:195-222, 1916.
8. Oliver, C. P.: Personal communication.

9. Hughes, Estella M.: The Social Signs of Huntington's Chorea. *Am. J. of Psychiat.*, 4:536-574, 1923.
10. Popenoe, Paul, and Brousseau, Kate: Huntington's Chorea. *J. of Heredity*, 21:113-118 (March), 1930.
11. Kepner, R. D., and Cloward, R. B.: Psychosis with Huntington's Chorea. *Dis. Nerv. Sys.*, 3:326, 1942.
12. Vessie, P. R.: On the Transmission of Huntington's Chorea for 300 Years. *J. of Nerv. and Ment. Dis.*, 76:553-573, 1932.
13. Oliver, C. P., and Schiele, B. C.: A Family History of Huntington's Chorea Made Possible by the Recording of Surnames. *The Dight Institute Bulletin*, No. 3, 1945, Univ. of Minn. Press, Minneapolis.

## MEET OUR CONTRIBUTORS

DR. DONALD HASTINGS, guest editor, is professor and head of the department of Psychiatry and Neurology, University of Minnesota, Minneapolis. Prior to his release from the Army, he was Chief Psychiatrist in the AAF. He was graduated from the University of Wisconsin in 1934, with B.A., M.A., and M.D. degrees. He was a Fellow in Psychiatry of the Rockefeller Foundation at the Pennsylvania Hospital for Nervous and Mental Diseases, Philadelphia, 1936-37, and at the Institute of Pennsylvania Hospital, 1937-38. He is a member of the Hennepin County Medical Society, Philadelphia County Medical Society, Philadelphia Psychiatric Society, and the American Psychiatric Association.

DR. J. ARTHUR MYERS is a well-known Minneapolis physician, and since 1914 has been on the staff of the Medical School of the University of Minnesota.

DR. EDWARD A. STRECKER, Philadelphia, has been practicing psychiatry for 25 years. He is a graduate of Jefferson Medical College, class of 1911, with degrees of A.B., A.M., M.D., Sc.D., Litt.D., LL.D. A few of his many activities in the field of psychiatry are as follows: former president of the American Psychiatric Association, former vice-president of the American Neurological Association, and one of the Thomas William Salmon lecturers. At present he is on the Commission of Six to administer the \$12,000,000 U.S.P.H.S. Bill for psychiatry and mental hygiene, a fellow of the American College of Physicians, and a member of the A.M.A., American Psychiatric Association, and the American Neurological Association.

DR. HANS H. REESE has been professor of neurology and psychiatry at the University of Wisconsin, Madison, since 1924. He is a graduate of the University of Kiel, Germany, and did graduate work at the University of Hamburg. He is a member of the A.M.A., American Neurological Association, College of Psychiatry, American Psychiatric Association, and the Wisconsin Medical Society. He was past president, and is now a member of the American Board of Neurology and Psychiatry, and the Office of Scientific Research, War Department.

DR. BERNARD J. ALPERS is professor of neurology, Jefferson Medical College, Philadelphia. He received his M.D. from Harvard University in 1923 and did graduate work at the University of Pennsylvania, 1926-29, Sc.D.(med.). He has practiced in Philadelphia for 16 years, and is a member of the A.M.A., American Neurological Association, and the American Psychiatric Association.

DR. ROY GRINKER is chief of the Psychiatric Service, Michael Reese hospital, Chicago. During the war he was awarded the Legion of Merit for his services as neuropsychiatrist on the staff of the Air Surgeon, Northwest African Air Forces. On returning to this country he was made Director of Professional Services and Psychiatry of the Don Ce-Sar Convalescent Hospital, St. Petersburg, Florida. He is co-author with J. P. Spiegel of *Men Under Stress* (Blakiston), one of the best books on psychiatry to come out of the war.

DR. HENRY W. WOLTMAN has been associated with the Mayo Clinic since 1917 and his specialty is neurology. He is a graduate of the University of Minnesota, class of 1913, with B.S., M.D., and Ph.D. degrees. He did graduate work in neuropsychiatry at the University of Minnesota. He is a mem-

ber of the A.M.A., American Neurological Society, American Psychiatric Association, Central Society for Clinical Research, Research Society in Nervous and Mental Diseases, Society of Biological Psychiatry, and the Minnesota Society of Neurology and Psychiatry.

DR. ALFRED W. ADSON has been with the Mayo Clinic since 1917. His specialty is neurologic surgery. He received his M.D. degree from the University of Pennsylvania in 1914, and also has B.S., M.A. and M.S. (surgery) degrees, with graduate work at the University of Minnesota. He is a member of the A.M.A., Minnesota State Medical Association, American College of Surgeons, Society of Neurological Surgeons, and the American Neurological Association.

DR. KENNETH H. ABBOTT is at present a Fellow in neurosurgery at the Mayo Foundation, Rochester. He received his M.D. from the College of Medical Evangelists, Loma-Linda, Los Angeles, California. He was a Captain in the AUS from 1943-45.

DR. DOUGLAS D. BOND is professor of psychiatry, Western Reserve University Medical School, Cleveland, Ohio. He was graduated from the University of Pennsylvania Medical School in 1938, M.D. degree. He was a teaching Fellow in Physiology at Harvard Medical School from 1941-42. During the war he was active in the field of psychiatry in the 8th Air Force. He is a member of the A.M.A., Ohio State Medical Society, and the American Psychiatric Association.

DR. ABE B. BAKER, Minneapolis, has been associated with the University of Minnesota medical school for 15 years, and specializes in neurology and neuropathology. He was graduated from this university in 1930 and holds the following degrees: B.A., B.S., M.D., M.S., and Ph.D. He is a member of the American Neurological Association, American Association of Neuropathologists, Central Neuropsychiatric Association, Minnesota Society of Neurology and Psychiatry, and is a Fellow in the A.M.A.

DR. DAVID DALY, who was graduated from the University of Minnesota in 1945, B.A., B.S., and M.D., now has a Fellowship at this university, and is specializing in neurology.

DR. JOHN E. SKOGLAND, Houston, Texas, is on the faculty of Baylor University College of Medicine. He was graduated from the University of Minnesota, M.B., 1935, M.D., 1937, M.S. (neuropsychiatry), 1937, Ph.D. (neuropsychiatry), 1940. He also did graduate work at Harvard University, 1940-41. He is a member of the Texas Neuropsychiatric Society.

DR. LAWRENCE R. GOWAN has been a neuropsychiatrist in Duluth, Minnesota, for 21 years. In 1922 he was graduated from the University of Minnesota, B.A., M.D., and M.S. (neuropsychiatry). At the time of his release from the USNR in July, 1945, he was Captain in the medical corps. He is a member of the Minnesota Society of Neurology and Psychiatry, Central Neuropsychiatric Association, and the American Psychiatric Association.

DR. BURTRUM C. SCHIELE is an associate professor of psychiatry at the University of Minnesota, and has been associated with the University of Minnesota Hospitals since 1937. He is a graduate of the Colorado University Medical School, class of 1931, A.B. and M.D., with graduate work at this university and at Cornell. He is a member of the Hennepin County Medical Society, American Psychiatric Association, Central Neuropsychiatric Association, and the Minnesota Neurologic and Psychiatric Association.



# The JOURNAL LANCET

Serves the *Medical Profession of*  
MINNESOTA, NORTH DAKOTA, SOUTH DAKOTA AND MONTANA

Official Journal of the American Student Health Assn., Great Northern Railway Surgeons' Assn., Minneapolis Academy of Medicine, Montana State Medical Assn., North Dakota Society of Obstetrics and Gynecology, North Dakota State Medical Assn., Northwestern Pediatric Society, Sioux Valley Medical Assn., South Dakota Public Health Assn., South Dakota State Medical Assn.

## ADVISORY COUNCIL

### North Dakota State Medical Assn.

Dr. A. E. Spear, *Pres.*  
Dr. Philip G. Arzt, *Pres.-Elect*  
Dr. L. W. Larson, *Secy.*  
Dr. W. W. Wood, *Treas.*

### North Dakota Society of Obstetrics and Gynecology

Dr. Paul Freise, *Pres.*  
Dr. G. Wilson Hunter, *Vice Pres.*  
Dr. F. A. DeCesare, *Secy.-Treas.*

### Minneapolis Academy of Medicine

Dr. Russell W. Morse, *Pres.*  
Dr. Paul F. Dwan, *Vice Pres.*  
Dr. J. C. Miller, *Secy.*  
Dr. Ragnvald S. Ylvisaker, *Treas.*  
Dr. Henry E. Hoffert, *Recorder*

### South Dakota State Medical Assn.

Dr. F. S. Howe, *Pres.*  
Dr. H. R. Brown, *Pres.-Elect*  
Dr. J. L. Calene, *Vice Pres.*  
Dr. Roland G. Mayer, *Secy.-Treas.*

### South Dakota Public Health Assn.

Dr. J. M. Butler, *Pres.*  
Dr. C. E. Sherwood, *Vice Pres.*  
Dr. Gilbert Cottam, *Secy.-Treas.*

### Sioux Valley Medical Assn.

Dr. D. S. Baughman, *Pres.*  
Dr. Will Donahoe, *Vice Pres.*  
Dr. R. H. McBride, *Secy.*  
Dr. Frank Winkler, *Treas.*

### Montana State Medical Assn.

Dr. M. A. Shillington, *Pres.*  
Dr. L. W. Allard, *Pres.-Elect*  
Dr. H. T. Caraway, *Secy.-Treas.*

### Northwestern Pediatric Society

Dr. G. B. Logan, *Pres.*  
Dr. Geo. Kimmel, *Vice Pres.*  
Dr. Northrop Beach, *Secy.-Treas.*

### Great Northern Railway Surgeons' Assn.

Dr. R. W. Taylor, *Pres.*  
Dr. R. C. Webb, *Secy.-Treas.*

### American Student Health Assn.

Dr. Ralph I. Canuteson, *Pres.*  
Dr. Laurence Chenoweth, *Vice Pres.*  
Dr. G. T. Blydenburgh, *Secy.-Treas.*

## BOARD OF EDITORS

DR. J. A. MYERS, *Chairman*

Dr. J. O. Arnson  
Dr. A. B. Baker  
Dr. D. S. Baughman  
Dr. Ruth E. Boynton  
Dr. Gilbert Cottam  
Dr. H. S. Diehl  
Dr. L. G. Dunlap  
Dr. Ralph V. Ellis  
Dr. W. A. Fansler

Dr. A. R. Foss  
Dr. James M. Hayes  
Dr. A. E. Hedback  
Dr. E. D. Hitchcock  
Dr. R. E. Jernstrom  
Dr. A. Karsted  
Dr. L. W. Larson  
Dr. W. H. Long  
Dr. O. J. Mabe

Dr. J. C. McKinley  
Dr. Irvine McQuarrie  
Dr. Henry E. Michelson  
Dr. C. H. Nelson  
Dr. N. J. Nessa  
Dr. Martin Nordland  
Dr. J. C. Ohlmacher  
Dr. K. A. Phelps  
Dr. C. E. Sherwood

Dr. M. A. Shillington  
Dr. J. C. Shirley  
Dr. E. Lee Shrader  
Dr. E. J. Simons  
Dr. J. H. Simons  
Dr. S. A. Slater  
Dr. W. P. Smith  
Dr. S. E. Sweitzer

Dr. W. H. Thompson  
Dr. E. L. Tuohy  
Dr. M. B. Visscher  
Dr. O. H. Wangensteen  
Dr. S. Marx White  
Dr. H. M. N. Wynne  
Dr. Thomas Ziskin,  
*Secretary*

LANCET PUBLISHING CO., *Publishers*, 84 South Tenth St., Minneapolis 2, Minnesota

MINNEAPOLIS, MINNESOTA, NOVEMBER, 1946

## NORTH CENTRAL STATES SOCIO-MEDIC PROBLEMS

It must be conceded that there is a persistent demand for a prepayment medical and hospital care-plan-provision by and for the public. This fact was recognized by the A.M.A. when at its last meeting it took the unprecedented step of instructing its committee on public relations and medical service to develop a national prepayment health program. This committee was also instructed to coordinate all existing plans and to stimulate the formation of new ones in areas where none exist at present. The Minnesota State Medical Association approved a prepayment medical-care-plan at its last meeting. Commercial companies writing insurance in the state of Wisconsin have agreed to write a standard policy approved by their association as to premium provisions and benefits, and this has become known as "The Wisconsin Plan." The committee on prepayment and insurance plans of the South Dakota State Medical Association deplored the fact that the necessary enabling act failed to pass the last session of the state legislature and under the circumstances expressed the feeling that for the pres-

ent their needs could best be served by a program similar to that in Wisconsin.

North Dakota has evidenced increasing interest in a prepayment plan. A request was submitted to Senator Murray, chairman of the committee on education and labor, for an opportunity to appear before the committee at a hearing on the Murray-Wagner-Dingell bill, but permission was denied. Dr. Hanna, in his presidential address at Bismarck, cited three important problems confronting the medical profession, which are: equitable distribution of physicians, of medical facilities, and of medical costs. The Cass County Medical Society already has a prepayment medical plan in conjunction with the Blue Cross group and any district medical society in North Dakota may join and participate in this venture. Montana was first denied, but later accorded, an invitation to appear before the committee hearing views on senate bill No. 1606. It was the impression of Dr. Cooney, president of the Montana State Medical Association, based upon the questions of Senator Donnell, that state organizations were much more representative of the profession than national organizations, which is quite understandable.

A. E. H.

## THE FUTURE OF PSYCHIATRY

Medicine, as do other professions, tends to travel in waves, each rising school of thought or theory holding sway for a shorter or longer period depending upon its fundamental soundness and usefulness, then falling away to be lost, or remaining as a part of the body of knowledge which constitutes either the science or practice of medicine. One of the fundamental pieces of the professional equipment of the physician always has been his relation to his patient. Since the turn of the century and with the introduction of precision instruments and scientific methodology into medical practice, the fundamental relation of the doctor and patient tended to be lost or forgotten. The doctor by virtue of his training came to look at his patient as a mass of pieces and parts, some of which had become fouled, and which required fixing if the symptoms were to be done away with. The patient thus came to be regarded as a "rheumatic heart" or an "acute appendix" but the fact that the patient was also a person, with the feelings of a person, often was overlooked. One of the most powerful agents in the physician's professional bag thus was discarded. Here and there various doctors intuitively discovered and used this old truth, but only two groups really practiced it throughout these past 50 years. One group was that of the general physicians whose daily contact with the patient and his family produced real regard of the patient as a person. The other group was that of the psychiatrists, who possessed few other therapeutic tools beyond that of the doctor-patient relationship with its intricate workings.

In the past few years, physicians generally are again returning to see the value of the examination of the patient as a person, and to recognize once again that the doctor-patient relationship may often have more therapeutic meaning than any or all medications. There are many reasons for this changing viewpoint. World War II exposed most of the younger physicians to the inescapable fact that many a sick soldier, without physical findings to explain the difficulty, was a sick person in the ordinary sense of the word; the war experiences also demonstrated to thousands of physicians (and not infrequently demonstrated it to the doctor in a very personal intimate manner) that emotional conflict and stress could produce physical symptoms of anxiety which were just as crippling as a gunshot wound. The war also demonstrated to the country as a whole the appalling numbers of American youth who were not fit to fight for their country because they were not sound mental or emotional specimens. The war also disclosed that many (40 per cent) of the soldiers and sailors who had to be discharged for medical disability, were discharged labelled with neuro-psychiatric diagnoses. Then, too, the mental hygiene movement and the teachings of the dynamic school of psychiatry had gradually filtered through all levels of medical practice. All physicians had noted

that many of their patients had physical complaints which they could not explain by the physical findings. It is reliably estimated that approximately one third of all the patients who consult doctors have no organic reasons for their complaints. Obviously then this group of patients, if they are to be handled by medical men, must receive treatment directed at something other than physical disease. Also it had become apparent that patients with actual organic disease might have psychological components which contributed either to the illness or to the problem of convalescence. Thus many factors have led to a recent awareness that emotional stress and conflict can produce illness.

What then are the general trends of psychiatry today and what seems to be the future of psychiatry? First of all, at the medical school level, the main trend is to devote the majority of the allotted teaching hours to psychoneuroses in general and to psychosomatic problems in particular. The old idea of exposing the medical student to the gross disorders of thinking and behavior (the psychoses or insanities) has now been almost completely dropped since it gives the student a perverted idea of the emotional problems of people and because he will never have much use for the knowledge in the general practice of medicine. The next few years will probably see the majority of medical schools teaching psychiatry to their students entirely in the medical outpatient department, instructing them in the handling of the patient as a whole.

By the same token of teaching the medical student the fundamentals of treating psychosomatic problems, the future of psychiatric practice will come to lie in the hands of the general practitioner and also of the internist to a somewhat lesser degree. With adequate medical school instruction, the average physician can handle 80 per cent or more of his psychosomatic and psychoneurotic patients. The formally trained psychiatrist will probably come to find his place as a teacher, as a researcher, and as a clinician who handles psychiatric problems which are beyond the scope of the general practitioner.

In general, then, psychiatry will demonstrate its growing maturity as a specialty by uniting itself firmly with the other clinical specialties and also with the basic sciences. Psychiatry will, in particular, come to have its fullest maturity by teaming with internal medicine. Psychiatry will gain much by this wedding. It will become more mindful of the scientific method and the evaluation of techniques and results. It will borrow the method of other disciplines to determine if they may apply toward the exploration of the psychiatric vastnesses which presently are largely uncharted. To the other specialties with which it allies itself, psychiatry will bring the oldest and the newest concept in medicine; the regard of the patient as a person; the regard of the person as a whole being.

DONALD W. HASTINGS, M.D.





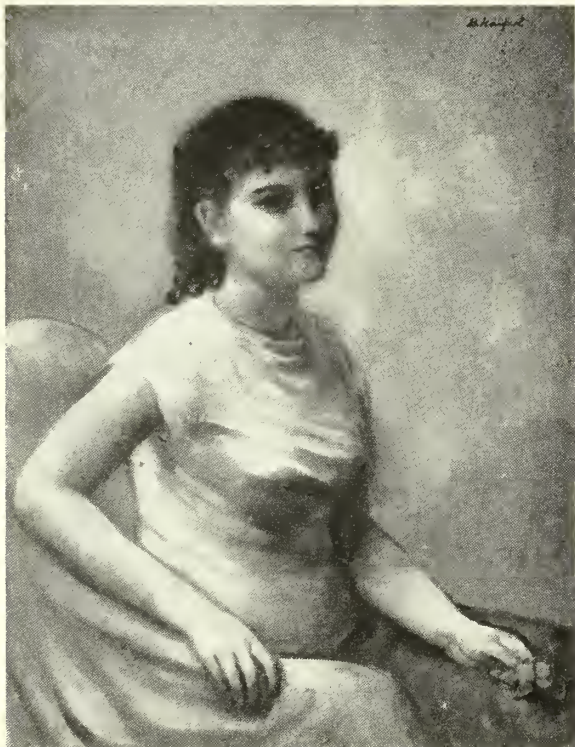
**S**yntropan has the desirable, antispasmodic actions of belladonna or atropine, but does not depress salivary secretion as actively nor induce mydriasis as readily. When used to induce mydriasis, its influence is not as profound nor as long in duration as that of atropine. The inhibitory action of Syntropan on the parasympathetic innervation of the heart is negligible and not as pronounced as that of atropine. Syntropan has a definite antispasmodic action on spastic smooth muscle, the antispasmodic influence being due jointly to inhibition of the parasympathetic innervation and to direct peripheral relaxing action on the muscle fibers themselves . . . HOFFMANN-LA ROCHE, INC., NUTLEY 10, NEW JERSEY

*Syntropan 'Roche'*—FOR THE RELIEF OF SMOOTH MUSCLE SPASM

## Advertisers' Announcements

### UPJOHN EMPLOYS FINE ART

"The Upjohn Company, which manufactures medical supplies at Kalamazoo, Michigan, has long made stimulating use of graphic art in its house organ, *Scope*, and in other publicity material.



Painting by Bernard Karfiol used to illustrate the Upjohn Company's health message: "And they thought she would always be paralyzed." Photo courtesy Midtown Galleries, New York.

In 1944, at the suggestion of the William Douglas McAdams advertising agency, it adopted paintings to illustrate a series of advertisements "Your Doctor Speaks." The company decides on the desired themes, then employs the Midtown Galleries, New York, to search exhibitions and studios for existing paintings suitable for use as illustrations. Selections to date include works by Waldo Pierce, Fletcher Martin, Bernard Karfiol and

other artists. Ten of the advertisements bearing color reproductions of paintings have been bound in portfolio form and distributed to 100,000 doctors for use in their waiting rooms. The original paintings organized into the Upjohn collection are now on tour.\*

The Upjohn procedure of purchasing existing paintings relieves the artist of all commercial pressure in creation of his work. Some of the examples selected, one of which is shown, are representative of better American paintings today. The pathological context results from using the paintings as illustrations to medical themes. A Fletcher Martin portrait is accompanied by the caption "Anemia?" The Karfiol figure-study shown was published under the caption, "And they thought she would always be paralyzed."†

An interplay between art and other activities of society makes for mutually beneficial integration,—something that has been sadly lacking in recent times. The Karfiol figure-study has been reproduced in color by the Upjohn Company in magazines having a combined circulation of 9,377,000. Eighteen additional paintings have been or will be reproduced in the series. The total number of reproductions of the paintings to appear in magazine advertisements is 100,242,000. In addition the Upjohn reprint portfolio, 100,000 copies, ten reproductions in each copy, makes another million color prints. Thus, this one company in this one advertising campaign is circulating well over 100,000,000 free color reproductions."—From the *Magazine of Art*, March, 1946.

### Parke-Davis Constructing New Antibiotic Laboratories

Construction of a new antibiotic laboratory has been started by Parke, Davis & Company in Detroit. The three-story building will be 496 feet long by 90 feet wide, with provision being made for the addition of a fourth floor when necessary. Erection of the building is expected to be completed in record time.

Special machinery designed by Parke-Davis engineers will be installed in the building. Processing equipment will be of special alloy type or glass-lined construction, and approximately 3500 horsepower in electrical apparatus will be required to drive air compressors, fermenter agitators, and refrigeration machinery.

The new laboratories will be devoted to research development and manufacture in the vast field of antibiotics, which includes such drugs as streptomycin and penicillin.

### ESTINYL COUNCIL ACCEPTED

Estinyl, Schering's ethinyl estradiol, the most potent oral estrogen known today, has been accepted by the A.M.A. Council on Pharmacy and Chemistry. Estinyl is marketed by Schering Corporation of Bloomfield and Union, New Jersey, manufacturers of endocrine and other important pharmaceuticals for the medical profession. With dosages being measured in hundredths of a milligram, this uniform potency results in economy to the patient. Estinyl has been proven of great value clinically in estrogenic deficiencies in the female, as in post-menopausal states. It is also used in the male to palliate the symptoms of metastatic prostatic carcinoma. Estinyl is supplied in tablet form, in 0.05 mg. or 0.02 mg. strengths, in bottles of 100, 250, and 1,000 tablets.

\*Mentioned in this column of the April issue.

†A full page advertisement in a mid-September issue of LIFE carries the heading, "New hope for childless couples." This is illustrated by another painting by Karfiol, figures of a man and a woman. It is the sixteenth of a series.

WHERE ELSE CAN YOU  
GET ALL THIS



But at  
BENSON LABORATORIES?

PRESCRIPTION ANALYSIS      OPHTHALMIC DISPENSING  
LENS GRINDING      LENS TEMPERING  
CONTACT LENSES  
ORKON LENSES (*Corrected Curve*)  
COSMET EDGES (*Distinctive style and beauty*)  
HARDRx LENSES (*Toughened to resist breakage*)  
SOFT-LITE LENSES (*Neutral Light Absorption, the 4th Prescription Component*)

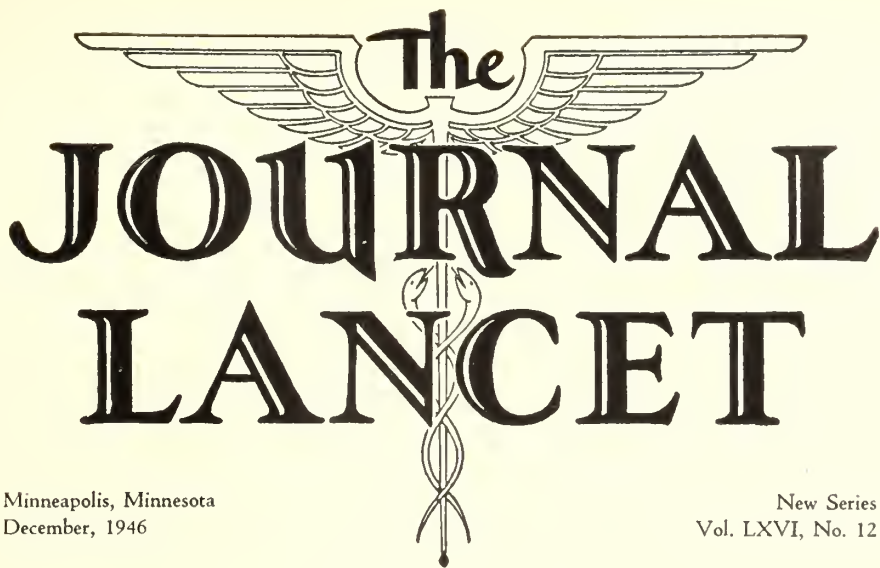
### N. P. BENSON OPTICAL COMPANY

Established 1913

MAIN OFFICE: MINNEAPOLIS, MINNESOTA

Aberdeen - Albert Lea - Beloit - Bismarck - Brainerd - Duluth - Eau Claire  
Huron - La Crosse - Rapid City - Rochester - Stevens Point - Wausau - Winona





# The JOURNAL LANCET

Minneapolis, Minnesota  
December, 1946

New Series  
Vol. LXVI, No. 12

## Plasma Proteins in Surgery: *A Review of the Literature*

R. O. Quello, M.D.  
Minneapolis, Minnesota

**S**LIGHTLY over 100 years ago a Dutch chemist named Mulder recognized a large group of important substances having similar general characteristics. These substances he called proteins, from the Greek word "proteios" meaning first or pre-eminent, since they seemed to be of such fundamental importance in body and plant function. The chemistry of proteins may be considered as starting when a French scientist named Braconnot prepared the amino acid glycine from gelatine in an attempt to determine whether acid decomposition of a protein behaved like starches, with the resultant formation of sugar.

These early studies, however, were on protein materials containing many other substances besides proteins, and it was not until about 1850 that a German investigator named Ritthausen was able to isolate plant proteins in relatively homogenous form. Thus a new field in chemistry was opened and many investigators, using the method of acid or alkaline hydrolysis, isolated the substances we now know as amino acids. However, all of these studies were studies in chemistry with no attempt at clinical application until about 1907, when an American biochemist, T. B. Osborne, explained that the various proteins had different nutritional values. He began breaking down protein molecules and comparing their constituent amino acids, with the conclusion that the difference in nutritional value was due to the difference in component amino acids. This prompted the study of comparing the various proteins as they affected the growth of experimental animals. Together with Mendell of Yale, Osborne noted that certain amino acids could be synthesized within the animal body, that other

amino acids could not and had to be supplied in food. Those amino acids necessary for growth but unable to be synthesized within the body they termed "essential" amino acids.

At about this time came the discovery of vitamins, causing sufficient excitement to nearly shelve further protein research, and it was not until 1935 with the work of W. C. Rose of Illinois, that all amino acids "essential" for growth of the rat were named. Cautious extension of experimental application to man is in progress, and would indicate the amino acid requirements of man are probably the same. This measure of human requirements has followed in a study of nitrogen balance, in which the quantity of excreted nitrogen is compared with that ingested by varying food mixtures. Normally, intake and output are about the same. An increase in nitrogen excretion above the calculated required intake would indicate an inadequate food mixture for body tissue maintenance. Accepting the probability of the amino acids "essential" for certain experimental animals as being also "essential" for man, these are: arginine, histidine, lysine, tryptophane, phenylalanine, methionine, threonine, leucine, isoleucine, and valine.

Proteins in their natural form are large complex molecules. All contain carbon, hydrogen, nitrogen and oxygen, most contain sulfur and some contain phosphorus. Other elements found are iron, iodine, copper, manganese, and zinc. Molecular weights are enormous and range from 900 for gramminic acid to 8,500,000,000 for psittacosis virus. The molecular weight of serum albumin is 70,000 and serum globulin 165,000.

Proteins are classified on the basis of physical properties, chiefly solubility, and not on chemical behavior because of the complexity of the molecule. They fall

Presented before the meeting of the staff of Swedish Hospital, Minneapolis, Minnesota, October 14, 1946.

into two main groups: (1) Simple proteins, those which on complete hydrolysis yield alpha amino acids. Examples of this group are albumins and globulins. (2) Conjugated proteins, or compounds of a protein with another molecule. Examples are nucleo proteins and phosphoproteins.

The chemical structure of proteins show they are compounds of many amino acids joined in peptide linkage, which is defined as the union of a carboxyl group to an amino group with the elimination of a molecule of water. Two amino acids so linked form a dipeptide, add a third and form a tripeptide. Further additions form a polypeptide, and so on to the formation of proteoses, then peptones and finally the complex protein molecule itself. In protein digestion within the intestinal tract, practically the reverse procedure occurs. The ingested large protein molecule through hydrolytic cleavage by enzymes secreted within the alimentary canal is broken down ultimately into their constituent amino acids. These are absorbed from the small intestine into the portal blood. It is at this point that the clinical significance of "forced" protein therapy enters into the picture because commercially prepared proteins are products at this stage of digestion. Given orally they are ready for absorption, or given parenterally they side-step absorption, either way permitting forced protein feeding in quantity above that possible in high protein diets.

These recent advances are partially the result of war research. In the early stages of the war, the demand for plasma by the armed forces was greater than the available shipping space. This need precipitated the use of the plasma protein fraction, serum albumin, in combating shock. Later, in the treatment of the debilitated inhabitants of concentration camps, the value of concentrated protein hydrolysates was overwhelmingly demonstrated.

Returning now to the fate of the amino acids or end product of protein digestion; these are absorbed practically unchanged from the intestine into the blood stream. From here they may be removed by all tissues of the body, accumulating in the cellular and extracellular fluids. From this temporary storage, tissue cells may remove certain of the acids as needed for the growth of new tissue. Twenty-five amino acids are now recognized from plant and animal proteins of which twenty-two have been identified as nutritionally important and ten as "essential".

Amino acids reaching the liver are somehow assorted, a part of them are re-manufactured to help build serum proteins. Amino acids not required for tissue building or repairs are deaminated or broken down by the liver with the formation of carbohydrate and non-protein nitrogen, the latter excreted chiefly in the urine. It is estimated that approximately one half of the deaminized amino acid molecules are converted to carbohydrate. This conversion to carbohydrate is increased at the expense of tissue building in the presence of a shortage of energy food. For this reason, for any condition where increased protein therapy is indicated general caloric intake should be increased simultaneously so that protein designed for may be utilized to maintain an adequate protein level.

Following the work of Sherman at Columbia University, approximately one gram of protein per kilogram of body weight is indicated as optimum intake for the normal adult, with increases to half again to twice as much in pregnancy, lactation, growth, and even more if indicated in certain pathological conditions.

In this paper we are concerned primarily with plasma proteins. These are of at least two distinct varieties; the albumins and globulins, with the latter further fractionated into fibrinogen, alpha, beta, and gamma globulins. Normal levels of serum proteins and the fractions albumin, globulin and fibrinogen expressed as per cent of plasma are: Serum proteins, 6.5-8.5 per cent; albumins, 4.0-5.0 per cent; globulins, 1.5-2.5 per cent; fibrinogen, 0.25-0.3 per cent.

The ratio of albumin to globulin in normal human plasma varies from 1.5:1 to 2.5:1, which ratio may vary in different pathological conditions, hence worthy of determination. Each of the fractions cited above have specific physiological functions, as for example, prothrombin is found in beta globulin and the circulating antibodies are found in gamma globulin. Far more components than the above fractions have been concentrated for clinical use. As an example of this may be cited the plasma fractionation of Red Cross blood for the armed forces. These include: (1) Normal human serum albumin for the treatment of shock and in burns; (2) Immune serum globulins for use in measles prophylaxis and modification; (3) Isohemagglutinins for use in blood grouping; (4) Thrombin used with fibrinogen for the formation of clots in certain surgical conditions including skin grafting and coagulum pyelolithotomy; (5) Fibrin films, thus far used as a covering for burns and more recently as a dura substitute in neurosurgery.

Up to this point we have discussed proteins generally for a better understanding of their clinical significance. Their application to surgery can probably best be reviewed by a discussion of a few individual conditions.

*Gastro-intestinal tract.* In surgery involving the gastro-intestinal tract, the provision of sufficient protein to maintain nitrogen balance is a definite must. These patients frequently present themselves for surgery with a marked hypoproteinemia and advance tissue protein depletion, due to a combination of inadequate protein intake and impaired digestion or absorption. Ulcers and gallbladder disease interfere with intake, while duodenal ulcers, regional ileitis, colitis, intestinal obstruction, malignancy, and associated febrile conditions interfere with absorption. Where possible, pre-operative forced protein feedings for the purpose of providing adequate storage is a valuable adjunct.

*Surgical Shock.* The condition, surgical shock, and the accompanying physiological changes responsible for circulatory deficiency and its subsequent clinical manifestations are due to the existence of a fall in blood flow. The therapeutic problem is then one of restoring the circulating volume before the onset of tissue damage. The actual restoration of circulating volume, is comparatively simple, merely the injection of saline or glucose solution. In non-severe cases this therapy is adequate, but in severe cases they have proven only transitory,



and alone, are deleterious in that they possess no colloid osmotic pressure, diffuse through the capillary membrane, carrying more plasma with them. As far back as 1918 Drs. Rous and Wilson showed that surgical shock following hemorrhage was due to loss of plasma, and not due to loss of red cell component. This same fact has been shown since by Whipple and his co-workers in producing hypoproteinemia by plasmaphoresis. In severe experimental hemorrhage, studies of the plasma protein have shown hypoproteinemia is spontaneously corrected but the process takes days, and too often hours are important.

Present-day information has shown conclusively that protein physiology is somehow disturbed following injury. This was first emphasized in 1936 by Cuthbertson when he demonstrated that negative nitrogen balance develops following fractures. In 1940, Elman of St. Louis reported that urinary nitrogen losses occurred after operation in spite of intravenous glucose therapy. Mulholland and Co Tui have demonstrated similar results and stated that "heavy nitrogen losses were part and parcel of every surgical intervention." Where surgical shock is a potential danger, the surgeon should be plasma protein conscious. Prophylactic use of plasma may prevent shock, certainly where clinical evidence of impending shock is noted, plasma, not saline or glucose alone, should be given and in sufficient quantity. At this point also we should not lose sight of the use of whole blood, particularly where through hemorrhage, the replacement of red cell component is indicated. As mentioned earlier, the use of the plasma fraction albumin is proving its value in combating shock. Reports from several investigators show comparable results and may be summarized by the following points enumerated by Cournand and his co-workers at Bellevue Hospital. In this group 12 clinical cases of traumatic injury in varying degrees of shock were given repeated injections of 25 grams of human albumin in 100 cc. fluid.

1. In patients who were not actively bleeding or losing plasma into burned tissues or peritoneum, the albumin was well retained. In nine cases an average of 62 grams of albumin was given and an average of 43 grams retained.

2. Albumin therapy was effective in producing recovery from shock. It increased right auricular pressure, arterial pressure, and cardiac output.

3. Compared with treatment by whole blood transfusion, albumin therapy brought about a relatively larger cardiac output during recovery from shock.

4. The presence of acute anemia in many cases, after albumin therapy, suggests that whole blood should be given subsequently.

*Burns.* Though extensive body burns tend toward surgical shock, and probably should have been discussed with that condition, the profound effect on plasma proteins makes it worthy of consideration as an individual condition.

Following extensive burns, there is a sudden and dramatic increase in urinary nitrogen excretion. This increase is due to excessive protein destruction. Taylor and co-workers, in studying 22 cases of severe burns, noted

urinary nitrogen excretion as high as 45 grams in twenty-four hours, which is equivalent to 280 grams of protein per day. Hirschfield of Wayne University Medical College makes the statement that patients, moderately to severely burned, excrete more nitrogen in the urine than can be administered orally without forced feedings.

A second source of protein depletion is protein loss in the exudate. Again from the work of Hirschfield, vesicle fluid from burns contains 3-4 grams of protein per 100 cc. This protein loss begins coincidental with vesicle formation, and continues to escape until epithelialization has occurred, this latter an argument for early skin grafting.

A third loss of protein comes in increased capillary permeability, with escape of fluid into the tissues. With the escape of fluid in the above mention manner, examination of the blood presents a picture of hemoconcentration. This can become confusing in that a hemoconcentration may result in a higher plasma protein determination than actually exists. For this reason hematocrit readings should also be taken. Normal hematocrit readings are: Males, 42-50 per cent cells; females, 39-43 per cent cells. A high hematocrit value with the subsequent correct interpretation of the misleading high blood protein figure will often show an actual low protein level.

*Edema.* The blood plasma protein exerts an osmotic pressure in the blood of 23 to 28 mm. of mercury. Serum albumin accounts for about four-fifths of this total, serum globulin exerting a pressure of approximately 3 mm. of mercury becomes a near negligible factor in edema formation. With a low plasma protein level, osmotic pressure goes down, decreasing the force that absorbs fluid back into the circulatory system from the tissue spaces. As a result more and more fluid accumulates in the tissues and eventually edema results. Some investigators have attempted to show quantitatively at what albumin level edema will follow. Printed reports show that level as 3 per cent, below which edema usually occurs. It is now generally agreed that because of the frequent presence of such altering factors as anemia in which edema will often occur at higher levels, no definite level becomes critical for the appearance of edema. It should be emphasized at this point, however, that before edema becomes perceptible generally, localized edema at the site of operation may be enough to disrupt healing. Dr. G. Scotchard and his co-workers at Massachusetts Institute of Technology showed the volume of fluid held in the blood stream by each gram of albumin should be about 18 cc. but will vary with the protein concentration of the plasma. They show further that each gram of albumin is equivalent to 1.2 grams of plasma protein or 20 cc. of the current Red Cross citrated pooled plasma.

*Malnutrition.* This condition concerns more frequently the aged. Loss of appetite is a common symptom of many conditions. Lack of teeth discourages proper eating. Conditions of the gastro-intestinal tract such as achlorhydria and chronic constipation lead to anorexia. Diseases of the gastro-intestinal tract which interfere with absorption are a forerunner of malnutrition. Chronic liver disease may interfere with plasma protein synthesis,

and gradual breakdown of protein stores by an elevated basal metabolic rate, febrile states and the like all lead to varying degrees of malnutrition. The degree of hypoproteinemia in these cases, even in the less perceptibly malnourished, would be interesting, perhaps startling, if determinations were available on all hospital admissions in this group.

Time does not permit the consideration of all surgical aspects of protein deficiency. Yet to be considered is their role in anesthesia, in wound healing, in infection, injuries and many other such conditions. While the literature presents a wealth of material, there is much yet dependent on further research.

In postoperative management, Co Tui presents some interesting observations in a series of patients undergoing gastrectomy. He points out the following:

1. In a series, where postoperative management was under the classical ward regime, there was a consistent nitrogen deficit and loss of weight, also a prolonged stay in bed. Postoperative asthenia was demonstrated objectively which had not disappeared by the twelfth day.

2. In a series managed on high caloric and high amino acid mixtures, there was a consistent nitrogen surplus, a steady gain in weight, and a stay in bed of less than one half the time required in the series managed under the previous regime. Postoperative asthenia was considerably less marked.

3. The principal source of nitrogen loss in convalescence following gastrectomy was the starvation postoperative regimen.

4. Nitrogen loss resulting from gastric suction was considerable.

Several methods of replacement therapy are available. In the first place high protein diets together with high caloric and high vitamin intake as a preoperative measure is indicated. Where forced feeding is indicated or replacement therapy is desired several alternate methods of administration are available. Oral administration of commercially prepared amino acids such as Amigen\* or Lactamin† can be given in addition to a regular high protein diet. These preparations are enzyme hydrolysates of casein and lact albumin respectively. In operations performed for ulcers, cancer, and other gastro-intestinal conditions, feeding of these hydrolysates by tube may be the logical procedure. Amigen has been prepared for the intravenous route, giving as high as 50 grams in 1000 cc. of glucose solution if desired. If given intravenously the injection should be slow. Rapid administration frequently is accompanied by nausea and vomiting.

Individual amino acid concentrates have been prepared and can be given where indicated, but these are still expensive and their use is still relegated to the future.

Human plasma is an excellent source of protein, and should be used in quantity when indicated. The advantage of the hydrolysates here however lies in the greater quantity of amino acids and also the replacement therapy for tissue proteins. Serum albumin should again be mentioned as a source of replacement therapy in treating shock or an effective means of raising blood volume.

*Dosage.* As to dosage, this varies with the individual condition. Co Tui cited figures to substantiate the thought advanced by others that the protein loss in operation varies directly with the severity and duration of the operation. As a guide I might quote the level of adequate intake as determined by him in the case of four surgical procedures:

1. Gastrectomy—.25 to .42 grams nitrogen/K.B.W.
2. Cholecystectomy—.224 to .339 grams N./K.B.W.
3. Appendectomy—.184 to .350 grams N./K.B.W.
4. Herniotomy—.147 to .182 grams N./K.B.W.

#### CONCLUSION

In conclusion, may I state that the purpose of this paper is primarily to draw attention to the fact that protein deficiencies are probably more common than has been considered. Elman of St. Louis has made the statement that "Many doctors have in the past and tend today to view an inadequate protein intake with complacency." A review of present-day information and a wider clinical application in medicine can prove both a prophylactic and therapeutic aid.

#### BIBLIOGRAPHY

1. Protein Nutrition in Health and Disease. A Series of Nine Articles Prepared Under the Auspices of the Council on Foods and Nutrition of the American Association.
2. Cohn, E. J.; Oncley, J. L.; Strong, L. F.; Hughes, W. L. Jr., and Armstrong, S. H. Jr.: The Characterization of the Protein Fractions of Human Plasma. *J. Clin. Invest.*, 23:417-432 (July), 1944.
3. Madden, S. C., and Whipple, G. H.: Plasma Proteins: Their Course, Production and Utilization. *Physiol. Rev.*, 20:194-217 (April), 1940.
4. Rose, W. C.; Haines, W. J.; Johnson, J. E., and Warner, D. T.: Further Experiments on Role of Amino Acids in Human Nutrition. *J. Biol.* 148:457-458 (May), 1943.
5. Sherman, H. C.; Gillet, L. H., and Osterberg, E.: The Protein Requirement of Maintenance in Man and the Nutrition Efficiency of Bread Protein. *J. Biol. Chem.*, 41:97-109 (Jan.), 1920.
6. Randin, I. S.; McNamee, H. G.; Kamholz, J. H., and Rhodes, J. E.: Effect of Hypoproteinemia on Susceptibility to Shock Resulting from Hemorrhage. *Arch. Surg.*, 48:491-492 (June), 1944.
7. Cuthbertson, D. P.: Further Observations on the Disturbance of Metabolism Caused by Injury with Particular Reference to the Dietary Requirements of Fracture Cases. *Brit. J. Surg.*, 23:505-520 (Jan.), 1936.
8. Hirschfield, J. W.; Williams, H. H.; Abbott, W. E.; Heller, C. G., and Pilling, M. A.: Significance of the Nitrogen Loss in the Exudate from Surface Burns. *Ann. Surg.*, 15:766-773 (May), 1944.
9. Block, R. J., and Bolling, D.: The Amino Acid Composition of Proteins and Foods. *Chas. C. Thomas, Springfield, Ill.*, 1945.
10. Rose, W. C.: *Science*, 86:298, 1937.
11. Elman, R.: *J.A.M.A.*, 128:659-664 (June 30), 1945.
12. Elman, R.: *Ann. Surg.*, 112:594, 1940.
13. Mulholland, J. H.; Co Tui, F.; Wright, A. M., and Vince, V. J.: *Ann. Surg.*, 117:512, 1943.
14. Taylor, F. H. L.; Levenson, S. M.; Davidson, C. S.; Adams, M. A., and McDonald, H.: *Science*, 97:423, 1943.
15. Co Tui, F.: Clinical Experience with Oral Use of Protein Hydrolysates, presented before the New York Acad. of Sciences, Dec. 1945.
16. Co Tui, F.; Wright, A. M.; Mulholland, J. H.; Carabva, V.; Barcham, L., and Vince, V. J.: Sources of Nitrogen Loss Post-gastrectomy and Effect of High Amino Acid and High Caloric Intake on Convalescence. *Ann. Surg.*, 120:99-122 (July), 1944.
17. The helpful aid of Mr. Wm. Murphy, representative of Wyeth Co., and Mr. Lincoln Thomas, representative of Mead Johnson and Co., in securing material and reprints is gratefully acknowledged.

\*Product of Mead Johnson & Co.

†Product of Wyeth, Incorporated.



# Surgery of the Stomach

O. Theron Clagett, M.D.\*

Rochester, Minnesota

IT is impossible at any one time to attempt to discuss all the phases of gastric surgery. However, it is well, occasionally, to review various common lesions of the stomach for which surgical treatment may be necessary in light of newer developments in this field. A reevaluation of the older procedures and an evaluation of the newer ones are necessary if the physician is to give his patients his best advice.

Duodenal ulcer is probably the most common lesion with which one is confronted. Unfortunately, the incidence of duodenal ulcer seems to be increasing rather than decreasing. It is still predominantly a disease of men but women are afflicted with increasing frequency. Duodenal ulcer is still primarily a medical disease and I am convinced that it should remain so. Most people who have duodenal ulcer, providing they will follow a medical program and make the adjustments in their lives that are necessary, can get along satisfactorily on medical management. Unless one of the indications for surgical treatment considered in subsequent paragraphs is present, patients should have a thorough trial on medical management.

There are, however, definite indications for surgical treatment of duodenal ulcer. These indications are: (1) perforation, (2) obstruction, (3) hemorrhage and (4) intractability. There can be no argument that perforation of a duodenal ulcer constitutes a surgical emergency. It is generally agreed that operation should be done as soon as possible. A simple closure of the ulcer without any attempt to do anything further is the treatment of choice in most cases. Occasionally there may be so much obstruction at the duodenum that it may be necessary to perform gastro-enterostomy at the same time that closure is carried out. It is not justifiable to consider gastric resection as a treatment for perforated duodenal ulcer. This has been advocated but it is a radical procedure which inevitably carries considerably greater risk than simple closure. The results of simple closure in general have been excellent. In our experience in the Mayo Clinic, only about 20 per cent of all patients that have undergone closure of acute perforation have ever required any subsequent gastric operation.

Obstruction at the outlet of the stomach constitutes a second definite indication for surgical treatment. If the obstruction is due to an old burned-out cicatricial ulcer and the patient is past fifty years of age and the concentration of gastric acids is not high, gastro-enterostomy is still a very satisfactory procedure. However, if the obstruction is due to edema around an acutely inflamed duodenal ulcer and the patient has a high concentration of acids, it may be advisable to perform gastric resection instead of gastro-enterostomy. It should

always be remembered, however, that the most vulnerable part of a gastric resection is the duodenal stump, and that in cases in which there is a very marked reaction around the duodenum and in which the tissues are edematous, friable and indurated, it may be impossible to obtain a satisfactory closure of the duodenal stump. In such cases the risk of gastric resection may be too great and gastro-enterostomy be preferred.

If the patient is more than forty years of age bleeding duodenal ulcer should be looked on with concern because it is well known that patients of this age and beyond may have an exsanguinating and even fatal hemorrhage from these ulcers. Younger patients tolerate hemorrhage and usually their hemorrhages are not as severe as those of older patients. Because of the danger of fatal hemorrhage, patients more than forty years of age who have recurrent hemorrhages from a duodenal ulcer should be considered candidates for operation providing their general condition will permit surgical treatment. If possible, the operation should be performed in the interval between hemorrhages. The danger of operating on patients while they are bleeding is well known and operation should not be attempted unless an adequate supply of blood for transfusion is available. Gastric resection rather than gastro-enterostomy is the treatment of choice for bleeding duodenal ulcers.

Some duodenal ulcers which have not perforated, have not become obstructing, and have not resulted in hemorrhage, justify surgical treatment because of their intractability to medical management. This type of ulcer is usually on the posterior wall of the duodenum, perforates into the pancreas and produces severe pain, which is not effectively relieved by medical management. The pain often wakes the patient at night and interferes with his rest so that it is impossible for him to continue working. This pain may be very severe, even requiring opiates for relief. A patient who has a duodenal ulcer with severe pain that interferes with health and work in spite of good medical management should certainly be offered the benefit of surgical relief. Partial gastrectomy is usually the operation of choice in these cases.

A brief discussion regarding the place of gastro-enterostomy and gastric resection in the treatment of duodenal ulcers is warranted. These two procedures are the only ones that are practiced commonly at the present time. Gastro-enterostomy has been completely condemned by many surgeons. It certainly must be admitted that its results have not all been what one would like them to be. However, it cannot be denied that there is still a place for gastro-enterostomy in the treatment of duodenal ulcer.

Gastro-enterostomy can be performed with minimal risk and it will, providing it functions properly, result in the healing of the duodenal ulcer. In those cases in

\*Division of Surgery, Mayo Clinic, Rochester, Minnesota.

Read before the meeting of the Montana State Medical Association, Great Falls, Montana, July 19-20, 1946.

which there is an old cicatricial ulcer resulting in obstruction, gastro-enterostomy will accomplish as good results as gastric resection. It should also be performed rather than gastric resection in those cases in which there is so much inflammatory reaction around the duodenum that it is impossible to resect beyond the pylorus and perform a closure of the duodenal stump that will be safe and satisfactory. It is much better in these cases to perform gastro-enterostomy and then at a later time, after the ulcer is healed, to perform resection if it seems necessary.

Gastric resection does not inevitably produce a good result. As more resections are followed for longer periods, a greater incidence of gastrojejunal ulcer after resection becomes apparent. I cannot agree with those surgeons who say that if an adequate amount of stomach is resected there will be no recurrence of the ulcer. My colleagues and I have seen patients in whom more than 90 per cent of the stomach has been resected but a gastrojejunal ulcer has promptly developed. Resection of more than three fifths of the stomach is not justifiable in most instances. A more extensive resection carries greater risk and it handicaps the patient by reducing the size of his stomach unnecessarily. The increased danger and disability of a very extensive resection are not justified by any reduction in the incidence of ulceration after resection.

Gastric ulcer is a very different problem from a duodenal ulcer. There is still some difference of opinion as to whether a gastric ulcer is primarily a medical or a surgical disease. While duodenal ulcer is primarily a medical disease, gastric ulcer is a surgical disease. I do not intend to enter the controversy as to whether benign gastric ulcers become malignant or are ulcerating carcinomas from their origin. Experience has now demonstrated conclusively that all gastric ulcers must be looked on with great concern since they may be or may become malignant. There are many ulcerating lesions in the stomach in which it is impossible to determine by roentgenologic examination, by gastroscopy, by any clinical or laboratory test, by palpation at the time of operation or even by macroscopic examination of the resected lesion, whether the lesion is benign or malignant. Only careful microscopic examination of sections taken from several parts of the lesion will provide accurate diagnosis of these lesions.

Because this is true and because the risk of gastric surgical treatment has been brought to such a low level, one is now justified in advising operation on every patient who has an ulcerating lesion of the stomach, provided, of course, the patient's general condition will permit operation. From every standpoint early surgical treatment of such lesions is preferable to a trial of medical treatment before advising operation. From an economic standpoint the length of hospitalization and disability is no longer for operation than for proper medical treatment. When the lesion is removed surgically, the patient is relieved of his disease and has nothing further to worry about. When gastric ulcer is treated medically the patient must follow a rigid dietary regimen

and must report back for re-examination at frequent intervals. Very often after a long trial of medical management it is still necessary to resort to surgical treatment and in those cases in which the lesion proves to be malignant, the best opportunity to cure the patient has been lost by this unnecessary delay. Nothing is lost by surgical treatment even if the patient proves to have a benign lesion at the time of operation. The results of surgical resection for benign gastric ulcer are among the best in all surgery. The risk of operation is slight. Recurrent ulcerations and complications are rare. When one considers the impossibility of making an accurate clinical diagnosis of ulcerating gastric lesions, the danger of these lesions being malignant and the benefits to be gained at minimal risk by surgical treatment, this aggressive attitude toward ulcerating gastric lesions is justified.

Gastrojejunal ulcer is still a problem after either gastro-enterostomy or gastric resection, and is certainly a surgical problem. Gastrojejunal ulcers rarely respond to medical management and usually require surgical treatment. A gastrojejunal ulcer following gastro-enterostomy can be successfully treated, in most instances, by take-down of the gastro-enterostomy and partial gastrectomy. It may be advisable, in the light of recent experience with resection of the vagus nerve, to section the vagus nerve at the same time, or, in some cases, as an alternative to take down the gastro-enterostomy and gastric resection. Gastrojejunal ulcers which occur following gastric resection should be treated by resection of the vagus nerve. Re-resection of the stomach, provided an adequate resection had been performed previously, should not be considered. If a recurrent ulcer develops after adequate gastric resection, this fact proves conclusively that the patient's ulcer-forming factors are very strong and in such instances, resection of the vagus nerve offers more relief than anything else.

A brief discussion of resection of the vagus nerve should be given here. I am much impressed by the work Dr. Dragstedt<sup>1</sup> has done in this regard. Dr. Dragstedt is a conservative and honest investigator. He is a physiologist as well as a surgeon and is most enthusiastic about resection of the vagus nerve. I am hopeful that his enthusiasm will continue to be warranted, but am a little afraid to be too enthusiastic about the procedure at the present time. So many treatments and surgical procedures for the treatment of duodenal ulcer have been proposed and proved disappointing that resection of the vagus nerve may follow the same pattern. The early results are most encouraging but too few cases have been studied long enough to permit an accurate evaluation of the procedure as yet. There is no question that it is an easy and safe procedure, and if it continues to be as effective as early appearances indicate, it will undoubtedly supplant most of the other surgical procedures used in the treatment of duodenal ulcer. Resection of the vagus nerve should not be used in the treatment of gastric ulcers instead of removal of the lesion because here, as mentioned earlier, it is impossible to determine which lesions are malignant and which are not before the operation is performed. For the present, I have used



resection of the vagus nerve only in those cases in which an ulcer has developed after gastric resection. Here it has seemed effective. The great disadvantage of vagotomy apparently is the fact that it reduces the motility of the stomach so that sometimes the stomach becomes quite large and atonic and occasionally gastro-enterostomy is necessary to facilitate its emptying. What late side effects to other organs may result from resection of the vagus nerve have not been determined.

Carcinoma of the stomach is still the most frequent carcinoma with which one is confronted. It is discouraging in considering this most common of carcinomas to be forced to admit the highest death rate and the lowest cure rate in all cancer surgery. About one fourth of all deaths from carcinoma are estimated to be due to carcinoma of the stomach. What can be done to better this situation? At present there are apparently only three ways to attack this problem. First come fundamental researches into the cause of cancer, factors predisposing to its development and means of preventing its development. Thus far, work in this field has not been productive but it is hoped that progress will be made in the future. Second, carcinoma of the stomach must be diagnosed earlier so that patients can be brought to the surgeon while the lesion is still operable. This requires education of the public as to their responsibility in seeking medical attention, and, just as important, education of the medical profession in using adequate methods of diagnosis to discover or rule out the presence of carcinoma in patients who present themselves with suggestive symptoms. Third, surgical treatment of carcinoma of the stomach must be made more effective by extending the limits of radical operation. I shall concern myself with the surgical treatment of cancer of the stomach and the methods by which the limits of operation may be extended and the results of surgical treatment improved.

In planning any surgical attack on cancer of the stomach, one must consider the four routes by which these growths may spread: (1) direct extension within the stomach and invasion of surrounding organs; (2) lymphatic spread through the extensive lymphatic system within and surrounding the stomach; (3) hematogenous spread with metastasis to distant organs, liver, and so forth; (4) implantation of malignant cells on peritoneal surfaces. The radical surgical treatment of cancer of the stomach must take these characteristics of cancer of the stomach into consideration. The operation should aim at excising in one block the entire lesion, as much of the stomach and surrounding structures as may conceivably be involved by direct spread, and the entire lymphatic system draining this region. Finsterer<sup>2</sup> first suggested, and recently, Coller and Kay<sup>3</sup> have re-emphasized the importance of including the entire greater omentum in any resection for carcinoma of the stomach because of the frequent involvement of lymphatic vessels and nodes in this structure.

All the usual operations performed for carcinoma of the stomach are modifications of the original Billroth I and Billroth II procedures. It does not make a great

deal of difference what type of partial or sub-total gastrectomy is performed for carcinoma of the stomach provided the operation accomplishes a sufficiently radical removal of the lesion and its lymphatics. I have a personal preference for a modification of the Billroth I operation. As carcinoma of the stomach rarely extends over into the duodenum, the duodenum is usually sufficiently mobile to permit a satisfactory anastomosis. I have found that I can remove up to three fourths or four fifths of the stomach in many cases and remove the entire lesser curvature, make an oblique closure of the lesser curvature portion of the end of the stomach and still bring the greater curvature portion of the end of the stomach to the duodenum and make an anastomosis without tension. The operation is quicker and easier to perform than the various Billroth II or Polya types of operations and accomplishes just as radical a resection. It is a more physiologic type of operation. My impression has been that these patients have a smoother postoperative course and become adjusted to their gastric resections more easily than to operations involving anastomosis of the stomach to the jejunum. The Billroth I type of operation has fallen into some disrepute because of the alleged danger of leakage at the angle where the closure of the lesser curvature portion of the end of the stomach and the anastomosis come together. Personally, I have had no difficulty of any kind with this problem and prefer this operation when conditions will permit.

Since it is impossible in most instances to diagnose carcinoma of the stomach at an early and favorable time for resection, surgeons have been forced for the most part to deal with extensive lesions. In order to improve the rate of resectability and end results, surgeons have devised technics for more extensive and radical operations. Total gastrectomy for lesions involving the entire stomach and transthoracic resection for lesions of the cardia and lower part of the esophagus have been outstanding developments of these efforts.

Total gastrectomy is a formidable operative procedure. The mortality rate of the operation is unavoidably high. However, there are many instances in which this procedure offers the patient his only chance. Every surgeon who undertakes gastric surgery should have sufficient training and experience to enable him to perform the operation when necessary. Total gastrectomy is not a new procedure. The feasibility of the procedure was suggested by Albert<sup>4</sup> in 1880. It was first carried out by Conner<sup>5</sup> of Cincinnati in 1884 but the patient did not survive. The first successful total gastrectomy reported was performed by Schlatter<sup>6</sup> in Switzerland in 1897. The patient lived about fourteen months. By 1943 Pack and McNeer<sup>7</sup> were able to report a series of 303 cases of total gastrectomy. They collected 283 cases from the literature and added 20 cases from their own experience. There have been reports of many additional cases since their study was made. Total gastrectomy is now a relatively common operation. Its technical difficulties, the metabolic abnormalities consequent to it, the

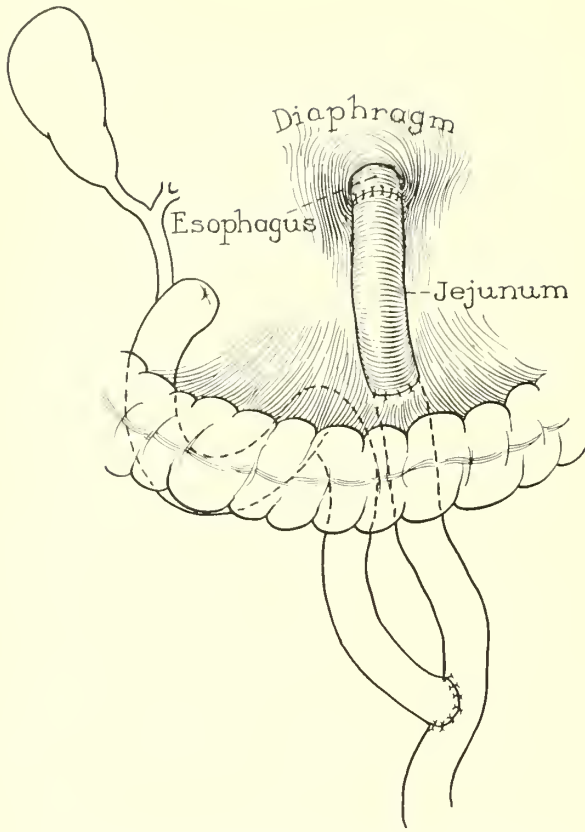


Fig. 1. End-to-side esophagojejunostomy with jejunojejunostomy.

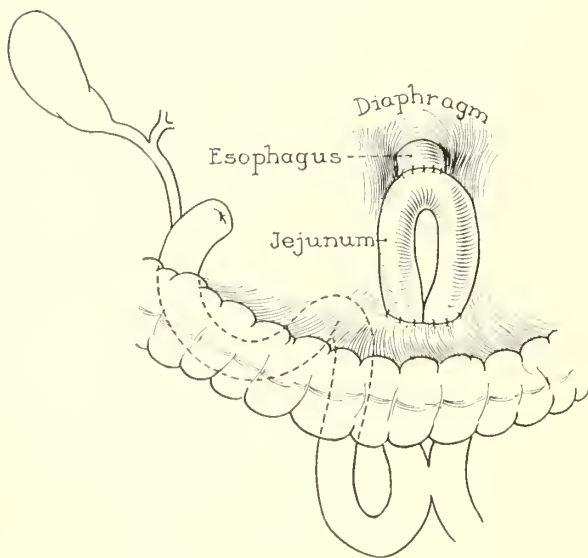


Fig. 2. End-to-end esophagojejunostomy with end-to-side jejunojejunostomy.

refractory anemia, the postoperative complications and the high mortality rate of the operation all serve to contraindicate its use except as an operation of necessity. However, many of the problems and difficulties regarding both the technical factors of the operation and postoperative complications have been solved and there is no excuse for denying a patient the benefit of the operation if a less radical procedure is not sufficient.

There are a variety of technics for the establishment of continuity of the esophagus to the small intestine after total gastrectomy. Figures 1, 2 and 3 illustrate some of the methods available. I have tried all these methods and have no great preference for one over another. Esophagoduodenostomy has many advantages when technically feasible and it is a quicker, easier operation to perform. There is only one line of suture for the anastomosis and it offers the best physiologic restoration possible. However, in many instances it is impossible to make the anastomosis without tension and it must be remembered that both the distal portion of the esophagus and the proximal portion of the duodenum lack a rich blood supply. If esophagoduodenostomy is not possible, the various types of esophagojejunostomy are quite satisfactory.

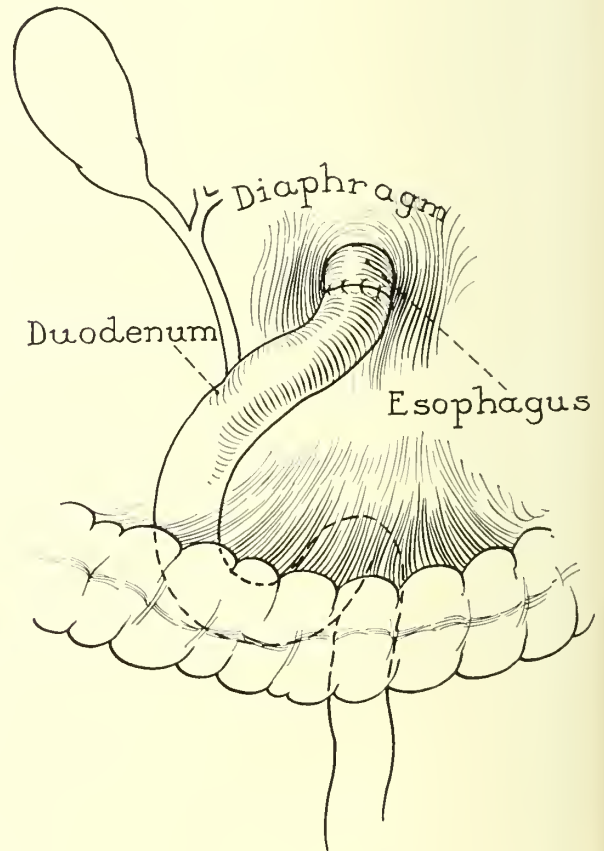


Fig. 3. End-to-end esophagoduodenostomy.



Pack and McNeer have pointed out that a procedure that is so technically difficult, which is followed by many immediate and late complications, which up to 1942 had a mortality rate averaging 37 per cent, and which up to 1942 had resulted in only sixteen patients surviving their operation more than three years, is not likely to meet with much favor. All this is certainly true but, on the other hand, there is no excuse for the development of a spirit of defeatism. Progress in surgery is such that it is not wise to make predictions for the future based on experience of the past. Total gastrectomy is never an operation of choice but is always an operation of necessity. Figure 4 indicates the more aggressive attitude that my colleagues and I are adopting. Since 1940 the frequency with which total gastrectomy has been performed has nearly tripled. With increasing experience the technical difficulties are being overcome, the risk of operation is being decreased and many of the immediate and late complications are being avoided. If progress is to be made in the surgical attack on cancer of the stomach, total gastrectomy must be performed more frequently.

The development of the transthoracic approach to lesions of the cardia of the stomach fills a long-felt need in gastric surgery. Previous to the development of this procedure, many patients were denied the benefits of operation because of the anatomic location of the lesion. Since about 10 per cent of all carcinomas of the stomach occur in the cardia, it becomes apparent that this procedure can extend considerably the rate of resectability for malignant lesions of the stomach. The transthoracic approach to lesions of the cardia involving the lower part of the esophagus and producing dysphagia permits adequate exposure for wide resection of the lesion and the regional lymph nodes and maintenance of esophago-gastric continuity. Pathologic studies have shown clearly that whereas there is a block mechanism which is quite effective in preventing extension of cancer beyond the pylorus into the duodenum, there is no such mechanism at the cardia. Instead there is a tendency for the cancer to extend along the submucosa up the esophagus, often to such an extent that even the most radical total gastrectomy possible by the abdominal route will not be sufficient to remove the entire malignant process. Operation by the transthoracic route is the only procedure which will permit adequate resection of the lower part of the esophagus, the growth in the stomach, and the regional lymph nodes in carcinomas of the cardia in which there is dysphagia.

Removal of carcinoma of the cardia by the transthoracic approach is an operation based on sound surgical principles. Its development provides another weapon for an attack on cancer of the stomach.

In reviewing our experience with carcinoma of the stomach from 1930 to 1944, inclusive (figure 5), it is interesting to note that the ratio of patients who were operated on to patients on whom a diagnosis was made has remained about the same, that is, in the neighborhood of 60 to 65 per cent. In other words, in spite of

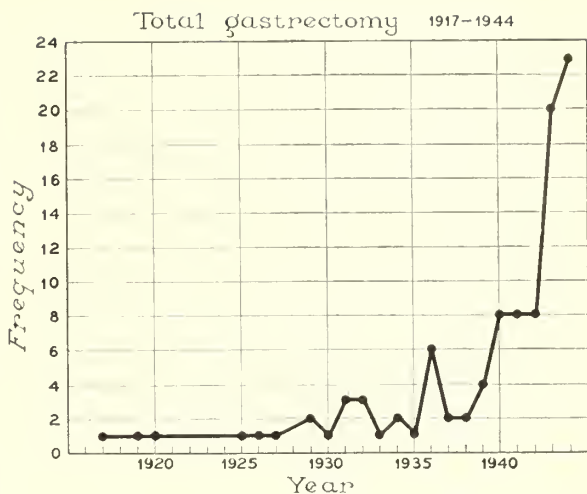


Fig. 4. Increase of frequency with which total gastrectomy has been performed.

all efforts to educate the public and the medical profession regarding the importance of early diagnosis of cancer it has not been possible to increase the proportion of patients whose lesion is not too extensive to permit a consideration of surgical exploration. This is a most discouraging fact. That surgeons have extended the limits of operation is indicated, however, by the fact that the ratio of patients who underwent resection to the patients operated on increased from about 42 per cent in 1930 to about 60 per cent in 1944. It is most encouraging to mention that whereas the mortality rate of resection for carcinoma of the stomach averaged 16.2 per cent from 1907 to 1938, by 1942 the risk had decreased to 6.7 per cent and in 1943 and 1944 to only 5 per cent and in 1945 to 2.8 per cent. This reduction of the operative mortality rate for carcinoma of the stomach is encouraging, particularly since it occurred during the period in which the limits of resection were being extended to include total gastrectomy and transthoracic gastrectomy, procedures which are necessarily accompanied by a high operative mortality rate.

While I do not want to be pessimistic, I do not see at the present time how one can anticipate much further improvement in the results of surgical treatment of carcinoma of the stomach. The rate of resectability has gone about as high as it can go until patients are brought to the surgeon at a more opportune time than they are at present. There is room for some improvement of the operative mortality rate to be sure, but it seems unlikely that the rate can be reduced much until patients are brought to the surgeon in more favorable condition for operation. Surgeons must continue their efforts but real solution of the problem of carcinoma must come from other sources. Means of preventing the development of cancer of the stomach or of diagnosing the presence of cancer in its very early stages seem to be the only satisfactory solution at the present time.

## Malignant Lesions of the Stomach

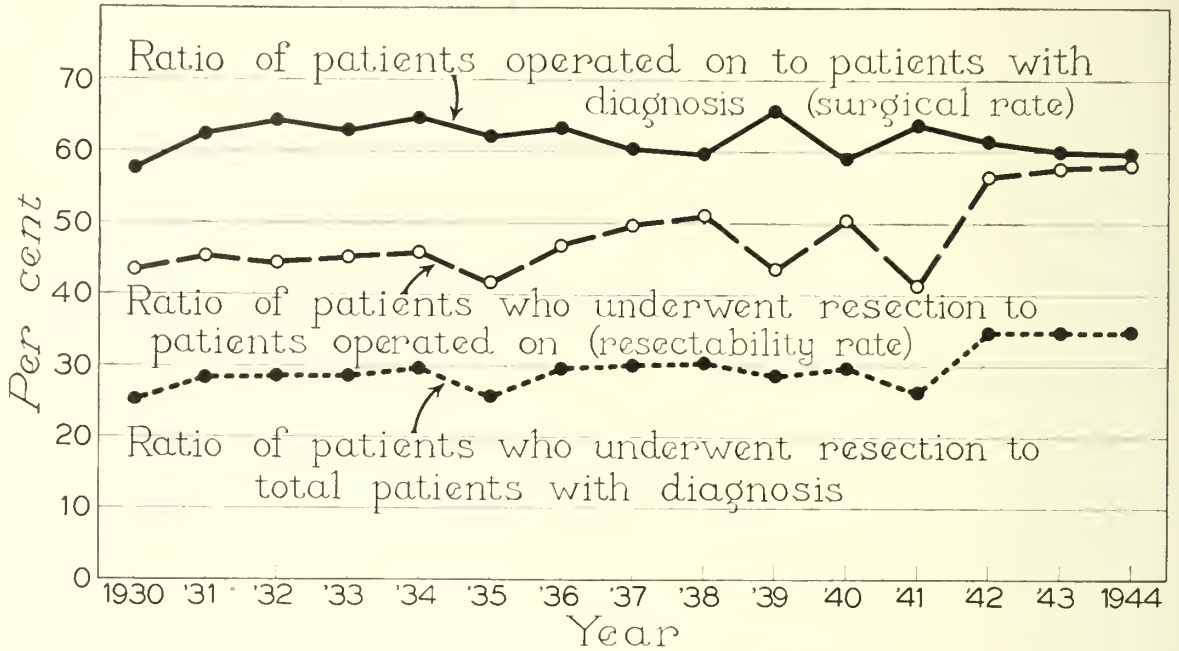


Fig. 5. Rate of resectability for carcinoma of the stomach.

## REFERENCES

1. Dragstedt, L. R.: Personal communication to the author.
2. Finsterer: Quoted by Ogilvie, W. H.: *The Approach to Gastric Surgery*. *Lancet*, 2:235 (July 30); 295 (Aug. 6), 1938.
3. Collier, F. A.; Kay, E. B.; and McIntyre, R. S.: Regional Lymphatic Metastases of Carcinoma of the Stomach. *Arch. Surg.*, 43: 748 (Nov.), 1941.
4. Albert: Quoted by Pack, G. T., and McNeer, Gordon.

5. Conner, P. S.: Quoted by Pack, G. T., and McNeer, Gordon.
6. Schlatter, C.: Quoted by Pack, G. T., and McNeer, Gordon.
7. Pack, G. T., and McNeer, Gordon: Total Gastrectomy for Cancer; a Collective Review of the Literature and an Original Report of Twenty Cases. *Internat. Abstr. Surg.*, 77: 265 (Oct.), 1943.

NEW MONTHLY JOURNAL,  
 POSTGRADUATE MEDICINE,  
 TO APPEAR IN JANUARY, 1947

This new journal is to be the official publication of the Interstate Postgraduate Medical Association of North America and will present the type of articles which the average general practitioner will find most useful and needful in his own practice. The source of most of the basic material will be the addresses and diagnostic clinics which are presented at the annual meetings of this association, supplemented by new material originating in various postgraduate centers.

Just as the addresses in the meetings have stressed the informal type of doctor to doctor discourse so will *Postgraduate Medicine* maintain this same approach. The

editorial emphasis will be centered on therapy, substantiated by an unusually fine graphic presentation.

Among special features to appear in the contents are: This Month in Medicine, a review of medical events and meetings; a department of clinical photography; a consultation service; Association Notes, news concerning current activities of the Interstate Postgraduate Medical Association; and clinical information on new drugs and instruments.

The business manager is Paul K. Whipple, 515 Essex Building, Minneapolis, Minnesota. The subscription price is \$8.00 per year.



# Tuberculosis Control in Colleges and Universities\*

J. Arthur Myers, M.D.

Minneapolis, Minnesota

## IMPROVED SITUATION ENCOURAGING

WHEN the original Committee on Tuberculosis of the American Student Health Association was appointed in 1931 an extremely serious tuberculosis problem existed in many of our colleges and universities. In very few institutions was any search being made for the disease among entering students or in the various classes already enrolled. Nowhere had a routine procedure been established for the control of the disease among faculty and other members of the personnel. Tuberculosis was diagnosed among students and personnel in most schools only when severe symptoms appeared, such as pulmonary hemorrhage. In many of these cases the disease had been contagious over a considerable period of time and, therefore, such persons had disseminated tubercle bacilli among their associates. In one case a senior medical student was within three weeks of death when his disease was diagnosed. Two years later four of his fraternity brothers were under treatment for pulmonary tuberculosis. In another school a student had been failing in health for several months before he was known to have advanced, contagious tuberculosis. During the next ten years twelve of his fraternity brothers died from this disease. In some instances when students were found to have tuberculosis, they stated that the only known contact had been with tuberculous faculty members.

In the fifteen years of its existence the Committee on Tuberculosis (directed by Chairmen Ferguson, Lyght, Lees, and Durfee) has made tremendous strides in stimulating control of the disease in many institutions. Unfortunately, there are many other colleges that have not availed themselves of the well-established, practical procedures, and much remains to be done even in those institutions that have done the best work up to the present time.

## COMPLETE CONTROL POSSIBLE

Today enough information is available concerning the diagnosis, treatment and prevention of tuberculosis so that its control can be established and maintained on any campus. However, this requires eternal vigilance and "taboo" of slipshod and short-cut methods. The practical procedures are so simple and inexpensive that the members of a Health Service Staff who fail to use them may be regarded as indifferent, uninformed, or misinformed. In even worse circumstances is the school which does not provide for an adequate Health Service Staff, both professional and clerical. Such an institution is deserving of the most severe criticism, since the health of the individual is his most priceless asset, both during his student days and thereafter. Therefore, no department of an institution is more important than the Health

Service, and no college or university is complete without such a modern first class service.

## DIAGNOSTIC PROCEDURES

The first step in tuberculosis control consists of ascertaining who among the entering students or the personnel have the disease or develop it while on the campus. The only way this can be determined with accuracy is through the use of the *tuberculin test*. (We no longer use the terms "negative reactors" and "positive reactors" but rather the words "reactors" and "non-reactors.") The body of everyone who reacts characteristically to tuberculin harbors tuberculous lesions in which living tubercle bacilli exist. The tuberculin reaction does not coincide with symptoms or physical signs, including X-ray shadows, because these are manifestations only of gross and often advanced disease. However, it does closely tally with postmortem findings, provided the examination is made in sufficient detail. The individual who has no evidence of the disease, except the tuberculin reaction, has tuberculosis just as truly as the one who is dying from tuberculous meningitis or chronic pulmonary lesions; the difference is only one of degree. In one case the lesions have not evolved so that their location can be determined by our present crude methods of examination, while in the other they have progressed to fatal termination. The tuberculin test determines the presence of the disease in all of its stages of evolution, with certain well-known but unimportant exceptions, particularly during the pre-allergic stage of three to seven weeks and sometimes in terminal conditions.

*A characteristic tuberculin reaction justifies an absolute diagnosis of at least primary or the first infection type of tuberculosis.* This type of the disease is indubitably prerequisite to the development of all acute and chronic reinfection forms. Indeed, somewhere in the body of every person who dies from tuberculosis the primary lesions can be found which definitely antedated the destructive and fatal lesions, if sufficiently careful search is made for them. The exact percentage of persons with primary tuberculosis, as manifested by the tuberculin reaction, who subsequently develop reinfection or clinical types of the disease has never been accurately determined. However, the careful analysis of Bogen indicates that it is about 50 per cent. Excellent support for this figure is to be found in places where primary tuberculosis develops by early adult life in nearly the entire population. Here one finds tuberculosis is responsible for one-fourth to one-third of the deaths from all causes. Certainly not all persons who develop the reinfection type of lesions die from the disease; indeed, many of them are never incapacitate. Therefore, Bogen's statement to the effect that one-half of the persons with primary tuberculosis subsequently develop reinfection types probably closely approaches the actuality. In any event, no one falls ill or dies from tuberculosis without first hav-

\*From the Student Health Service and the School of Public Health of the University of Minnesota. Presented before the twenty-fourth annual meeting of the American Student Health Association, May 9, 1946.

ing developed the primary type of this disease. Therefore, it behooves every Health Service to determine by the tuberculin test just who has primary tuberculosis and to examine promptly all such persons for the reinfection type of the disease on admission and periodically while they are on the campus, and to instruct them to have periodic examinations throughout the remainder of their lives. Failure to use the tuberculin test routinely and periodically is to omit or ignore the most important phase of tuberculosis control work on any campus.

Both Old Tuberculin and PPD are satisfactory testing materials. However, they must be obtained from reliable sources and so treated that their potency is guaranteed and maintained. The intracutaneous method of administration of Mantoux is the most satisfactory. For those who do not react to the first dose (0.1 mgm. of Old Tuberculin or 0.00002 mgm. of PPD) the second dose (1.0 mgm. of Old Tuberculin or 0.005 of PPD) should be administered. The test should be read 72 to 96 hours later. A reaction is present only when there is an area of edema or induration, or both, of five millimeters or more in diameter. This may or may not be surrounded by an area of hyperemia. When induration is present less than five millimeters in diameter, it should be recorded as a questionable reaction. In such cases it is possible that a recent infection has occurred and the sensitivity of the tissues has not reached a degree which will result in a characteristic reaction. Again, primary lesions may be present of such long standing that the allergy has waned and has reached such a low level that the initial dose of tuberculin does not elicit a characteristic reaction. In all such cases the test should be repeated within a few weeks, and if there remains only a questionable reaction to the second dose, larger amounts should be administered.

All tuberculin reactors have primary lesions and should be watched carefully for the appearance of reinfection forms of the disease. Those persons who do not react to tuberculin on entrance to a school should have the test repeated annually so that the few who become infected for the first time each year may be observed subsequently in the same manner as those who enter as reactors.

One reason that some Health Services do not use the tuberculin test is that members of the staff are laboring under the delusion that all young adults have primary tuberculosis (tuberculous infection) and, therefore, would react to the tuberculin test. While this may have been true forty or fifty years ago, the situation has changed so remarkably in recent years that now on most campuses only a relatively small percentage of the students have primary tuberculosis and, therefore, react to tuberculin. Indeed, the Committee on Tuberculosis of the American Student Health Association, in reporting for the school year 1942-1943, pointed out that among 208 colleges, representing a total student enrollment of 300,144, the incidence of reactors was only 18.6 per cent. That year thirteen colleges reported that less than 10 per cent of their students were reactors. The next year the Committee said: "It is sound practice and in the interest of economy to provide chest roentgenograms

for only those students who react to an adequate dose of tuberculin."

The incidence of tuberculin reactors has definitely decreased from year to year. In fact, during the school year 1932-1933 the Committee reported that 35 per cent of the students tested were found to be reactors. On the first routine testing of students at the University of Minnesota in 1928 the incidence of reactors was 33 per cent whereas in 1945 it was less than 10 per cent. Therefore, the number of students who have primary tuberculosis on most campuses is now so small that it is physically possible to keep them under close surveillance.

Routine and periodic testing of students provides our only satisfactory criterion of an effective tuberculosis control program, both on the campus and in the community from which the students are derived.

From most institutions reports of the existence of primary tuberculosis among the students have been exceedingly misleading since they obviously have included only those who presented such X-ray evidence as of calcium deposits, etc. In reality, this is only a sprinkling of those who actually have primary lesions. Moreover, from certain sections of the country, particularly Arizona, California, Colorado, and New Mexico, and the states in the Central-Eastern half of the country, extending from Kansas City to the East Coast, it now appears that more of the calcium deposits are due to fungus diseases (particularly coccidioidomycosis and histoplasmosis) than to tuberculosis. The recent work of Palmer emphasizes the great importance of specific tests in diagnosis. Since coccidioidin and histoplasmin are available, as well as tuberculin, there is no excuse for reporting the presence of primary tuberculosis, even when calcium deposits are in evidence, unless the individual reacts characteristically to tuberculin. Indeed, in the whole examination for tuberculosis there are only two phases that yield specific evidence, of which tuberculin is one.

In some institutions X-ray inspections of the chests of students and personnel have been adopted to the exclusion of all other phases of the examination. This is better than having no program at all but it is far from adequate. X-ray inspection reveals evidence only of gross pathology. Nevertheless it is extremely useful when properly employed because it often, and in fact usually, is capable of revealing the location of lesions before symptoms are present or other physical signs can be elicited. Therefore, it should be used routinely and periodically to inspect the chests of all tuberculin reactors, but never to the exclusion of other phases of the examination. Because some exaggerated and completely unfounded statements have been made concerning the value of X-ray, it is necessary to emphasize its limitations:

1. On the usual single X-ray film with postero-anterior exposure, one visualizes only about 75 per cent of the lungs, the remainder being obscured from view by shadows of such structures as the heart and diaphragm.

2. X-ray shadows are never pathognomonic. Those produced by various other diseases may have exactly the same appearance as those cast by tuberculous lesions. In all cases the etiological agent is microscopic but we inspect the X-ray shadows with the naked eye. More-



over, the pathologist at the postmortem table, when he views the lesion directly with his naked eye and palpates it, is still compelled to use the microscope to make accurate diagnoses. Thus, it is fallacious to attempt to make diagnoses only from the shadows of lesions on X-ray films.

The deposition of calcium in the lungs and hilum regions is not a specific process, since it results from numerous conditions. Therefore, it is absurd to use in an X-ray report such terms as *Ghon's tubercle*, *primary lesions or complex*, and *old healed tuberculosis*, whenever evidence of calcium deposits is seen on X-ray films.

3. Among the students and personnel of any campus at any given time there is far more *pre-X-ray tuberculosis* than that of visible X-ray proportion. Indeed, among persons recently infected with tubercle bacilli, as soon as allergy can be elicited by the tuberculin test, only 5 to 10 per cent present X-ray shadows which might be due to tuberculosis; in the remaining 90 to 95 per cent the films of the chest are entirely clear. A few years later, however, X-ray shadows which could be due to tuberculosis may be visualized in a higher percentage, but nearly always in less than 20 per cent. The increase is due to the deposition of calcium in some of the lesions. Even when this is seen one is never sure that it is in a tuberculous lesion. Thus, X-ray inspection of the chest practically never reveals evidence of primary tuberculosis in more than 20 per cent of the persons in whom lesions exist. The remaining 80 per cent have clear X-ray films throughout life, as far as this type of tuberculosis is concerned.

Some of the reasons that the X-ray is of so little help in the detection of primary lesions are: (a) Many of them never attain sufficient size or consistency to absorb X-rays so that shadows are cast which can be seen by the unaided eye; (b) many primary lesions are located in portions of the lungs which are obscured from view and are not visualized on an X-ray film, even though they are macroscopic in size. A considerable percentage of lesions never calcify. (c) An appreciable number of persons with primary tuberculosis have the lesions only in extrathoracic parts of the body. Therefore, any Health Service employing only the X-ray as a diagnostic agent will fail to identify at least 80 per cent of the students and personnel who have primary tuberculosis.

Much of the reinfection type of chronic pulmonary tuberculosis is also of *pre-X-ray proportion* over a considerable period of time. Therefore, despite the fact that these lesions are developing, they are completely missed by X-ray. However, as they progress there comes a time in their evolution when there is X-ray evidence, but it is so slight that one must refer to the area as questionable. Often such evidence is proved to be important only after the lesion has progressed so that unmistakable shadows are cast on the X-ray film. On the other hand, there are cases (and they are probably more numerous than we have previously realized) whose chest X-ray films are clear on one day and within three to six months so much shadow is present that they must be classified as moderately or far advanced. Some of these are thought to

be due to hematogenous dissemination of large numbers of tubercle bacilli over extensive areas of lung tissue.

Those who maintain that X-ray inspection of the chest is an adequate tuberculosis control measure must be shocked to know that of 18 million persons examined for military service in the last few years, 180,000 were rejected largely because of X-ray shadows. In some places these rejectees were adequately examined subsequently and the figures to date indicate that about 10 per cent had no shadow whatsoever a few weeks after the rejection. This suggests that they probably had lesions of acute infections, such as pneumonia, which were mistaken for tuberculosis at the induction centers. Active tuberculosis existed in far less than 50 per cent of those whose X-ray shadows resulted in rejection for this disease. In fact, the figures have varied from approximately 4 per cent in one section of Illinois to 37 per cent in New York City. The observations available thus far suggest that not more than one-fifth to one-fourth of the persons rejected for military service because of tuberculosis actually had this disease in significant clinical form. Another shocking fact is that in two-thirds of all persons discharged from military service because of tuberculosis during the first two years of the war, there were definite shadows on the induction films which were either overlooked or ignored. Although students of tuberculosis have long known that X-ray inspection of the chest alone is wholly inadequate in a tuberculosis control program, the evidence on such a large group of individuals had never before been brought into bold relief. While this kind of work may be excusable during a war emergency, it can never be justified in a Student Health Service.

The size of type of X-ray film to be used on any campus apparently is of little significance. Prior to 1918 chest X-ray exposures were made on glass plates coated with a sensitized emulsion; these were cumbersome, heavy, and easily broken. The U-boat warfare having cut off the supply of glass from Europe, the celluloid film was substituted and generally adopted. However, it was greeted with much opposition on the part of many physicians who were long accustomed to using glass plates.

Beginning in 1932 another heated controversy was waged with reference to the efficacy of paper films. Those who used them extensively contended that they are as efficacious as celluloid films in determining the location of demonstrable lesions in the lungs. On the other hand, those who had used them little or not at all severely condemned them. A similar debate ensued when microfilms were introduced into this country by Lindberg in 1938.

In 1945 films of the chests of a large number of individuals were made successively on 14x17-inch celluloid, 14x17-inch paper, 4x10-inch stereo photofluorograms, and 35-millimeter photofluorograms. These films were carefully studied by a committee composed of three chest specialists and two radiologists, who concluded that all four methods are equally reliable from the standpoint of case-finding. The committee pointed out that such advantage as may be inherent in any one technic is of

so small a magnitude that it is very much smaller than the human error involved in X-ray inspection.

#### THE DIAGNOSIS

X-ray film inspection of the chest is only one phase of the physical examination for tuberculosis. Palpation, percussion, and auscultation should always be employed. Occasionally, lesions lying near the periphery of the lung, particularly in and above the axillary region, may present no shadow on the X-ray film, and yet other phases of the examination, particularly auscultation, reveal evidence of their presence. Moreover, no examination of tuberculin reactors should be limited to the chest. In an appreciable number of tuberculous persons (10 per cent or more) the lungs may be entirely free from demonstrable disease, yet clinical lesions are present in various other parts of the body, such as the bones, joints, and kidneys. For this reason the entire body should always be examined. Indeed an individual may be within a few hours of death from tuberculous meningitis or miliary disease, and yet the X-ray films of the chest appear entirely clear.

Keeping in mind that no symptom or physical sign, including X-ray shadows, is pathognomonic, one must determine the etiology of a demonstrable lesion, whether it is pulmonary or extrathoracic. The fact that an individual reacts to tuberculin does not necessarily mean that a lesion detected in the lung is tuberculous. Tuberculin reactors are just as likely to develop non-tuberculous pulmonary lesions as non-reactors. To locate a gross pulmonary lesion generally requires almost no effort, as a single X-ray film usually suffices. To determine its etiology may be equally simple, or it may require a tremendous amount of painstaking effort, since the etiological agent, whether it be malignant cells, pathogenic bacteria and fungi, and the like, are microscopic. Therefore, we must depend largely upon the use of the microscope, culture media, and animal inoculation in determining etiology. Tuberculous lesions may already be eliminating tubercle bacilli when first detected. The first microscopic inspection of sputum or gastric washings may reveal the presence of acid-fast bacilli which, when studied in cultures and animal inoculations, may prove to be tubercle bacilli. On the other hand, the lesion may be only in the stage of infiltration and tubercle bacilli are not recoverable by laboratory methods. A demonstrable lesion may not even be tuberculous and, therefore, one must go through the entire gamut of diagnostic procedures seeking for other organisms and sometimes resorting to biopsy material obtained by the bronchoscopist. Even with all of this, an etiological diagnosis may not be possible immediately. A lengthy period of observation and study may be necessary, including a series of X-ray films, to determine how long the lesion persists and whether it changes in size or character.

In this country more adults than children are now developing primary tuberculosis. Consequently, it is not unusual for students or personnel to become infected with tubercle bacilli for the first time while in school or during employment. In 5 to 10 per cent of such persons the primary pulmonary lesions attain a size and consis-

tency so that X-ray shadows are cast. These have precisely the same appearance as lesions of the reinfection type. There is no possible way to differentiate between them except when a good tuberculin testing record is available. If the individual has become a tuberculin reactor within the past three or four months, in all probability the lesion, if tuberculous, is primary; on the other hand, if it is known that the tissues have been sensitized for a considerable period of time, the lesion belongs to the reinfection type. Even symptoms and bacteriological studies may not at first enable one to differentiate, inasmuch as primary lesions occasionally cause hemoptysis and other symptoms over a brief period of time, and in as many as 25 per cent of them tubercle bacilli may be recovered from the sputum or gastric washings. Accurate differentiation is extremely important because the treatment is so different for the two conditions. In the diagnosis of tuberculosis we must keep in mind constantly that there are only two specific findings to be revealed by the examination: namely, the tuberculin reaction and the recovery of tubercle bacilli. In the absence of the former, with well-known but unimportant exceptions, one is never justified in making a diagnosis of tuberculosis in any stage of its development.

#### IDEAL CASE-FINDING

During the past quarter of a century I have had the opportunity of testing every method of case-finding that has been proposed. Although several methods are good, the one that has proved most efficacious in my area of activity consists of:

1. Screening from any group under consideration those who have the primary type of tuberculosis, regardless of age. This is done solely by the tuberculin test.

2. All who do not react, indicating that primary tuberculosis is not present on the initial testing, are retested annually, and whenever one is found to have developed primary tuberculosis since the previous testing, he is added to the group of reactors from the original testing.

3. All with primary tuberculosis who have reached adult life have X-ray film inspection of the chest immediately. Those who present shadows that may be caused by the reinfection type of pulmonary tuberculosis are completely examined or observed so that a diagnosis can be made at the earliest possible moment. For them appropriate treatment is recommended.

4. Those who have no X-ray shadows (or only evidence of calcium deposits) are scheduled for annual X-ray inspections of their chests. It is in this group that one actually finds the disease early, as far as it may be disclosed by X-ray shadow. Obviously, the person with a clear X-ray film of the chest today, but who has definite evidence of disease at the next annual examination, has developed gross pathology during the year. This may be regarded as early tuberculosis but it is not necessarily minimal. In some cases (we do not know the percentage) moderately or even far advanced disease may appear within a period of three or six months.

Minimal lesions found at the time of the first tuberculin test and X-ray film are not necessarily tuberculous, and often those which are proved are not early. Indeed,



many of them have long since been brought under control by the defense mechanism of the body (with or without significant illness or treatment) and are now arrested or apparently cured. In approximately one-fourth of the persons who develop chronic reinfection type of pulmonary lesions, the disease comes under control with little or no treatment, and often without the individual having any knowledge of its presence. However, many such lesions result in permanent densities which cast X-ray shadows. Obviously, therefore, there is an accrument of such cases in any large group of individuals following the attainment of adulthood. Consequently, if one examines 100,000 apparently healthy adults, among the lesions found there will be a preponderance of this so-called minimal type. Those who have become significantly ill from this disease have already been removed from the group. However, in a minority of all the lesions found the disease is moderately or far advanced. This small percentage of individuals consists of those who have had no symptoms, despite the extent of the disease, or have neglected or ignored them. On the other hand, if one examines 100,000 persons as they are being admitted to sanatoriums there will be a preponderance (80 to 90 per cent) whose lesions are classified as moderately or far advanced. These are the persons who have dropped out of work largely because symptoms have appeared. A small number (usually not more than 10 to 20 per cent) have minimal lesions. These are the persons who have: (a) Been fortunate enough to develop symptoms while the lesions are minimal; (b) had the disease found when an examination was being made for some other purpose, such as following an accident or for insurance, or through routine annual examination; (c) those whose lesions are not tuberculous or, if so, are of no clinical significance. Their pre-admission examinations have not been adequate. These persons probably contribute in a large way to 15 or 20 per cent of the patients admitted to our sanatoriums who are discharged in a short time because no indication can be found for treatment.

5. The source of infection should always be sought. Among adults who react to tuberculin on the first testing the source may be found with considerable difficulty or not at all in many cases. However, among those who have become reactors since the last annual testing, the source is not far distant in point of time and often can be discovered.

#### SCHOOLS WITH SPECIAL TUBERCULOSIS HAZARD

All institutions that have schools of nursing or medicine either have had or still have a serious tuberculosis problem among the students and personnel of these divisions. This is because in line of duty there is contact with contagious cases of tuberculosis who are not being managed under strict contagious disease technic. The problem may develop in a general hospital or in a sanatorium; its seriousness depends upon the amount of contact that is permitted with the patients. Obviously, it is far less serious in a general hospital where there is only the occasional case of contagious tuberculosis, even though it is unsuspected, than on a regular tuberculosis

service in a hospital or sanatorium, where a high percentage of the patients has contagious disease. Boynton studied this subject carefully and found that the tuberculous infection attack rate was 100 times greater among student nurses in a general hospital than among students in a College of Education on the same campus. However, among those students who were compelled to take a tuberculosis service the infection attack rate was 500 times greater than in the College of Education. After all, it makes no difference whether exposure to contagious cases of tuberculosis occurs in a home, a classroom, a general hospital or a sanatorium, as far as the individual is concerned. The point of importance is that it has been allowed to occur.

The tuberculosis problem in our professional schools can be solved in large part and the solution consists of preventing the tubercle bacilli of patients from reaching the bodies of students who are in contact with them. There is no excuse for a general hospital having unsuspected contagious cases of tuberculosis in either its outpatient or in-patient service. Disease in this stage is so easily diagnosed that it should be detected immediately upon admission and before students come in contact with the patients. Those found to have tuberculosis should be placed under rigid contagious disease technic immediately so that an adequate barrier between patients and personnel is afforded. Some of our schools of nursing and medicine have teaching affiliations on special tuberculosis services and in sanatoriums. These are exceedingly dangerous to students unless the most rigid contagious disease technic is employed. It is my firm conviction that without such technic students should never be permitted to participate in the care of tuberculous patients. Directors of some schools of nursing still maintain that the standards of their schools are lowered if contact between tuberculous patients and students is not maintained as a part of their teaching. The price the students pay in health and life, itself, for the next quarter of a century is far too high to justify such an unpardonable experiment. In reality, nothing is taught on a tuberculosis service that is not presented as well or better on a contagious disease service. Unless a hospital or a sanatorium is willing to adopt the most rigid contagious disease technic known, its patients should be cared for only by full-time and well-trained personnel. Even to them the hazard of contagion should be constantly emphasized, and their salaries should be commensurate with the risk involved.

#### COOPERATION WITH OTHER ORGANIZATIONS

Health Service staffs can do much to reduce the incidence of tuberculosis among students in colleges and universities by encouraging the tuberculosis control program in the communities from which their students are derived, and especially to support the nation-wide campaign which has been launched in the grade and high schools of this country. The Committee on Tuberculosis of the American School Health Association has subcommittees in each state, and in some places the members of these subcommittees cooperate closely with similar subcommittees of the American Academy of Pediatrics. The

objective of these subcommittees is to arrange for the establishment of good tuberculosis control programs in the schools of their respective states. A recent innovation consists of certifying schools on the basis of tuberculosis control programs in progress.

It has been suggested that each state subcommittee prepare the qualifications for certification of the schools in its own state. In Minnesota the subcommittee has arranged for different grades—A, B, and C—depending upon the program the schools adopt. For example, to attain a Class A certificate at least 95 per cent of all the children must be tested with tuberculin and the nonreactors retested at least every other year; the tuberculin reactors must have X-ray inspections of their chests during the freshman and senior years of high school. All members of the school personnel must have the tuberculin test, and all non-reactors are retested every two years. All reactors among the personnel must have X-ray film inspection of the chest periodically. For both students and personnel, whenever shadows are found, complete examinations are required. The entire Northfield school system received a Class A certificate in October 1945. In the sanatorium district of four counties, directed by Dr. L. S. Jordan, more than one hundred schools have just qualified for certification. This work dovetails so perfectly with that of Student Health Services of colleges and universities that the Committees on Tuberculosis of both organizations could work together to immense advantage.

#### MANAGEMENT OF CASES

On every campus there is still a considerable number of students and personnel members who have primary tuberculosis as manifested by the tuberculin reaction. The X-ray films of the chest are clear, for the most part, only a small percentage having evidence of calcium deposits. They require no treatment whatsoever and may engage in all of the activities of the institution, including athletics. However, each one should be instructed to guard himself against exposure to contagious cases of tuberculosis. Moreover, each one should be examined periodically at intervals of one year if possible, always including X-ray inspection of the chest. Among those who enter school as reactors who recently acquired the infection, together with the small group which becomes infected while on the campus, only a small group (5 to 10 per cent) have primary lesions in the pulmonary parenchyma that are demonstrable on the X-ray film. The majority of such individuals have no significant symptoms and require no active treatment. They should be kept under close observation for lesions of the acute or chronic reinfection type of disease. From the occasional fresh primary lesion significant symptoms, such as temperature elevation, small pulmonary hemorrhages occur, and over a brief period tubercle bacilli are recoverable from the sputum. The red cell sedimentation rate is elevated. Such cases must be isolated and treated symptomatically, including strict bed rest. This should be continued until all symptoms have disappeared, including cough and expectoration, and the sedimentation rate has returned to the normal level. Because recovery oc-

curs so promptly in such cases (usually within two or three months) long periods of hospitalization, sanatorium care, or collapse therapy, are unnecessary.

When active reinfection type of tuberculosis is found in any part of the body, appropriate treatment should be instituted at once. For example, cases of renal tuberculosis and those with bone and joint lesions should immediately be referred to the urologist and the orthopedist. In cases of the reinfection type of pulmonary tuberculosis which are found on the first examination, determination of activity may require a great deal of work and a considerable period of observation. When first detected by the Health Service such lesions may be in the arrested or the apparently cured stage, either with or without previous treatment. Obviously, such cases do not need treatment at the moment but should be kept under close observation for reactivation of old lesions or the appearance of new ones.

Obviously, persons who are found to have active and contagious pulmonary tuberculosis should have treatment instituted at once, preferably in a hospital or a sanatorium. In some carefully selected cases, ambulatory artificial pneumothorax, plus a well regulated life, is permissible while the individuals continue their work on the campus. This is especially suitable for persons who are being periodically examined because of the presence of a tuberculin reaction and who present lesions on a regular examination which were not detectable at the time of the last annual examination.

With the recent revival of chemotherapy considerable hope has been engendered in finding a drug that will be effective in tuberculosis. At the present moment streptomycin appears to offer considerable promise. It has been found efficacious in experimental tuberculosis and favorable reports have been made concerning its use in a few human cases. However, because of the limited amount of the drug available, it has not yet been possible to give it adequate trial in a sufficiently large number of cases to justify final conclusions. Splendid work in progress by Hinshaw, Feldman, Pfuetze, and others may be continued and extended as the availability of the drug increases, so that we may expect considerable information concerning its efficacy within the next year or two. If streptomycin or any other drug is found to have a definite germicidal action in the human body and can be stripped of unduly toxic effects, one would expect it to be most effective during the early development of the primary complex. Therefore we might anticipate that Student Health Services would administer such a drug to every tuberculin reactor, even in the absence of all other findings just as we now institute treatment for syphilis in many cases with nothing more than serological evidence.

To date we possess no immunizing agent that can be recommended for use in Student Health Services. In fact, since an attack of primary tuberculosis with virulent strains of tubercle bacilli does not result in dependable immunity, it still appears that attempts to immunize with such agents as BCG, is the wrong approach to the solution of the problem. Moreover, the Student Health Services in this country can readily solve the tuberculosis problem by the well established and proved procedures above outlined, and therefore there is no urgent need for an immunizing agent. If all the students and personnel of a campus were given a substance like BCG, which sensitizes the tissues to tuberculoprotein so that all would react to tuberculin, there would be no way to determine which individuals are infected with virulent tubercle bacilli or subsequently become so, and therefore our most valuable weapon against tuberculosis—the tuberculin test—would be rendered useless. Although it was first used in 1913, BCG is still in the experimental stage; to introduce it on any campus would constitute an experiment on the students.



# The Use of Physostigmine and Neostigmine Therapy in Neuromuscular Dysfunction Caused by Trauma

*with Special Reference to the Sequelae of War Wounds*

Joel Goldman, M.D.\*

Lewistown, Pennsylvania

Abraham Cohen, M.D.\*

Philadelphia, Pennsylvania

**I**N 1943, H. Kabat and M. E. Knapp<sup>1</sup> discussed the use of neostigmine in the treatment of poliomyelitis. It was their belief that neostigmine, in addition to its parasympathetic effect, relieved muscular hyperactivity (muscle spasm) due to proprioceptive reflexes.

By inhibiting the action of cholinesterase, neostigmine enables the accumulation of acetylcholine in concentrations greater than normal. Profound physiologic changes are thus produced throughout the body. This parasympathetic effect may be nullified by the use of atropine. The altered conditions of the synapses in the spinal cord, following the use of neostigmine in many cases, led to decreased skeletal muscular hyperactivity and proprioceptive reflex hyperirritability. Kabat<sup>2</sup> suggests that, in addition to the above, neostigmine probably facilitates the development of new nerve pathways in the central nervous system. If this is the case then these continue to function even after neostigmine is discontinued.

It was to be expected that the benefits of neostigmine could be reproduced similarly in other types of neuromuscular dysfunction. Kabat found the drug to be of value in post-traumatic disability, fibrositis, chronic rheumatoid arthritis, bursitis, hemiplegia, cerebral palsy, facial paralysis, etc. Trommer and Cohen<sup>3</sup> reported similar results in a series of cases of rheumatoid arthritis. Bell and Boone<sup>4</sup> reported the successful treatment of muscle spasm in a case of arachnidism by the use of neostigmine methylsulfate. Cohen, Trommer and Goldman<sup>5</sup> have successfully treated a large number of cases of rheumatoid arthritis substituting physostigmine salicylate and atropine sulfate for neostigmine and atropine. They found little difference in the action of the two drugs, with the exception that fewer side effects were noted when physostigmine salicylate was used.

During the last two years there have been many cases of neuromuscular dysfunction seen as a result of civilian and military accidents and wounds. The great industrial effort of World War II carried with it numerous civilian casualties. The wounded of the battlefields are seen daily. The economic, social and crippling effect of such accidents and wounds cannot be exaggerated. In the past little could be done for many such cases, for physiotherapy and orthopedic surgery were successful in a distinctly limited number.

The authors, in reporting the following cases of treat-

ment of neuromuscular dysfunction due to industrial and battle wounds, feel that the work of Kabat<sup>2</sup> has great merit. In another paper,<sup>5</sup> the use of physostigmine interchangeably with neostigmine is described. Physostigmine was selected since it was pharmacologically similar to prostigmine, cheaper as to cost, and presented fewer side effects. Both were combined with suitable quantities of atropine sulfate to reduce or eliminate undesirable parasympathetic side effects. The drug was not given by mouth, since our experience with neostigmine bromide administered orally in treating rheumatoid arthritis was disappointing.<sup>5</sup> It was found that benefits were obtained by hypodermic injections only.† Cases were started on a placebo to observe whether or not any degree of improvement occurred merely by the initiation of a new form of therapy. It is to be stressed that many of these patients have traveled from physician to physician seeking relief and any unusual interest in their recovery by a physician may have led to emotional factors giving a false sense of improvement and even recovery. Once basic conditions were established, neostigmine or physostigmine with atropine were used.

## PROCEDURE

The drug, physostigmine or neostigmine, was injected daily subcutaneously in the following doses:

1. Physostigmine Salicylate (Eserine Salicylate) gr. 1/100 (0.65 mg.) with Atropine Sulfate, gr. 1/150 (0.4 mg.)

2. 2 cc. Neostigmine Methyl Sulfate 1:2000 solution (1 mg.) with Atropine Sulfate, gr. 1/100 (0.65 mg.)

In most cases the drugs were given daily. No serious side effects were noted, but it was noted that some of the unpleasant reactions were due to excessive atropinization. When several doses of the drug are given daily, it is desirable to hospitalize the patients, but nearly all cases can be treated as out-patients or as private cases in the physician's office. The benefits obtained from the above have been maintained after therapy was discontinued.

The return of the injured to work and self-support, and of the wounded to a useful way of life has been gratifying. The despondency of many veterans unable to return to their former routine has been replaced by a mental attitude of happiness, encouragement and faith in the future.

†Hypodermic Tablets, physostigmine salicylate, 0.65 mg. and atropine sulphate, 0.4 mg. were supplied by the Endo Products Co., Inc., for this investigation.

\*From the Arthritis Clinic of the Philadelphia General Hospital.

It must be stressed that adequate dosage of neostigmine or physostigmine must be used to obtain the desired results. The dose of physostigmine must be gauged by the needs of the patient. Some patients require more than others to produce a similar effect. It is wise to begin with physostigmine salicylate 1/100 gr. (0.65 mg.) and atropine sulfate 1/150 gr. (0.4 mg.). Should a reasonable amount of relaxation of muscle spasm be encountered, a continuation of this dosage is desirable; however, in the event that the patient does not receive adequate relief it may be necessary to increase the amount of physostigmine to gr. 1/50 (1.3 mg.) with atropine sulfate gr. 1/100 (0.65 mg.). Under these conditions one frequently notes untoward reactions due to either atropine or physostigmine. One must be familiar with the signs and symptoms of over-dosage of each of these drugs. Nausea, dizziness or pain in the abdomen are indications of excessive physostigmine or neostigmine. Sometimes diarrhea becomes manifest rather suddenly. On the other hand, if the patient complains of excessive dryness of the throat and blurring of vision, one is to suspect atropinization.

In the event that atropinization occurs it may be necessary to reduce the quantity of atropine and perhaps increase the dose of physostigmine or neostigmine to keep the drugs in proper balance. On the other hand, if muscle spasm is relieved, but the patient complains of dizziness, salivation or pain in the abdomen with nausea, the dose of physostigmine must now be decreased to perhaps gr. 1/100 (0.65 mg.). In this way one can arrive at a reasonable and adequate dosage for each individual patient.

#### CASES OF NEUROMUSCULAR DYSFUNCTION DUE TO TRAUMA CAUSED BY SURGERY

*Case 1.* I. A., white female, age 45. *Chief Complaint:* Protrusion of tongue to left, impaired speech and difficulty in swallowing. *Duration:* One month.

A mass was noted in the left anterior cervical region, in November, 1943. Patient was seen by a reputable radiologist who recommended biopsy. This was done on December 18, 1943, and the tissue studies were conclusive for a diagnosis of a tuberculous adenitis. The entire gland was enucleated on April 18, 1944. On the patient's return home from the hospital, it was noted that her tongue protruded to the left, she had difficulty in swallowing, and her speech was indistinct. Apparently this was caused by injury to the innervation of the tongue by the surgical procedure. On June 1, 1944, the patient was placed on a daily dosage of neostigmine 1.0 mg. and atropine sulfate 0.65 mg. Her improvement was prompt and very encouraging. In a few weeks the tongue protruded in the mid-line, speech cleared, and the swallowing function returned to normal. On July 1, 1944, treatment was changed to daily doses of physostigmine salicylate 0.65 mg. and atropine sulfate 0.40 mg. The improvement continued and all treatment was stopped August 1, 1944. There has been no recurrence.

*Case 2.* S. D., white, male, age 38. *Chief Complaint:* Painful fixation of the left knee. *Duration:* Two years.

Two years ago, while at work, the patient twisted his left knee. He was told that he had dislocated cartilages in this knee and that they would have to be removed surgically. The left knee joint was opened and meniscectomy was performed on April 1, 1944. The wound and joint became infected resulting in a deformity of the left knee. It was painful, flexed and fixed with considerable spasticity of the hamstring muscles. A brace was worn until November 3, 1944, when daily subcutaneous injections of neostigmine methyl sulfate 2 cc., 1/2000 (1 mg.) and atropine sulfate 1/100 (0.65 mg.) were started. At the end of several days the muscle spasm which had fixed the left knee in angulation relaxed sufficiently so that his left foot could be firmly and completely placed on the floor. The brace was discarded. Although this patient has slight recurrence of muscle spasm in damp weather, the condition has never returned to its former state and he is able to earn his living as an electrician. The neostigmine 1.0 mg. and atropine sulfate 0.65 mg. were injected subcutaneously daily from November 3, 1944, until February 1, 1945. Since that time physostigmine salicylate 0.65 mg. and atropine sulfate 0.65 mg. were given daily as above for an additional month: no change in the rate of progress could be noted when using the physostigmine. The improvement has been gradual and continuous and all therapy was discontinued on March 1, 1945.

#### CASES OF NEUROMUSCULAR DYSFUNCTION DUE TO TRAUMA CAUSED BY INDUSTRIAL ACCIDENTS

*Case 3.* A. H., white, male, age 59. *Chief Complaint:* Spastic, fixed left knee. *Duration:* Five months.

In August, 1942, a 20-pound wrench falling a distance of about 30 feet struck the patient's left knee. He sustained a broken cartilage and meniscectomy was found necessary. Following the operation, the knee did not return to normal. It was painful and semi-fixed in flexion. The patient walked with a marked limp. A brace was used as a support and he was unable to be on his feet for a very long period of time. Physical examination revealed the hamstring muscles definitely spastic and the knee was held in a fixed, semi-flexed position. Beginning December 2, 1944, neostigmine methyl sulfate 1.0 mg. and atropine sulfate 0.65 mg. were given hypodermically daily. On December 11, 1944, the leg was relaxed, stable and supported the patient well. The brace was no longer necessary. Since there was a tendency for the muscles of the affected leg to resume their spastic state, neostigmine and atropine therapy was continued until May 14, 1945. Physostigmine salicylate 0.65 mg. and atropine sulfate 0.65 mg. were given daily for an additional month. All treatments were stopped June 15, 1945, since it was felt that a maximum benefit had been achieved. He has approximately 75 per cent function of the left knee, and the patient has returned to his work as a machinist in a steel mill. To date there has been no regression.

*Case 4.* F. C., white, male, age 48. *Chief Complaint:* Low back pain, staggering gait, pains in thighs, back and asymmetry of face. *Duration:* Two years.

Two years ago while at work as a mechanic, a heavy wire perforated the patient's right ear drum, injuring



the cochlea. His face became drawn to the left; the right side of his mouth dropped; his right lower lid became ptotic. Because of a staggering gait, the muscle groups of his back became spastic. He had pains in his lumbar and shoulder girdle areas. On July 1, 1944, a daily schedule of neostigmine methyl sulfate 1.0 mg. and atropine sulfate 0.65 mg. was started. Relaxation of muscle spasm resulted, thus producing considerable relief from pain in the back. There was no change in the underlying condition, but the patient was practically free from pain during the use of the above medication. Physostigmine was not used in this case. The results were entirely subjective. The treatment lasted for six weeks. Upon discontinuing the medication, there was a return of spasm of the spinal muscles and some recurrence of back pain.

*Case 5.* A. K., age 41, female. *Chief Complaint:* Back strain with associated sciatica. Pain in the lower back radiating down the right leg to the heel and down the left leg to the popliteal space. *Duration:* Present illness dates back about six weeks when the patient suddenly, while lifting a heavy object, felt something "give" in the lower back. This was accompanied by severe pain in the back radiating down the right leg to the heel and the left leg to the popliteal space. The pain became so intense that the patient was unable to get around. Even in the recumbent position there was no relief from discomfort. Morphine was necessary for relief. She states that as long as she received the injections she was able to sleep and was not conscious of pain, however, she always had discomfort during her waking hours. Oral medication seemed to be of no avail. The patient had been seen every other day by her physician and at each visit an "injection" was necessary.

*Physical examination.* Physical examination revealed a female, 41 years of age, who complained of severe pain in the lower back radiating down the legs. Head and neck were negative, as were the chest and abdomen. In the back one could elicit tenderness over both sacroiliac joints. Coughing or sneezing did not aggravate her discomfort. There was also tenderness over the sciatic nerve of both legs. While standing there was a decided deformity of the right hip. The muscles of the lower back were in spasm. They were tense but not tender. Flexing the thigh on the abdomen and attempting to extend the leg caused excruciating pain. (Leseque's sign).

*Treatment.* September 15, 1945, hypodermic injection of physostigmine salicylate 1/100 gr. (0.65 mg.) with atropine sulfate gr. 1/150 (.4 mg.) were administered simultaneously. In ten minutes the patient felt considerable relief from the discomfort and desired to get out of bed. This treatment was repeated daily for a period of about ten days. At the end of this period, the patient was free from pain and has been getting along fairly well ever since. She was sent to a radiologist for diagnostic X-ray examination. His report is as follows:

"Minimal arthritic changes of the sacro-iliac joints. Postural acute angulation of the lumbo-sacral arc. This may be significant in accentuating the symptomatology

in this instance." To date the patient has had no recurrence of symptoms.

#### CASES OF NEUROMUSCULAR DYSFUNCTION DUE TO TRAUMA CAUSED BY PROJECTILES OR MILITARY ACCIDENTS

*Case 6.* A. B., white, male, age 38. *Chief Complaint:* Nearly useless, wounded right arm. *Duration:* Six months.

This patient was seen on December 19, 1945. Due to the effects of wounds caused by shrapnel, his right arm was practically useless. He was wounded at St. Lo in Normandy on July 11, 1944. There were nearly one-half dozen wounds in the right arm between the shoulder and wrist. The right brachial nerve had been severed and spliced. The right shoulder, elbow and wrist were semi-fixed and muscles were in spasm. The fingers of his right hand could not touch the right thumb when an attempt was made to close the hand to form a fist. The loss of function was 90 per cent at the shoulder, 75 per cent at the elbow and 100 per cent at the wrist. On December 19, 1945, daily subcutaneous injections of neostigmine methyl sulfate 1.0 mg. and atropine sulfate 0.65 mg. were started. As the muscle spasm relaxed, the fixations at the shoulder, elbow and wrist became mobile. The digits of the right hand relaxed and a fist could be made on flexion of the fingers; the fist could be closed and opened at will. The daily injections were continued for one month, when physostigmine salicylate 0.65 mg. with atropine sulfate 0.65 mg. were substituted for the original drugs. The improvement continued but progress was slow. Two months after treatment was started the right arm was once more a useful member with approximately 80 per cent normal function at the shoulder, 50 per cent at the elbow and 80 per cent at the wrist. There were no untoward reactions.

*Case 7.* M. D., white, male, 65 years of age. *Chief Complaint:* Partially paralyzed right hand. *Duration:* Four years.

Four years ago this patient was shot in the right arm, the bullet severing the right brachial nerve. The nerve was spliced by a neuro-surgeon. The hand was useless due to nearly 100 per cent loss of function at the wrist and 80 per cent loss of function of the fingers. On November 14, 1944, the use of daily doses of neostigmine methyle sulfate 1.0 mg. and atropine sulfate 0.65 mg. was started. At the end of two months physostigmine salicylate 0.65 mg. and atropine sulfate 0.65 mg. were substituted. There was a 20 per cent return of function in the use of his hand at the wrist and fingers. The patient can now hold his service revolver with his right hand and feels a gradual return of power.

*Case 8.* F. S., white, male, age 33. *Chief complaint:* Staggering gait, difficulty in controlling urinary bladder and bowels. *Duration:* Six months.

This patient, while leading a patrol in Germany on March 23, 1945, was struck in the back by a high velocity anti-tank shell. A wound 20 cm. in length crossed the vertebral column at the level of the twelfth dorsal vertebra. He was hospitalized for four months in Europe because of total paralysis from the waist down. Within three months he could only partially control his

bowels and bladder. When seen September 6, 1945, he had a shuffling gait, was unsteady on his feet, had difficulty in controlling his bowels and bladder and was depressed mentally. On September 6, 1945, daily subcutaneous injections of neostigmine 1.0 mg. and atropine sulfate 0.65 mg. were begun. A most remarkable change occurred; almost immediately his walking improved, he became stronger and within one month he had improved to such an extent that he returned to work. Physostigmine salicylate 0.65 mg. and atropine sulfate 0.65 mg. were substituted for neostigmine and atropine and improvement was maintained. There remains an element of foot drop, but 90 per cent normal function in his legs has persisted. The bowel and bladder functions are 100 per cent normal.

*Case 9.* P. F., white, male, age 36. *Chief Complaint:* Severe pain in left shoulder and upper back. *Duration:* Six months.

Eighteen months ago, during a severe storm at sea, the patient was thrown against a bulkhead. He sustained an injury to the left shoulder and dorsal spine area causing severe pain in these regions. He was hospitalized for several months. His tonsils were removed as a general health measure. When seen on December 27, 1944, he had severe pain in the left shoulder and in the dorsal spinal region. The muscles of these areas were spastic. There was a loss of function of at least 50 per cent on ordinary effort. On January 1, 1945, daily dosages of physostigmine salicylate 0.65 mg. and

atropine sulfate 0.65 mg. were started. The spasticity slowly relaxed and the pain gradually disappeared. All studies were negative with the exception of the X-ray films. These showed "evidence of narrowing of the bodies of the fifth and sixth cervical vertebrae; there was no disease of the vertebra and the changes are probably traumatic in origin." Treatment was continued for three months and return of function was 100 per cent. The patient now earns his living as a truck driver.

#### SUMMARY AND CONCLUSIONS

1. Physostigmine and atropine combination is suggested for use in the treatment of muscle spasm due to trauma caused by surgery, industrial accidents, war wounds and back sprain.
2. Nine cases are herein described in detail.
3. Treatment is simple and uncomplicated and therefore can be carried out in the physician's office on ambulatory cases.

#### BIBLIOGRAPHY

1. Kabat, H., and Knapp, M. E.: The Use of Prostigmine in the Treatment of Poliomyelitis. *J.A.M.A.*, 122:989, 1943.
2. Kabat, H.: Studies on Neuromuscular Dysfunction. *Public Health Reports*, 59, No. 51 (Dec. 22), 1944.
3. Trommer, P. R., and Cohen, A.: The Use of Neostigmine in the Treatment of Muscle Spasm in Rheumatoid Arthritis and Associated Conditions. Preliminary report. *J.A.M.A.*, 124: 1237, 1944.
4. Bell, J. E., Jr., and Boone, J. A.: Arachnidism Treated by Neostigmine Methylsulfate. *J.A.M.A.*, 129:15, 1946.
5. Cohen, A.; Trommer, P. R.; and Goldman, J.: Physostigmine for Muscle Spasm in Rheumatoid Arthritis and Allied Conditions. In press.

#### TUBERCULOSIS RESEARCH PROGRAM

Guided by recommendations of a conference of outstanding leaders in tuberculosis from the United States, China, and Denmark, the United States Public Health Service, Federal Security Agency, will extend its tuberculosis research program to include studies on the effectiveness of BCG vaccine in preventing this disease, Surgeon General Thomas Parran announced.

At the conference, Dr. Herman E. Hilleboe, Chief, Tuberculosis Control Division of the Public Health Service, reviewed the past experience with BCG, named bacillus of Calmette and Guerin for the French scientists who discovered it. Dr. Hilleboe pointed out that the vaccine has been extensively used in Europe and South America in artificial immunization against tuberculosis and that research on this subject has been undertaken in the United States by competent investigators.—(U. S. Public Health Service Release.)

#### 100 YEARS AGO

One hundred years ago New York City had 30 deaths from tuberculosis during a single August week. According to *Herald Tribune*, the disease ran a close second to cholera infantum. Other deaths during the week were attributed to apoplexy, sunstroke, "inflammation of the bowels," diarrhea, dysentery, and "dropsy in the head."

#### T-B GERM PERILS ESKIMO POPULATION

The natives of Alaska face extermination by tuberculosis unless vigorous corrective measures are taken, according to Army and Red Cross officials. Some 40 per cent of the natives have the disease, and in isolated villages the percentage is higher.

Why Eskimo children have a low resistance is evident in their diet which consists of bread, fried dough, and store candy, with only rare tastes of meat. The result, according to the Alaska Native Service, is that their teeth are often inferior to those of their parents, who looked upon fish-eye chowder, seaweed, and berries covered with seal oil as delicacies.

In Alaska the proportions of hospitals to residents is one to every 90. Until this spring there was no orthopedic clinic in the territory, and there still is no program for the care of the blind.

Three Army hospitals have recently been acquired by the Department of Public Health which will treat tuberculosis, and plans are in the making for a hospital near Anchorage which will be built from surplus Army huts and supported by the American Red Cross and local agencies.—(*Hospital Topics*, October, 1946.)



# Remarks for Variety Club Heart Hospital Dinner

By H. S. Diehl, M.D., Dean Medical Services, University of Minnesota  
Minneapolis, Minnesota

*This talk was given at the presentation of the Variety Club Heart Hospital to the University of Minnesota on September 23, 1946, at which event Mr. Fred Allen of radio fame was master of Ceremonies. The Variety Club Heart Hospital Fund, in excess of \$250,000, raised by a campaign for gifts conducted by the Variety Club of the Northwest, was presented to President J. L. Morrill of the University of Minnesota by Mr. A. W. Anderson, Chief Barker of the Club, who also announced the Club's pledge of \$25,000 a year towards support of the Heart Hospital. Other speakers were the Hon. Hubert H. Humphrey, Mayor of Minneapolis, the Hon. Edward J. Thye, Governor of Minnesota, and Mr. William McCraw, Executive Director of the National Variety Clubs.*

**P**ARTICIPATION in a program such as this one is a new experience for me. In the first place, deans don't often make Fred Allen's program. As I understand it, Mr. Allen's famous "Alley" contains many notable characters; even including a senator. Perhaps our good friend Governor Thye can qualify after we send him to the U. S. Senate. But never, so far as I know, has a dean or a college professor succeeded in gaining admission to this exclusive residential development.

In the second place, it is rare indeed that the Medical School has the privilege of accepting a gift of such importance as the one which the Variety Club is presenting here this evening.

The real beginning of this Heart Hospital goes back a considerable number of years when Dr. M. J. Shapiro practically single-handed started a clinic for the Minneapolis school children with heart disease. This clinic was located in the building known as the Lymanhurst School on Chicago Avenue. There was no ballyhoo or publicity about this work but over the years Dr. Shapiro's clinic rendered vital medical service to hundreds of Minneapolis children who were victims of heart disease.

The next chapter in this story came several years ago when the Lymanhurst School building was turned over to the Kenny Institute, and Dr. Shapiro's heart clinic had to look for another place in which to carry on. Temporary arrangements of various kinds were made but none of these was satisfactory. Then a little more than a year ago Dr. Shapiro happened to talk about his difficulties, his disappointments and his hopes for this clinic with the late Mr. Al Steffes, who at the time was Chief Barker of the Variety Club. Mr. Steffes replied that this sounded like the sort of service project in which the Variety Club might be able to help.

Dr. Shapiro's talks with Mr. Steffes were followed by conferences between the representatives of the Variety Club, the Medical School and the University administration. These conferences were especially interesting to me because the officials of the Variety Club had no idea at the beginning, of undertaking a project of such magnitude as this turned out to be. Yet every constructive suggestion which was made concerning the hospital was met by the response "of course, we'll do it."

By a tragic stroke of fate Mr. Steffes passed away from an attack of heart disease several months ago. I am sure that we are all keenly disappointed that he is not present here this evening to take pride in the success of the project which he inaugurated. Mr. Steffes' term of office as Chief Barker of the Variety Club expired

when the preliminary planning of the Heart Hospital had been completed and Mr. Art Anderson took over. To his deep interest, his devotion and his unceasing efforts belongs most of the credit for the success of this enterprise. I want to take this opportunity to tell Mr. Anderson that we are deeply appreciative of all that he has done for this Heart Hospital program.

The importance of this Variety Club Heart Hospital can hardly be overestimated. We know that it will provide the best of medical service for thousands of children and adults with heart disease. With prompt and efficient medical care the lives of many victims of this disease can be prolonged and even more can be returned to useful and happy lives instead of being condemned to years of invalidism. That alone would justify the construction and continued support of this hospital.

But even more important is the opportunity which this hospital will present for the study of this disease which ranks first as a cause of death in this country. Among children the major cause of heart disease is rheumatic fever. This disease which transcends in importance all the other diseases of childhood was also the foremost medical problem of the armed forces during the early years of the war. Tens of thousands of young men who were afflicted with this disease, not only were rendered unfit for military service but were discharged from the Army or Navy with damaged hearts which will handicap them throughout life and on the average will shorten their life expectancy by approximately twenty years.

In order to be a bit more specific about the importance of heart disease may I introduce just three figures.

First, in the current epidemic of infantile paralysis which is the worst that this area has ever known 167 residents of Minnesota have died from this disease.

I would ask that you keep this figure in mind while I tell you that in recent years Minnesota has been having more than 500 deaths annually from rheumatic heart disease and over 8000 deaths from all types of heart disease.

I mention this comparison not to minimize the importance or the tragedy of infantile paralysis. No one who has had anything to do with the epidemic could possibly do that. But I do want to point out how much more of a problem heart disease constitutes, not occasionally, but regularly year after year.

This new hospital will make it possible for our medical faculty to conduct intensive studies of the treatment, and better still, the prevention of this disease. Funds for the support of such research I am sure will be available as soon as we have the facilities which this hospital will provide.

A similar intensive attack will be made upon the heart disease of later life. I could predict with assurance that at least one out of every three persons in this room this evening will eventually be a victim of this disease. But even knowing that, there is little that can be done to prevent it. Any contribution to the solution or even a significant forward step in the control of a disease of such importance will be of inestimable value.

## AMERICAN STUDENT HEALTH ASSOCIATION NEWS LETTER

F. A. Woll, M.D., of the City College of New York, New York, New York, has retired as Director of Student Health and has been replaced by Frank S. Lloyd, M.D., Chairman of the Department of Hygiene.

Margherita Ciaramelli, M.D., of New York City has recently been appointed as Assistant Physician on the Carleton College Health Service staff at Northfield, Minnesota.

Murray Wagner, M.D., has been appointed the first full time physician of the recently reorganized Student Health Service at Union College, Schenectady, New York.

Thomas Urmy, M.D., of Boston, recently a Major in the Army, has been appointed as the new Director of Student Health at Williams College, Williamstown, Massachusetts.

Elizabeth L. Broyles, M.D., has been appointed resident physician at Wellesley College, Wellesley, Massachusetts, to take the place of the late Doctor Mary Fisher DeKruif.

Dana L. Farnsworth, M.D., Director of the Department of Health at Williams College, has resigned to take a position as Medical Director at the Massachusetts Institute of Technology.

Wesley P. Cushman, M.D., has resigned from his position as Director of Student Health at State Teachers College, Mankato, Minnesota, to take a position in the Physical Education Department at Ohio State University, Columbus, Ohio.

George Houck, M.D., has been appointed successor to Charles E. Shepard, M.D., as Director of the Student Health Service at Stanford University, California. Doctor Shepard is still convalescing from a recent illness.

Ralph I. Canuteson, M.D., reports that he is establishing a complete visiting nurse service at Sunflower Village, which is a residence district for students living about twelve miles from the campus of the University. In addition he is planning to set hospital facilities there in the event of any epidemic. The enrollment at the University is about twice that of any previous years.

George M. Decherd, Jr., M.D., has been appointed Director of the Student Health Service at the University of Texas, Austin, Texas.

Robert B. Beech, M.D., is assuming the position of acting Director of the Student Health Service at Northwestern University to take the place of Richard H. Young, who is now Dean of the University of Utah Medical School.

.....

Dan G. Stine, M.D., Director of the Student Health Service at the University of Missouri, Columbia, Missouri, writes the following paragraph concerning the barracks, trailers, etc., on his campus:

"At present, we have a number of G.I. Villages made up of barracks, trailers, etc., scattered over our golf links and Agricultural College farms, each with its mayor and town council and each with a health committee. I have one of the physicians of the Student Health Service assigned as Health Inspector of these villages, and one

of our women physicians acts as counselor to the wives of the students in these villages, advising them about the problem of wifehood and motherhood as well as the sanitation of the inside of the trailer or barracks apartment. I have a feeling that one of the greatest things that will come out of this crisis in college education will be the training of the student in citizenship, as he assumes the civic responsibility in his village."

.....

The Dean of Medicine at the University of Wisconsin Medical School, Dr. Wm. S. Middleton, has announced the appointment of Dr. C. Knight Aldrich as Assistant Professor of Neuropsychiatry in the Department of Student Health.

Dr. Aldrich was granted the degree of Doctor of Medicine by Northwestern University in 1939, following which he served an internship at the Cook County Hospital in Chicago. Later he was resident physician in Neuropsychiatry at the United States Marine Hospital at Ellis Island and then became associated with the United States Public Health Service, Lexington, Kentucky, and Ft. Worth, Texas. Dr. Aldrich spent a year in the Pacific with the Coast Guard connected with the United States Public Health Service. His home was Winnetka, Illinois.

.....

Announcement of the appointment of Dr. John Welch Brown to the Professorship of Preventive Medicine and as Director of the Department of Student Health at the University of Wisconsin was made by Dr. Wm. S. Middleton, Dean of Medicine at that institution. Dr. Brown's appointment became effective on November 1, 1946. He holds the degrees of Bachelor of Arts and Doctor of Medicine from the University of California and he received the M.D. degree in 1935. He was on war leave from the University of California from November 1941 to December 1945.

Dr. Brown has held numerous important appointments, included among which were Director of Clinical Laboratories, University of California Hospital, Assistant Professor of Medicine, University of California Medical School, Member of the Commission on Influenza of the National Research Council, Army Epidemiological Board, Consultant in Medicine, Letterman General Hospital, U. S. Army, San Francisco, and Assistant Visiting Physician, San Francisco Hospital, from 1939 to the time of his appointment at the University of Wisconsin Medical School.

His publications have been extensive covering the field of Preventive Medicine, Blood, the Pneumococcus, Immunology and certain of the Virus diseases including Influenza.

Dr. Brown will utilize the Student Health Service as a demonstration unit for closer correlation of clinical practices with Preventive Medicine in the broader field of Public Health. It is particularly significant that the University of California organized the first of the important Health Services for University students in this



country in 1909, and the University of Wisconsin followed closely in 1910 when the Health Service was established with Dr. J. S. Evans as its Director.

Dr. Brown was born in Iowa in 1911 and is certified by the American Board of Internal Medicine.

.....

Notice of the appointment of Dr. Carol M. Rice to the Medical faculty and the Department of Student Health at the University of Wisconsin was announced by the Dean of Medicine, Dr. William S. Middleton, on September 1, 1946.

Dr. Rice returns to the University of Wisconsin Medical School after an absence of several years. During that period she has been Director of the Health Service

at Sweet Briar College in Virginia.

She holds the Bachelor of Arts degree from Smith College and a Masters degree from Wellesley. Dr. Rice was granted the degree of Doctor of Medicine by the University of Wisconsin in 1931. She served an internship at the State of Wisconsin General Hospital as well as a residency in Medicine and Neuropsychiatry at that same institution. In addition, she has done graduate work in Vienna.

Dr. Rice now holds the appointment of Associate Professor of Clinical Medicine, and Assistant Director of the Student Health Service at the University of Wisconsin.

## Book Reviews

**Diseases of the Skin**, by GEORGE CLINTON ANDREWS, 3rd edition. Philadelphia: W. B. Saunders Co., 1946. Pp. 886, illustrated. \$10.00.

This book is a distinct improvement over previous editions. Noteworthy is the clearness of the histopathologic illustrations and their descriptions. The present concept of treatment of various types of syphilis with penicillin is outlined. The chapter on tropical diseases of the skin is complete yet concise and to the point. X-ray and radium therapy and X-ray physics are well dealt with. However, what recommends this volume highly are the numerous well chosen and intensely representative clinical illustrations. The subject matter is brief and to the point and contains a wealth of information of both diagnostic as well as therapeutic nature. This book is recommended for practitioners and students, and is a worthy addition to the American scene of dermatologic training. L. W.

**The Biochemistry of Malignant Tumors**, by KURT STERN, M.D., and ROBERT WILLHEIM, M.D. Brooklyn, N. Y.: Chemical Publishing Co., Inc. 885 pages. \$12.00.

This treatise describes the relationship of cancer to chemistry in the broadest medium of both words. In it, Kurt Stern, formerly research Associate of the University of Vienna, and now of New York, and Robert Willheim, professor in the University of Philippines, have collaborated in an exhaustive review of the literature and compilation of the world literature. The present edition appears to be a reprint of the original book first available in 1943 which was reviewed in *JOURNAL-LANCET*. Main emphasis has been placed on the literature of the past 25 years which reflects the greatest strides in biochemical cancer research. It is a valuable reference book for the investigator interested in cancer, or for the clinician desiring basic information in the subject. H. W.

**Narcotics and Drug Addiction**, by ERICH HESSE, M.D. New York: Philosophical Library, 1946, 219 pages, \$3.75.

This book is a translation into English, and therefore a good share of the statistics do not refer to this country. Apparently this volume has been written for the general public and is an attempt to stimulate interest in the overuse and abuse of the various narcotics and stimulants. Many sections of this book, however, are too technical for the general public to understand. On the other hand, most of the information contained is too simplified for the medical profession. A great deal of the contents are of historical and educational interest and present a brief, simplified review of the various drugs in spite of the author's attitude and dogmatism against the use of these drugs in any form. A. B. B.

**Peripheral Vascular Diseases**, by EDGAR V. ALLEN, NELSON W. BARKER, EDGAR A. HINES. Philadelphia: W. B. Saunders Company, 1946. 871 pages. \$10.00.

This book represents the experience of the last twenty-five years of the Mayo Clinic with peripheral vascular diseases. Besides the authors there are eleven contributors, all Mayo staff members. The work is profusely and beautifully illustrated. Many of the chapters are prefaced with a portrait and thumb-nail sketch of one of the men who discovered or popularized one of the vascular diseases. The preclinical chapters—definitions, vascular anatomy, methods of investigation—are an excellent introduction to the study of peripheral vascular disease. The clinical sections are masterfully done and testify to the tremendous experience in the field by these authors. This reviewer considers this text to be the best in the field, required reading for anyone interested in vascular pathology. R. B.

## MEET OUR CONTRIBUTORS . . .

**Dr. Robert O. Quello** has practiced in Minneapolis for the past ten years, and is a member of the Swedish Hospital staff. He was graduated from the University of Minnesota in 1936, M.D. degree. He is a member of the Hennepin County Medical Society, the Minnesota State Medical Association, and the A.M.A.

**Dr. O. Theron Clagett**, who specializes in thoracic surgery, has been on the surgical staff of the Mayo Clinic, Rochester, Minnesota, since 1940. He was graduated from the University of Colorado Medical School, class of 1933, with the degrees of M.D., M.S., and F.A.C.S., with graduate work at the Mayo Foundation from 1935 to 1940. He is a member of the A.M.A., American Society for Thoracic Surgery (active member), Central Surgical Association, Minnesota Trudeau Society, and the American Trudeau Society. He was also elected as honorary member of the Mexican National Academy of Surgery this year.

**Dr. J. Arthur Myers** of Minneapolis is nationally known for his work in the field of tuberculosis.

**Dr. Joel Goldman**, Lewiston, Pennsylvania, is Assistant Chief of the Arthritis Clinic, Philadelphia General Hospital. In 1931 he was graduated from Jefferson Medical College, M.D. degree. He specializes in internal medicine and is a member of the A.M.A., the Mifflin County of Pennsylvania Medical Society, and the Pennsylvania State Medical Society.

**Dr. Abraham Cohen**, Philadelphia, Pennsylvania, is Chief of the Arthritis Clinic and Associate in Medicine, Philadelphia General Hospital. His specialty is internal medicine with special reference to arthritis and its allied diseases. He was graduated from Jefferson Medical College in 1925, M.D. degree. He is a member of the A.M.A., the Pennsylvania County Medical Society, International Rheumatism Association, Brussels, Belgium, and the International Society of Medical Hydrology, London, England.

# The JOURNAL LANCET

Serves the Medical Profession of  
MINNESOTA, NORTH DAKOTA, SOUTH DAKOTA AND MONTANA

Official Journal of the American Student Health Assn., Great Northern Railway Surgeons' Assn., Minneapolis Academy of Medicine, Montana State Medical Assn., North Dakota Society of Obstetrics and Gynecology, North Dakota State Medical Assn., Northwestern Pediatric Society, Sioux Valley Medical Assn., South Dakota Public Health Assn., South Dakota State Medical Assn.

## ADVISORY COUNCIL

### North Dakota State Medical Assn.

Dr. A. E. Spear, *Pres.*  
Dr. Philip G. Arzt, *Pres.-Elect*  
Dr. L. W. Larson, *Secy.*  
Dr. W. W. Wood, *Treas.*

### North Dakota Society of Obstetrics and Gynecology

Dr. Paul Freise, *Pres.*  
Dr. G. Wilson Hunter, *Vice Pres.*  
Dr. F. A. DeCesare, *Secy.-Treas.*

### Minneapolis Academy of Medicine

Dr. Russell W. Morse, *Pres.*  
Dr. Paul F. Dwan, *Vice Pres.*  
Dr. J. C. Miller, *Secy.*  
Dr. Ragnvald S. Ylvisaker, *Treas.*  
Dr. Henry E. Hoffert, *Recorder*

### South Dakota State Medical Assn.

Dr. F. S. Howe, *Pres.*  
Dr. H. R. Brown, *Pres.-Elect*  
Dr. J. L. Calene, *Vice Pres.*  
Dr. Roland G. Mayer, *Secy.-Treas.*

### South Dakota Public Health Assn.

Dr. J. M. Butler, *Pres.*  
Dr. C. E. Sherwood, *Vice Pres.*  
Dr. Gilbert Cottam, *Secy.-Treas.*

### Sioux Valley Medical Assn.

Dr. D. S. Baughman, *Pres.*  
Dr. Will Donahoe, *Vice Pres.*  
Dr. R. H. McBride, *Secy.*  
Dr. Frank Winkler, *Treas.*

### Montana State Medical Assn.

Dr. M. A. Shillington, *Pres.*  
Dr. L. W. Allard, *Pres.-Elect*  
Dr. H. T. Caraway, *Secy.-Treas.*

### Northwestern Pediatric Society

Dr. G. B. Logan, *Pres.*  
Dr. Geo. Kimmel, *Vice Pres.*  
Dr. Northrop Beach, *Secy.-Treas.*

### Great Northern Railway Surgeons' Assn.

Dr. W. W. Taylor, *Pres.*  
Dr. R. C. Webb, *Secy.-Treas.*

### American Student Health Assn.

Dr. Ralph I. Canuteson, *Pres.*  
Dr. Laurence Chenoweth, *Vice Pres.*  
Dr. G. T. Blydenburgh, *Secy.-Treas.*

## BOARD OF EDITORS

DR. J. A. MYERS, *Chairman*

Dr. J. O. Arnsion  
Dr. A. B. Baker  
Dr. D. S. Baughman  
Dr. Ruth E. Boynton  
Dr. Gilbert Cottam  
Dr. H. S. Diehl  
Dr. L. G. Dunlap  
Dr. Ralph V. Ellis  
Dr. W. A. Fansler

Dr. A. R. Foss  
Dr. James M. Hayes  
Dr. A. E. Hedback  
Dr. E. D. Hitchcock  
Dr. R. E. Iernstrom  
Dr. A. Karsted  
Dr. L. W. Larson  
Dr. W. H. Long  
Dr. O. J. Mabee

Dr. J. C. McKinley  
Dr. Irvine McQuarrie  
Dr. Henry E. Michelson  
Dr. C. H. Nelson  
Dr. N. J. Nessa  
Dr. Martin Nordland  
Dr. J. C. Ohlmacher  
Dr. K. A. Phelps  
Dr. C. E. Sherwood

Dr. M. A. Shillington  
Dr. J. C. Shirley  
Dr. E. Lee Shradar  
Dr. E. J. Simons  
Dr. J. H. Simons  
Dr. S. A. Slater  
Dr. W. P. Smith  
Dr. S. E. Sweitzer

Dr. W. H. Thompson  
Dr. E. L. Tuohy  
Dr. M. B. Visscher  
Dr. O. H. Wangensteen  
Dr. S. Marx White  
Dr. H. M. N. Wynne  
Dr. Thomas Ziskin,  
*Secretary*

LANCET PUBLISHING CO., *Publishers*, 84 South Tenth St., Minneapolis 2, Minnesota

MINNEAPOLIS, MINNESOTA, DECEMBER, 1946

## AN INCIDENT IN SURGERY FIFTY-FIVE YEARS AGO

It is well now and then to be reminded of the advances in surgery by those of us who have been eye-witnesses of its phenomenal progress. In this particular case we look back to sharpen the contrast between the appendectomy of today as compared to one performed fifty-five years ago by Dr. Frank Epley in New Richmond, Wisconsin. A few successful operations of this type had been performed and reported but none in that part of the state, therefore it was a matter of unusual responsibility.

In preparation, three large emergency bags had been packed and the steam sterilizer set out. Moist iodoform and carbolated gauze and sponges in glass jars made up the bulkiest parcels. Instruments were rarely boiled but were submerged in trays of strong carbolic acid. Gowns, hand towels, and gauze were sterilized for each operation. The gauze was used as an outermost dressing, covering the layers of absorbent cotton and gutta percha beneath; it was not allowed to touch the wound unless

previously dipped in an antiseptic solution. Rubber gloves, face masks, and head coverings were unknown.

With the arrival of Dr. Perry H. Millard as consultant, everything was in readiness for the operation. The room temperature was maintained at 100 degrees because it was feared that inrushing air of a lower temperature than that of the abdominal contents might produce shock when the incision was made and the organs exposed.

The appendix had ruptured and there was a large peritoneal abscess. A weak, warm bichloride of mercury solution from a large fountain syringe was used to wash out the pus at the time of the operation and at subsequent dressings. Real sponges instead of gauze pledgets were used to wipe away blood and pus. A fenestrated glass tube with a collar near one end was used for drainage, the collar preventing the tube from slipping into the wound and becoming lost in the abdomen. Small round openings in the tube were supposed to afford unobstructed drainage of pus and did facilitate the daily irrigation.

The patient recovered and Dr. Epley carried on his work with renewed interest.

A. E. H.



### CHRISTMAS SEAL SALE

The Christmas Seal Sale in the cause of tuberculosis control was instituted by individuals; first, Einer Holboell of Denmark in 1904, then Emily P. Bissell of Wilmington, Delaware, in 1907. From these beginnings the Christmas Seal now plays a major role in tuberculosis control. Emily Bissell's sale in Delaware brought a return of \$3,000. The possibility of this becoming a potent fund-raising method attracted the attention of the American Red Cross, which launched a sale on a national basis in 1908 with a reward of \$135,000. In 1910 the Red Cross and the National Tuberculosis Association entered into a partnership whereby the former financed the expense of the sale and contributed its emblem, prestige and name, while the latter did the organization work, conducted the sale and determined the proper expenditure of the funds. For ten years the Red Cross fostered the fund-raising campaigns of the National Tuberculosis Association. By 1920 the National Association had become so strong that officials of the Red Cross were of the opinion that special support was no longer necessary. For the past twenty-six years the National Association has conducted the seal sale alone.

Tuberculosis societies have been organized throughout the country, until today there are 2,900 of them co-operating with the National Association. These organizations participate in the Christmas Seal Sale. They all have the same objective, namely, the eradication of tuberculosis, and they are operated under the world-wide symbol of the tuberculosis movement, the red, double-barred cross.

All Christmas seals for this nation are produced by the National Association. The paper on which the seals are printed is the largest single order for gummed paper in the United States. Over two billion individual Christmas seals are lithographed annually. This work is done in the spring and summer and delivered by September to the associations planning to sell them which, in turn, place them in the twenty million envelopes to be mailed to individuals and families the latter part of November. Not all of the seals mailed bring a financial return; only about 43 per cent of them are accepted and paid for by recipients.

The Seal Sale reached its peak in 1945 with a gross income of \$15,638,755.37. Ninety-five per cent of the annual income remains in the states from which it is derived and enables state, county and city organizations to conduct their year-round activities in the prevention and control of tuberculosis. Five per cent is sent to the National Association to aid in the solution of special regional and national problems.

The Christmas Seal Sale also has an important educational value. The seals subtly and in the most cheerful way possible promulgate the message of tuberculosis control. It has become as closely identified with the holidays as Santa Claus himself. The educational value of the



seal has been such that there probably is no disease concerning which the public is so well informed.

Courtesy and ethics have caused most other health and philanthropic organizations to refrain from promoting their work by the sale of seals. They have left the Christmas Seal closely identified with tuberculosis in the minds of the general public. This has been a fine display of wisdom on the part of other organizations, inasmuch as tuberculosis has been almost a universal scourge, so much so that even at the beginning of this century few families escaped it in some form of its development; also because the National Tuberculosis Association and its component societies have rendered a fine accounting of their stewardship. This is manifested by the decline of mortality from 200 deaths annually per 100,000 persons living at the opening of the century, to approximately 40 per 100,000 at present. The morbidity has decreased proportionately, and the incidence of tuberculous infection is spectacularly reduced. Indeed, the disease has been completely eradicated at the grade school age level in sizeable areas of this country.

Much remains to be done. Tuberculosis is still the seventh cause of death among the diseases of this nation. Therefore, other health agencies should continue to abstain from the use of seal sales in fund-raising campaigns, and all persons should participate heartily in the promotion of the tuberculosis Christmas Seal Sale in order that the excellent record of the past may be continued or even improved.

J. A. M.

## News Items

### NEWS FROM SOUTH DAKOTA

Dr. W. H. Cubbins, a member of the board of governors of the American College of Surgeons, has been added to the staff of the newly-expanded four-year medical school at the South Dakota State University as professor of surgery, Dean Donald Slaughter announced. Dr. Cubbins is one of the founders of the *Journal of Surgery, Gynecology, and Obstetrics*, and of the American College of Surgeons.

Dr. Walter L. Hard of East Lansing, Michigan, has recently been appointed chairman and professor of the department of anatomy of the South Dakota State University four-year medical school. Dr. Duke received a teaching fellowship at Duke University in zoology and was graduated from that institution in 1937 with a Ph.D. degree.

### NEWS FROM NORTH DAKOTA

Dr. A. H. Reiswig of Wahpeton, South Dakota, received the degree of Associate in the International College of Surgeons at Detroit, Michigan, in October. The honor was conferred during a three-day meeting of the group.

Sponsored by the state health planning committee, a meeting of representatives of groups interested in health problems was held in Bismarck November 19 for the discussion of the health, medical, and hospital situation in the state. Participating in the discussions were Dr. W. G. Wright of Williston, chairman of the economics committee of the state medical association, Dr. Robert Ray of Garrison, Dr. William M. Smith of Bismarck, acting state health officer, Dr. A. E. Spear, Dickinson, president of the state medical association, Dr. A. C. Bachmeyer, director of study of the commission on hospital care and director of the University of Chicago clinics, and Dr. J. F. Hanna of Fargo.

### NEWS FROM MINNESOTA

Mrs. R. E. Scammon of the board of public welfare, Dr. E. J. Huenekens of Hennepin County Medical Society, and Dr. Frank J. Hill, city health commissioner, have been named by Mayor Hubert Humphrey to work with the public health division in sponsoring a city-wide chest X-ray survey.

Dr. George C. Kimmel of Red Wing, Minnesota, was elected president of the Northwest Pediatric Society at its annual meeting held recently at Bayport. The Northwest society consists of North and South Dakota, Montana, Wisconsin and Minnesota.

Dr. Clifford O. Ericks has resigned as assistant superintendent of the Rochester state hospital to enter private psychiatric practice with Dr. Harold Noran of Minneapolis.

Officials of the medical associations of Minnesota, Iowa, Nebraska, Wisconsin, North and South Dakota

met in St. Paul on November 10 for the annual North Central medical conference.

The North Central section of the American Urological Association met recently in Rochester for a three-day session. Dr. William J. Baker of Chicago was named president for the coming year, to succeed Dr. Walter M. Kearns of Milwaukee. Dr. Robert S. Breakey of Lansing, Michigan, was named president-elect, and Dr. Russell D. Herrold of Chicago was re-elected secretary-treasurer.

Dr. D. J. Halpern, Brewster, is the new president of the Southwestern Minnesota Medical Society, elected at the annual meeting of the group held here recently. Dr. F. L. Schade of Worthington was chosen president-elect, Dr. John Lohmann, Pipestone, vice president, and Dr. B. O. Mork, Jr., Worthington, was re-elected secretary-treasurer.

Dr. Robert Davies, associate medical director of Nopeming sanatorium, near Duluth, was chosen from a field of twenty applicants to be medical director of Morningside tuberculosis hospital at Seattle, Washington, where he will assume his new job about January 1.

## Deaths

Dr. Francis Peake, 75, who had practiced in Jamestown, North Dakota, since 1908, died October 26.

Dr. William E. Patterson, 71, Minneapolis physician for the past 29 years, died October 30.

Dr. Harry T. Frost, 53, of Wadena, Minnesota, died at Detroit Lakes on October 27.

Dr. Mathias Sundt, 63, who was a member of the staff of Fairview hospital, Minneapolis, died October 21.

Dr. Thomas L. DePuy, 59, of Jamestown, North Dakota, died October 24.

Dr. Nathan J. Braverman, 44, died at Duluth, Minnesota, on October 14.

Dr. Henry Foshager, 55, Clara City, Minnesota, died October 19.

Dr. J. G. Chichester, 70, physician and surgeon in Redfield, South Dakota, since 1904, died September 5.

Dr. Harold C. Joesting, 42, former Butte, Montana, physician and surgeon, died in Los Angeles, California, September 18. He was one of the founders and the first president of the Butte clinic.

Dr. Benjamin Shalett, 58, New York physician, was born in Minneapolis, where he practiced for a number of years. He died in New York September 17.

Dr. C. M. Roan, 68, Minneapolis physician, died September 11.

Dr. Frank M. Loring, 85, of Howard, South Dakota, pioneer physician and surgeon in Sanborn and Miner counties, died September 11.

Dr. Henry J. Rock, 82, former Sioux Falls, South Dakota physician, died in Wilmington, Delaware, September 9.



# The Journal=Lancet

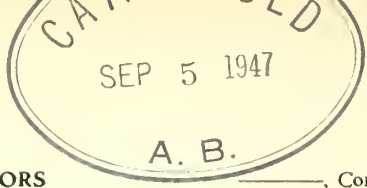
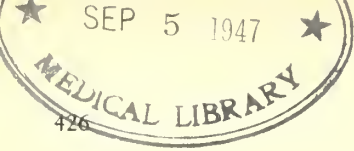
INDEX TO  
VOLUME LXVI  
New Series  
January 1946 - December 1946

*The Official Journal of the*  
North Dakota State Medical Association  
South Dakota State Medical Association  
Montana State Medical Association  
Sioux Valley Medical Association  
Great Northern Railway Surgeons' Association  
Minneapolis Academy of Medicine  
North Dakota Society of Obstetrics and Gynecology  
South Dakota Public Health Association  
American Student Health Association  
Northwestern Pediatric Society

---

Lancet Publishing Company, Publishers  
Minneapolis, Minnesota

1946



INDEX OF AUTHORS

ABBOTT, KENNETH H. See Woltman, Henry W., co-author  
 ADAMS, FORREST H. See Platou, Erling S., co-author  
 ADSON, ALFRED W. See Woltman, Henry W., co-author  
 ALPERS, BERNARD J., The brain changes associated with electrical shock treatment: a critical review, 363  
 AREY, STUART LANE, Post-measles and post-mumps encephalitis, 188  
 ———, Two cases of hemolytic anemia with leukemoid reaction of the myeloid type, 166  
 ARRASMITH, WINFRED W., Massive hemorrhage from the upper digestive tract, 209  
 BAIRD, JOE W., Oxygen therapy, 193  
 BAKER, A. B., and DALY, DAVID, Endogenous toxic encephalitis, 381  
 BLEGEN, H. M., and BOYER, ESTHER, Perforation of chole-dochus cyst with biliary peritonitis, 177  
 BOND, DOUGLAS D., The psychiatrist looks at family life, 377  
 BOYER, ESTHER L. See Blegen, H. M., joint author  
 BRIGGS, JOHN FRANCIS, and GEER, EVERETT K., The out-patient chest clinic, 114  
 BURKE, EDMUND C., and PLATOU, ERLING S., Biliary obstruction in the newborn with recovery, 232  
 BUTLER, JOHN M., Short leg backache, 10  
 CANUTESON, RALPH I., Looking ahead in health service, 227  
 CLAGETT, O. THERON, Surgery of the stomach, 403  
 CLAYMAN, S. G., Report of an unusual case of mediastinal tumor, 184  
 COHEN, ABRAHAM. See Goldman, Joel, joint author  
 COHEN, JOSEPH T. See Knight, Ralph, co-author  
 COLLINS, L. L., Tuberculosis control depends upon the practicing physician, 103  
 DALY, DAVID. See Baker, A. B., joint author  
 DIEHL, HAROLD S., Remarks for Variety Club heart hospital dinner, 419  
 DREW, HARRY O., Diet and the liver, 319  
 DYSON, RALPH E., Mesenteric cyst, 155  
 EGAN, RICHARD L., Thiouracil in the management of hyperthyroidism, 326  
 EMERSON, KENDALL, Tuberculosis and war, (Foreword), 95  
 EVANS, CHARLES A., The immunology of poliomyelitis, 328  
 GEER, EVERETT K. See Briggs, John F., joint author  
 GIBBS, R. W. See Platou, Erling S., co-author  
 GOLDMAN, JOEL, and COHEN, ABRAHAM, The use of physostigmine and neostigmine therapy in neuromuscular dysfunction caused by trauma (with special reference to the sequelae of war wounds), 415  
 GOWAN, L. R., Psychiatric care in general hospitals, 389  
 GRINKER, ROY R., A note on the development of speech patterns, 370  
 GRUNFEL, JUDITH, Future prospects for physicians, 229  
 HEALY, JAMES C., Hypochromic anemia: treatment with molybdenum-iron complex, 218  
 HUDSON, ELLIS HERNDON, Filariasis and malaria on the campus, 191  
 JACOBS, SYDNEY, The chronic cough, (Reprint), 74  
 ———, The tuberculin test, (Reprint), 72  
 KEITH, HADDOW M. See Logan, George B., joint author  
 KNIGHT, RALPH T., Anesthesia in general practice, 323

———, COHEN, JOSEPH T., and LITOW, M. M., The use of general anesthesia in the treatment of extensive caries in problem children, 148  
 KOONS, MELVIN E., Free plasma service in North Dakota, 4  
 ———, A report on the use of two thousand units of dried plasma under a state-wide health department program, 222  
 LA VAKE, R. T., Serology and obstetrics, 1  
 ———, Serology and obstetrics, II, 244  
 LEITER, HERBERT C., Some common skin diseases and their treatment  
 LIPPMAN, HYMAN S., Direct psychiatric treatment of the child, 161  
 LITOW, M. M. See Knight, Ralph, co-author  
 LOGAN, GEORGE B., and KEITH, HADDOW M., The successful treatment of subacute bacterial endocarditis of children with penicillin, 145  
 MANTZ, HERBERT L., Histoplasmin skin sensitivity and pulmonary calcifications, 100  
 MAUSS, I. H., A comparison of the response of gonorrhea to sulfathiazole and penicillin, 65  
 MORRIS, SARAH I., The hazard of tuberculosis during medical training, 109  
 MYERS, J. ARTHUR, Chester Arthur Stewart, a personal appreciation, 132  
 ———, John Charnley McKinley: A personal appreciation, 351  
 ———, Tuberculosis control in colleges and universities, 409  
 NOVAK, JULIUS B., Who should have the tuberculin test?, 116  
 ODEGARD, JOHN K. See Scherer, Roland G., joint author  
 OLSON, W. E., Electroshock convulsion therapy, 68  
 PELNER, LOUIS, Aids in the diagnosis of intestinal obstruction, 81  
 ———, The sprue syndrome, 79  
 PETERSON, WILLARD E., Report of a one-year survey of a diagnostic tuberculosis service in a general hospital, 118  
 PLATOU, ERLING S., GIBBS, R. W., and ADAMS, FORREST H., Treatment of chronic influenzal meningitis: heparin as an adjuvant, 157  
 ———, See Burke, Edmund C., joint author  
 ———, See Tudor, Richard B., joint author  
 PLETSCH, DONALD J., Anopheline mosquitoes in Montana, 289  
 PRAY, L. G., Mesenteric cysts causing intestinal obstruction in infancy, 152  
 \* PROFFITT, WILLIAM E., and WYATT, OSWALD S., Giant-cell tumor of bone in a four-month-old infant, 163  
 QUFLLO, R. O., Plasma proteins in surgery: a review of the literature, 399  
 REESE, HANS H., What do we know of multiple sclerosis?, 359  
 SANDER, O. A., The relationship of tuberculosis and silicosis, 96  
 SARFF, OLIVER ELTON, Treatment of prostatism, The, 215  
 SCHATZ, ALBERT I. See Waksman, Selman, co-author  
 SCHEMM, F. R., High fluid intake regime in the management of edema, 50  
 SCHERER, ROLAND G., and ODEGARD, JOHN K., Spontaneous rupture of a hydronephrotic kidney, 241  
 SCHIELE, BURTRUM C., Huntington's chorea in relation to the heredity of personality disorders, 393  
 SIMONS, EDWIN J., Facts and inferences of Minnesota sanatorium admittances, 105  
 SKOGLAND, JOHN E., Occlusion of arteries supplying the brain-stem and cerebellum, 385



- SPINK, WESLEY W., Sulfonamides and antibiotics in the prevention and treatment of infectious diseases, 277
- STRECKER, EDWARD A., War psychiatry and its influence upon postwar psychiatry and upon civilization, 357
- TUDOR, RICHARD B., and PLATOU, ERLING S., The celiac syndrome, 142
- VAN DEMARK, ROBERT E., The treatment of trimalleolar fractures of the ankle, 196
- WAKSMAN, SELMAN, and SCHATZ, ALBERT I., The present status of streptomycin therapy (Reprint), 77
- WANGENSTEEN, OWEN H., The graduate student and research, 284
- , The ulcer problem, 31
- WEECH, A. A., The challenge of postwar pediatrics, 138
- WELTY, DALTON M., Chronic unstable colon, 55
- WOLTMAN, HENRY W., ADSON, ALFRED W., and ABBOTT, KENNETH H., Neuritis ossificans with osteogenic sarcoma in brachial plexus following trauma; report of case, 372
- WYATT, OSWALD S. See Proffitt, William E., joint author

### INDEX OF ARTICLES

- Aids in the diagnosis of intestinal obstruction, Louis Pelner, 81
- A.M.A. house of delegates meeting (editorial), 20
- American Student Health Association:  
Fifteenth annual report of Tuberculosis Committee, 171  
News-Letter and Digest of Medical News, 72, 94, 195, 236, 329, 420
- Anesthesia in general practice, Ralph T. Knight, 323
- Anopheline mosquitoes in Montana, Donald J. Pletsch, 289
- As the life span lengthens (editorial), 271
- Biliary obstruction in the newborn with recovery, Edmund C. Burke and Erling S. Platou, 232
- Brain changes associated with electrical shock treatment: a critical review, Bernard J. Alpers, 363
- Celiac syndrome, The, Richard B. Tudor and Erling S. Platou, 142
- Challenge of postwar pediatrics, The, A. A. Weech, 138
- Christmas seal sale (editorial), 423
- Chronic cough, The, Sydney Jacobs, (Reprint), 74
- Chronic unstable colon, Dalton M. Welty, 55
- Comparison of the response of gonorrhea to sulfathiazole and penicillin, I. H. Mauss, 65
- Co-operative health unit organized (editorial), 314
- Diet and the liver, Harry O. Drew, 319
- Direct psychiatric treatment of the child, Hyman S. Lippman, 161
- Electroshock convulsion therapy, W. E. Olson, 68
- Endogenous toxic encephalitis, A. B. Baker and David Daly, 381
- Facts and inference of Minnesota sanatorium admittances, Edwin J. Simons, 105
- Filariasis and malaria on the campus, Ellis Herndon Hudson, 191
- Free plasma service in North Dakota, Melvin E. Koons, 4
- "Functional heart murmurs" unsatisfactory term (editorial), 348
- Future of psychiatry, The (editorial), 398
- Future prospects for physicians, Judith Grunfel, 229
- Giant-cell tumor of bone in a four-month-old infant, William E. Proffitt and Oswald S. Wyatt, 163
- Graduate student and research, Owen H. Wangensteen, 284
- Hazard of tuberculosis during medical training, Sarah I. Morris, 109
- High fluid intake regime in the management of edema, F. R. Schemm, 50
- Histoplasmin skin sensitivity and pulmonary calcifications, Herbert L. Mantz, 100
- Huntington's chorea in relation to the heredity of personality disorders, Burtrum C. Schiele, 393
- Hypochromic anemia: treatment with molybdenum-iron complex, James C. Healy, 218
- Immunology of poliomyelitis, Charles A. Evans, 328
- Incident in surgery fifty-five years ago, An, (editorial), 422
- Looking ahead in health service, Ralph I. Canuteson, 227
- Massive hemorrhage from the upper digestive tract, Winfred W. Arrasmith, 209
- McKinley, John Charnley: A personal appreciation, J. Arthur Myers, 351
- Measuring the community for a hospital, (condensation) 24
- Medical continuation courses at University of Minnesota, winter and spring, 1946, 21
- Medical conventions again (editorial), 199
- Medical outlook for the new year (editorial), 19
- Mesenteric cyst: report of a case, Ralph E. Dyson, 155
- Mesenteric cysts causing intestinal obstruction in infancy, L. G. Pray, 152
- Minnesota State Board of Medical Examiners, List of physicians licensed by, November 9, 1945, 29
- Montana State Medical Association: roster, 343; transactions, 331; women's auxiliary, 347
- Nation's birth and maternal record improves, (editorial), 58
- Neuritis ossificans with osteogenic sarcoma in brachial plexus following trauma: report of a case, Henry W. Woltman, Alfred W. Adson, and Kenneth H. Abbott, 372
- Neurology:  
Brain changes associated with electrical shock treatment: a critical review, Bernard Alpers, 363  
Endogenous toxic encephalitis, A. B. Baker and David Daly, 381  
Neuritis ossificans with osteogenic sarcoma in brachial plexus following trauma; report of a case, Henry W. Woltman, Alfred W. Adson and Kenneth H. Abbott, 372  
Occlusion of arteries supplying the brain-stem and cerebellum, John E. Skogland, 385  
What do we know of multiple sclerosis? Hans H. Reese, 359
- North Central states socio-medical problems (editorial), 397
- North Dakota State Medical Association: House of Delegates, transactions, 290; roster, 309
- Note on the development of speech patterns, A., Roy R. Grinker, 370
- Occlusion of arteries supplying the brain-stem and cerebellum, John E. Skogland, 385
- Out-patient chest clinic, The, John Francis Briggs and Everett K. Geer, 114
- Oxygen therapy, Joe W. Baird, 193
- Passing of the family doctor, The (editorial), 350
- Pediatrics:  
Biliary obstruction in the newborn with recovery, Edmund C. Burke and Erling S. Platou, 142

- Celiac syndrome, The, Richard B. Tudor and Erling S. Platou, 142
- Challenge of postwar pediatrics, The, A. A. Weech, 138
- Direct psychiatric treatment of the child, Hyman S. Lippman, 161
- Giant-cell tumor of bone in a four-month-old infant, William E. Proffitt and Oswald S. Wyatt, 163
- Mesenteric cyst: report of a case, Ralph E. Dyson, 155
- Mesenteric cysts causing intestinal obstruction in infancy, L. G. Pray, 152
- Successful treatment of subacute bacterial endocarditis of children with penicillin, George B. Logan and Haddow M. Keith, 145
- Treatment of chronic influenzal meningitis: heparin as an adjuvant, E. S. Platou, R. W. Gibbs, and Forrest H. Adams, 157
- Two cases of hemolytic anemia with leukemoid reaction of the myeloid type, S. L. Arey, 166
- Use of general anesthesia in the treatment of extensive caries in problem children, Ralph T. Knight, Joseph T. Cohen, and M. M. Litow, 148
- Perforation of choledochus cyst with biliary peritonitis, H. M. Blegen and Esther L. Boyer, 177
- Physicians licensed by the Minnesota State Board of Medical Examiners, List of November 9, 1945, 29
- Physicians too many or too few, (editorial), 57
- Plasma proteins in surgery: a review of the literature, R. O. Quello, 399
- Post-measles and post-mumps encephalitis, Stuart Lane Arey, 188
- Present status of streptomycin therapy, by Selman A. Waksman and Albert I. Schatz (reprint), 77
- Psychiatric care in general hospitals, L. R. Gowan, 389
- Psychiatrist looks at family life, The, Douglas D. Bond, 377
- Psychiatry:
- Electroshock convulsion therapy, W. E. Olson, 68
  - Future of psychiatry, The, (editorial), 398
  - Huntington's chorea in relation to the heredity of personality disorders, Burtrum C. Schiele, 393
  - Note on the development of speech patterns, A. Roy R. Grinker, 370
  - Psychiatric care in general hospitals, L. R. Gowan, 389
  - Psychiatrist looks at family life, The, Douglas D. Bond, 377
  - Psychotherapy strides forward (editorial), 83
  - War psychiatry and its influence upon postwar psychiatry and upon civilization, Edward A. Strecker, 357
  - Psychotherapy strides forward (editorial), 83
- Relationship of tuberculosis and silicosis, O. A. Sander, 96
- Report of a one-year survey of a diagnostic tuberculosis service in a general hospital, Willard E. Peterson, 118
- Report of an unusual case of mediastinal tumor, S. G. Clayman, 184
- Report on the use of two thousand units of dried plasma under a state-wide health department program, Melvin E. Koons, 222
- Serology and obstetrics, R. T. La Vake, 1
- Serology and obstetrics (II), R. T. La Vake, 244
- Short leg backache, John M. Butler, 10
- Some common skin diseases and their treatment, Herbert C. Leiter, 12
- South Dakota forges ahead (editorial), 239
- South Dakota State Medical Association: roster, 264; transactions, 247; women's auxiliary, 268
- Spontaneous rupture of a hydronephrotic kidney, Roland G. Scherer and John K. Odegard, 241
- Sprue syndrome, The, Louis Pelner, 79
- Stewart, Chester Arthur: A personal appreciation, J. Arthur Myers, 132
- Stewart, Dr. Chester Arthur, at Louisiana, 1941-46 (editorial), 169
- Strenuous holidays (editorial) 237
- Streptomycin in treatment of tularemia (editorial), 271
- Successful treatment of subacute bacterial endocarditis of children with penicillin, George B. Logan and Haddow M. Keith, 145
- Sulfonamides and antibiotics in the prevention and treatment of infectious diseases, Wesley W. Spink, 277
- Surgery of the stomach, O. Theron Clagett, 403
- Thiouracil in the management of hyperthyroidism, Richard L. Egan, 326
- Transmission of poliomyelitis, The (editorial), 315
- Treatment of chronic influenzal meningitis: heparin as an adjuvant, E. S. Platou, R. W. Gibbs, and Forrest H. Adams, 157
- Treatment of prostatism, The, Oliver Elton Sarff, 215
- Treatment of trimalleolar fractures of the ankle, Robert E. Van Demark, 196
- Tuberculin test, The, Sydney Jacobs, (reprint), 72
- Tuberculosis:
- Christmas seal sale (editorial), 423
  - Chronic cough, The, Sydney Jacobs, 74
  - Facts and inferences of Minnesota sanatorium admittances, Edwin J. Simons, 105
  - Hazard of tuberculosis during medical training, Sarah I. Morris, 109
  - Out-patient chest clinic, The, John Francis Briggs and Everett K. Geer, 114
  - Relationship of tuberculosis and silicosis, O. A. Sander, 96
  - Report of a one-year survey of a diagnostic tuberculosis service in a general hospital, Willard E. Peterson, 118
  - Tuberculin test, The, Sydney Jacobs, 72
  - Tuberculosis among college students, 15th annual report of the Tuberculosis Committee, American Student Health Association, 171
  - Tuberculosis and war, Kendall Emerson, 95
  - Tuberculosis control depends upon the practicing physician, L. L. Collins, 103
  - Tuberculosis control in colleges and universities, J. Arthur Myers, 409
  - Tuberculosis is contagious (editorial), 121
  - Tuberculosis prevalence revealed through autopsies (editorial), 122
  - Vaccination and tuberculosis (editorial), 238
  - Who should have the tuberculin test? Julius B. Novak, 116
  - Tuberculosis among college students, 15th annual report of the Tuberculosis Committee, American Student Health Association, 171
  - Tuberculosis and war, Kendall Emerson, (Foreword), 95
  - Tuberculosis control depends upon the practicing physician, L. L. Collins, 103
  - Tuberculosis control in colleges and universities, J. Arthur Myers, 409
  - Tuberculosis is contagious (editorial), 121
  - Tuberculosis prevalence revealed through autopsies (editorial), 122
  - Two cases of hemolytic anemia with leukemoid reaction of the myeloid type, S. L. Arey, 166
- Ulcer Problem, The, Owen H. Wangensteen, 31
- Uses of general anesthesia in the treatment of extensive caries in problem children, Ralph T. Knight, Joseph T. Cohen, and M. M. Litow, 148
- Use of physostigmine and neostigmine therapy in neuromuscular dysfunction caused by trauma (with special reference to the



- sequelae of war wounds), Joel Goldman, Abraham Cohen, 415
- Vaccination and tuberculosis (editorial), 238
- Variety Club heart hospital dinner, remarks for, H. S. Diehl, 419
- War psychiatry and its influence upon postwar psychiatry and upon civilization, Edward A. Strecker, 357
- What do we know of multiple sclerosis? Hans H. Reese, 359
- Who should have the tuberculin test? Julius B. Novak, 116

## EDITORIALS

- A.M.A. house of delegates meeting, 20
- As the life span lengthens, 271
- Christmas seal sale, 423
- Co-operative health unit organized, 314
- Dr. Chester Arthur Stewart at Louisiana, 1941-1946, 169
- "Functional heart murmurs" unsatisfactory term, 348
- Future of psychiatry, The, 398
- Incident in surgery fifty-five years ago, An, 422
- Medical conventions again, 199
- Medical outlook for the new year, 19
- Nation's birth and maternal record improves, 58
- North Central states socio-medical problems, 397
- Passing of the family doctor, The, 350
- Physicians too many or too few, 57
- Psychotherapy strides forward, 83
- South Dakota forges ahead, 239
- Strenuous holidays, 237
- Streptomycin in treatment of tularemia, 271
- Transmission of poliomyelitis, The, 315
- Tuberculosis is contagious, 121
- Tuberculosis prevalence revealed through autopsies, 122
- Vaccination and tuberculosis, 238
- Wash less after sun baths, 270

## BOOK REVIEWS

- Ambulatory Proctology, by Alfred J. Cantor, 236
- Arthropies, The: A Handbook of Roentgen Diagnosis, by Alfred A. de Lorimier, 59
- Bibliography of Infantile Paralysis, 1789-1944, with Selected Abstracts and Annotations, edited by Morris Fishbein, 198
- Blind Hog's Acorns, A, by Carey P. McCord, 330
- Brazil: Orchid of the Tropics, by Mulford B. Foster and Racine S. Foster, 87
- Classic Descriptions of Disease, by Ralph H. Major, 86
- Clinical Electrocardiography, by David Scherf and Linn J. Boyd, 137
- Corky the Killer, a Story of Syphilis, by Harry A. Wilmer, 330
- Curare-Intocostrin, prepared and edited by E. R. Squibb & Sons, 330

- Dietary of Health and Disease, The, by Gertrude I. Thomas, 87
- Dysentery, Colitis and Enteritis, by Joseph Felsen, 86
- Electrocardiography in Practice, by Ashton Graybird and Paul D. White, second edition, 313
- Essentials of Allergy, by Leo H. Criepp, 18
- Facial Prosthesis, by Arthur H. Bulbulian, 59
- General and Plastic Surgery, with Emphasis on War Injuries, by J. Eastman Sheehan, 18
- Gastro-Enterology. Vol. III: The Liver, Biliary Tract and Pancreas, and Secondary Gastro-Intestinal Disorders, by Henry L. Bockus, 137
- Herbal of Rufinus, The, edited by Lynn Thorndyke, 18
- Home Study Course in Social Hygiene Guidance, by Roy E. Dickerson and Paul Popenoe, 246
- Hypoanalysis, by Lewis R. Wolberg, 86
- Intravenous Anesthesia, by R. Charles Adams, 165
- Manual of Tuberculois, Clinical and Administrative, by E. Ashworth Underwood, 330
- Medical Clinics of North America, Mayo Clinic Number, 246
- Men Without Guns, by DeWitt Mackenzie, 59
- Mirror for Cure-Takers, A, edited by Harold Holand, 124
- Oral Medicine, by Lester W. Burket, 330
- Physical Chemistry of Cells and Tissues, by Rudolph Hober, 18
- Pictorial Handbook of Fracture Treatment, by E. L. Compere and S. W. Banks, 87
- Pneumoperitoneum Treatment, by Andrew L. Banyai, 313
- Prescribing Occupational Therapy, by William Rush Dunton, Jr., 59
- Psychotherapy in General Medicine, by Geddes Smith, 392
- Physiology of the Newborn Infant, The, by Clement A. Smith, 165
- Rehabilitation at Lake Tomahawk State Camp, by Harold Holand, 137
- Science and Scientists in the Netherlands Indies, edited by Pieter Honig and Frans Verdoorn, 165
- Sex Endocrinology: A Handbook for the Medical and Allied Professions, Schering Corporation, 18
- Skin Diseases in Children, by George M. Mackee and Anthony C. Cipollaro, 165
- Structure and Function of the Human Body, by Ralph N. Bailif and Donald L. Kimmel, 60
- Suggested School Health Policies: A Charter for School Health, National Conference for Cooperation in Health Education, 86
- Surgical Clinics of North America, Mayo Clinic Number, 246
- Surgical Treatment of the Nervous System, by F. W. Bancroft and C. Pilcher, 392
- Surgical Treatment of the Motor-Skeletal System, edited by Frederic W. Bancroft and Clay Ray Murray, 198
- Toward Mental Health, by George Thorman, 392
- Trauma in Internal Diseases, with Consideration of Experimental Pathology and Medicolegal Aspects, by Rudolf A. Stern, 86
- Women in Industry: Their Health and Efficiency, by Anna M. Baetjer, 330



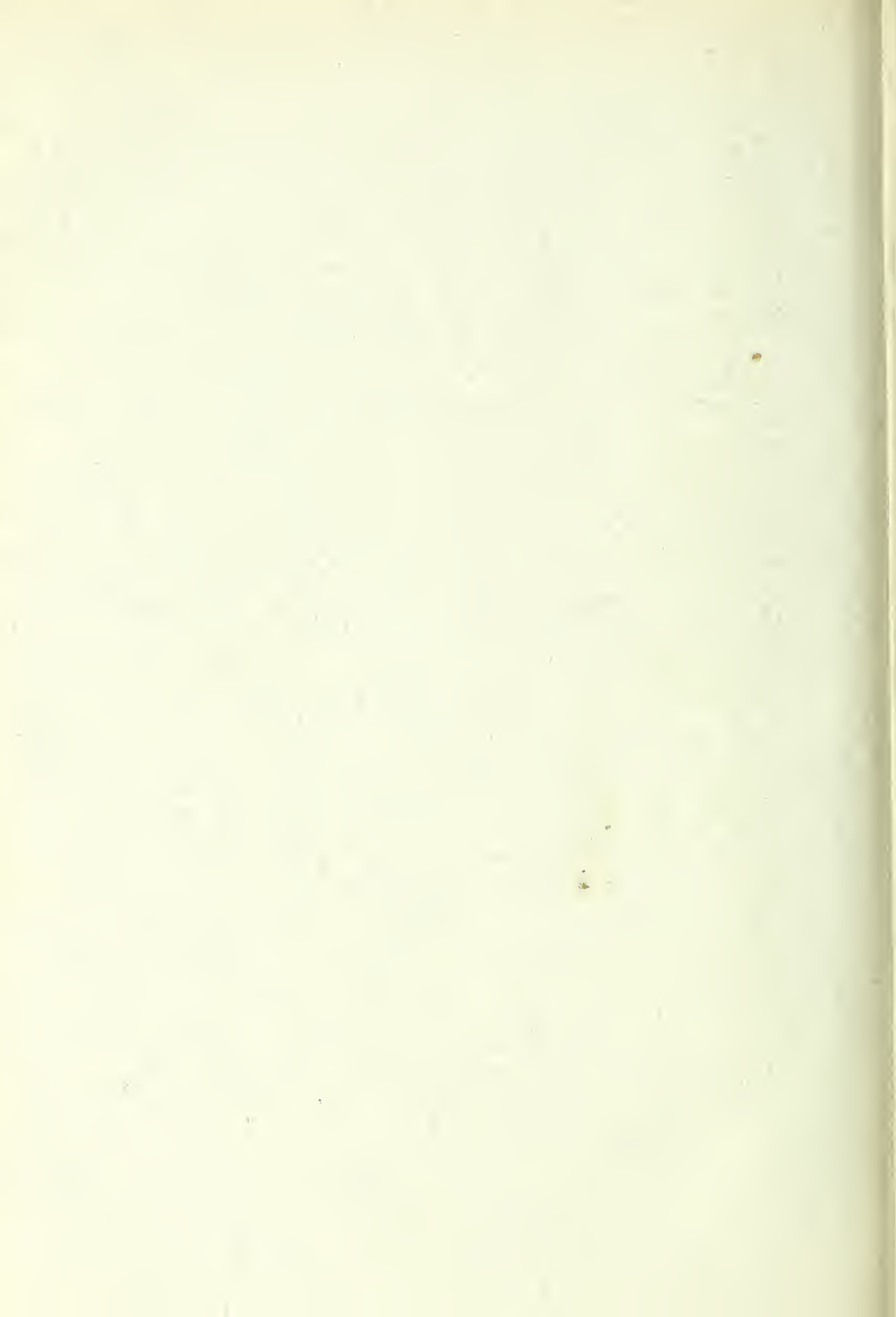














41B 172+

